

!A

LLOAD ROM2E.L,D1,A\$4000

*** End of Pass 1

LLOAD C0.L,D2,A\$4000

LLOAD C4.L,A\$4000

LLOAD SW.L,A\$4000

LLOAD C8.L,A\$4000

LLOAD CC.L,A\$4000

LLOAD D0.L,D2,A\$4000

LLOAD D4.L,A\$4000

LLOAD D8.L,A\$4000

LLOAD DC.L,A\$4000

LLOAD E0.L,D2,A\$4000

LLOAD E4.L,A\$4000

LLOAD E8.L,A\$4000

LLOAD EC.L,A\$4000

LLOAD F0.L,D2,A\$4000

LLOAD F4.L,A\$4000

LLOAD F8.L,A\$4000

LLOAD FC.L,A\$4000

LLOAD ROM2E.L,D1,A\$4000

*** End of Pass 2

```
0800      1          ttl "ROM Source Code, ROM2E.L"
0800      2          src "ROM2E.L,D1"
0800      3      ;
0800      4      ;
0800      5      ; ROM2E.L
0800      6      ;
0800      7      ;
0800      8      ; ROM2E Source Code, No Tape, with Sweet 16, and new
0800      9      ; Garbage Collection (Cornelis Bongers concept)
0800     10      ;
0800     11      ; 2023 April 4
0800     12      ;
0800     13      ; Build Version #6
0800     14      ;
0800     15      ;
0800     16      ; DOS 4.5, Build 06
0800     17      ;
0800     18      ; 2023 April 4
0800     19      ;
0800     20      ;
0800     21      ; Start of Source Code:  0x4000
0800     22      ; Start of Symbol List: 0x7000
0800     23      ;
0800     24      ;
0800     25      ; Copyright (c) 2023 April 4 by
0800     26      ; Walland Philip Vrbancic Jr
0800     27      ;
0800     28      ; 6223 East Peabody Street
0800     29      ; Long Beach, California  90808
0800     30      ; Unitied States of America
0800     31      ;
0800     32      ; All Rights Reserved
0800     33      ;
0800     34      ; This software is the confidential and
0800     35      ; proprietary intellectual property of
0800     36      ; Walland Philip Vrbancic Jr
0800     37      ;
0800     38      ;
0000     39  LOC0      epz $00
0001     40  LOC1      epz $01
0800     41      ;
0000     42  R0L      epz $00
0001     43  R0H      epz $01
0018     44  R12L     epz $18
0019     45  R12H     epz $19
001C     46  R14L     epz $1C
001D     47  R14H     epz $1D
001E     48  R15L     epz $1E
001F     49  R15H     epz $1F
0800     50      ;
0002     51  ZPG02     epz $02
0003     52  ZPG03     epz $03
0004     53  ZPG04     epz $04
0005     54  ZPG05     epz $05
000A     55  ZPG0A     epz $0A
000B     56  ZPG0B     epz $0B
000C     57  ZPG0C     epz $0C
000D     58  ZPG0D     epz $0D
000E     59  ZPG0E     epz $0E
000F     60  ZPG0F     epz $0F
```

0800	61	;	
0010	62	ZPG10	epz \$10
0011	63	ZPG11	epz \$11
0012	64	ZPG12	epz \$12
0013	65	ZPG13	epz \$13
0014	66	ZPG14	epz \$14
0015	67	ZPG15	epz \$15
0016	68	ZPG16	epz \$16
001A	69	SHAPE	epz \$1A
001C	70	HCOLOR1	epz \$1C
001D	71	COUNTH	epz \$1D
0800	72	;	
0020	73	WNDLFT	epz \$20
0021	74	WNDWDTH	epz \$21
0022	75	WNDTOP	epz \$22
0023	76	WNDBTM	epz \$23
0024	77	CH	epz \$24
0025	78	CV	epz \$25
0026	79	GBASL	epz \$26
0027	80	GBASH	epz \$27
0028	81	BASL	epz \$28
0029	82	BASH	epz \$29
002A	83	BAS2L	epz \$2A
002B	84	BAS2H	epz \$2B
002C	85	H2	epz \$2C
002C	86	LMNEM	epz \$2C
002D	87	V2	epz \$2D
002D	88	RMNEM	epz \$2D
002E	89	CHKSUM	epz \$2E
002E	90	FORMAT	epz \$2E
002E	91	MASK	epz \$2E
002F	92	LENGTH	epz \$2F
002F	93	LASTIN	epz \$2F
002F	94	SIGN	epz \$2F
0800	95	;	
0030	96	COLOR	epz \$30
0030	97	HMASK	epz \$30
0031	98	MODE	epz \$31
0032	99	INVFLG	epz \$32
0033	100	PROMPT	epz \$33
0034	101	YSAV	epz \$34
0035	102	YSAV1	epz \$35
0036	103	CSWL	epz \$36
0037	104	CSWH	epz \$37
0038	105	KSWL	epz \$38
0039	106	KSWH	epz \$39
003A	107	PCL	epz \$3A
003B	108	PCH	epz \$3B
003C	109	A1L	epz \$3C
003D	110	A1H	epz \$3D
003E	111	A2L	epz \$3E
003F	112	A2H	epz \$3F
0800	113	;	
0040	114	A3L	epz \$40
0041	115	A3H	epz \$41
0042	116	A4L	epz \$42
0043	117	A4H	epz \$43
0044	118	A5L	epz \$44
0044	119	MACSTAT	epz \$44
0044	120	OPRND	epz \$44
0045	121	AREG	epz \$45

0046	122	XREG	epz \$46	
0047	123	YREG	epz \$47	
0048	124	PREG	epz \$48	
0049	125	SPNT	epz \$49	
004E	126	RNDL	epz \$4E	
004F	127	RNDH	epz \$4F	
0800	128	;		
0050	129	LINNUM	epz \$50	
0050	130	ACL	epz \$50	
0051	131	ACH	epz \$51	
0052	132	TEMPPT	epz \$52	
0053	133	LASTPT	epz \$53	
0054	134	EL	epz \$54	
0055	135	STRATCH	epz \$55	; string scratch name/len
005E	136	INDEX	epz \$5E	
0800	137	;		
0060	138	P2	epz \$60	
0062	139	LASTMUL	epz \$62	; 62-66
0067	140	PRGTAB	epz \$67	
0069	141	VARTAB	epz \$69	
006B	142	ARYTAB	epz \$6B	
006D	143	STREND	epz \$6D	
006F	144	FRETOP	epz \$6F	
0800	145	;		
0071	146	FRESPC	epz \$71	
0073	147	MEMSIZE	epz \$73	
0075	148	CURLIN	epz \$75	
0077	149	OLDLIN	epz \$77	
0079	150	TEXTPTR	epz \$79	
007B	151	DATLIN	epz \$7B	
007D	152	DATPTR	epz \$7D	
007F	153	SRCPTR	epz \$7F	
0800	154	;		
0081	155	LASTVBL	epz \$81	
0080	156	ZPG80	epz \$80	
0083	157	VARPNT	epz \$83	
0085	158	FORPNT	epz \$85	
0087	159	GENTEMP	epz \$87	; 87-89
008A	160	TEMP3	epz \$8A	; 8A-8E
008C	161	GENTPTR	epz \$8C	
008F	162	SPCLFLAG	epz \$8F	
008F	163	ZPG8F	epz \$8F	
0800	164	;		
0090	165	ZPG90	epz \$90	
0091	166	ZPG91	epz \$91	
0092	167	ZPG92	epz \$92	
0093	168	TEMP1	epz \$93	; 93-97
0094	169	HIGHDS	epz \$94	
0094	170	LEN	epz \$94	
0095	171	PROCESS	epz \$95	
0096	172	HIGHTR	epz \$96	
0098	173	TEMP2	epz \$98	; 98-9C
009B	174	LOWTR	epz \$9B	
009D	175	DSCTMP	epz \$9D	; 9D-9F
0800	176	;		
00A0	177	FACMO	epz \$A0	
00A2	178	FACSIGN	epz \$A2	
00A3	179	ZPGA3	epz \$A3	
00A4	180	ZPGA4	epz \$A4	
00A5	181	ARGEXP	epz \$A5	
00A6	182	ARGMANT	epz \$A6	; A6-A9

00AA	183	ARGSGN	epz	\$AA	
00AB	184	STRNG1	epz	\$AB	
00AD	185	STRNG2	epz	\$AD	
00AF	186	PRGEND	epz	\$AF	
0800	187	;			
00B1	188	CHRGET	epz	\$B1	
00B7	189	CHRGOT	epz	\$B7	
00B8	190	TXTPTR	epz	\$B8	
0800	191	;			
00C9	192	FPRAND	epz	\$C9	
0800	193	;			
00D0	194	ZPGD0	epz	\$D0	
00D1	195	ZPGD1	epz	\$D1	
00D2	196	ZPGD2	epz	\$D2	
00D3	197	ZPGD3	epz	\$D3	
00D4	198	ZPGD4	epz	\$D4	
00D5	199	ZPGD5	epz	\$D5	
00D6	200	RUNFLAG	epz	\$D6	
00D8	201	ERRFLG	epz	\$D8	
00DA	202	ERRLIN	epz	\$DA	
00DC	203	ERRPOS	epz	\$DC	
00DE	204	ERRNUM	epz	\$DE	
00DF	205	ERRSTK	epz	\$DF	
0800	206	;			
00E0	207	HRXCOOR	epz	\$E0	
00E2	208	HRYCOOR	epz	\$E2	
00E4	209	HRCOLOR	epz	\$E4	
00E5	210	HRHZNDX	epz	\$E5	
00E6	211	HPAG	epz	\$E6	
00E7	212	SCALE	epz	\$E7	
00E8	213	HRSHPTBL	epz	\$E8	
00EA	214	HRCOLCNT	epz	\$EA	
0800	215	;			
00F0	216	FIRST	epz	\$F0	
00F1	217	SPDBYT	epz	\$F1	
00F2	218	ZPGF2	epz	\$F2	
00F3	219	ORMASK	epz	\$F3	
00F4	220	X2	epz	\$F4	
00F5	221	M2	epz	\$F5	; F5-F7
00F8	222	REMSTK	epz	\$F8	
00F9	223	M1	epz	\$F9	; F9-FB
00FF	224	ZPGFF	epz	\$FF	
0800	225	;			
0800	226		enz		
0800	227	;			
0001	228	HLINMOD	equ	1	; HLIN routine modification
0800	229	;			
0000	230	ZERO	equ	\$00	
0003	231	AVARLEN	equ	\$03	
0005	232	AHDRLEN	equ	\$05	
0007	233	SVARLEN	equ	\$07	
007F	234	MSBCLR	equ	\$7F	
0080	235	MSBSET	equ	\$80	
0083	236	CTRLC	equ	\$83	
0088	237	LARROW	equ	\$88	
008A	238	DARROW	equ	\$8A	
008B	239	UARROW	equ	\$8B	
008D	240	RETURN	equ	\$8D	
0093	241	CTRLS	equ	\$93	
0095	242	RARROW	equ	\$95	
0098	243	CTRLX	equ	\$98	

```

009B      244  ESCAPE      equ  $9B
00A0      245  SPACE      equ  $A0
00DF      246  LWRMASK    equ  $DF
00FE      247  NEG TWO    equ  $FE
00FF      248  NEG ONE    equ  $FF
0800      249  ;
0006      250  GOODF8     equ  $06      ; 0xF8 ROM version
0800      251  ;
00A5      252  PWRUPBYT   equ  $A5
0800      253  ;
0100      254  PAGESIZE   equ  $100
0100      255  STACK      equ  $100
0800      256  ;
0200      257  INPUT      equ  $200
0800      258  ;
03ED      259  XFERADR    equ  $3ED      ; XFER destination address
0800      260  ;
03F0      261  BRKADR     equ  $3F0
03F2      262  AUTORSET   equ  $3F2
03F4      263  PWRSTATE   equ  $3F4
03F5      264  AMPERRTN   equ  $3F5
03F8      265  CTRLYRTN   equ  $3F8
03FB      266  NMIRTN     equ  $3FB
03FE      267  IRQADR     equ  $3FE
0800      268  ;
0400      269  TEXTPG1    equ  $400
05B0      270  PG1TXLOC   equ  $5B0
0800      271  ;
047B      272  OLDCH      equ  $47B      ; last CH used by video F/W
04FB      273  XMODE      equ  $4FB      ; video firmware mode
0800      274  ;
057B      275  OURCH      equ  $57B      ; 80 column CH
05FB      276  OURCV      equ  $5FB      ; 80 column CV
0800      277  ;
067B      278  CHAR       equ  $67B      ; character to be printed/read
06FB      279  XCOORD     equ  $6FB      ; GOTOXY X-coord (Pascal only)
0800      280  ;
077B      281  XTEMP1     equ  $77B      ; temp
077B      282  OLDBASL    equ  $77B      ; last BASL (Pascal only)
07F8      283  MSLOT      equ  $7F8
07FB      284  XTEMP2     equ  $7FB      ; temp2
07FB      285  OLDBASH    equ  $7FB      ; last BASH (Pascal only)
0800      286  ;
0800      287  PAGE08     equ  $800
0C00      288  PAGE0C     equ  $C00
1000      289  PAGE10     equ  $1000
BF00      290  PAGEBF     equ  $BF00
C000      291  PAGEC0     equ  $C000
C100      292  PAGEC1     equ  $C100
C800      293  PAGEC8     equ  $C800
F000      294  PAGEF0     equ  $F000
FE00      295  PAGEFE     equ  $FE00
0800      296  ;
C000      297  KEY        equ  $C000
C000      298  STR80OFF   equ  $C000
C001      299  STR80ON    equ  $C001
C002      300  RAMRDOFF   equ  $C002
C003      301  RAMRDON    equ  $C003
C004      302  RAMWROFF   equ  $C004
C005      303  RAMWRON    equ  $C005
C006      304  CXROMOFF   equ  $C006

```

```
C007      305  CXROMON equ $C007
C008      306  AUXZPOFF equ $C008
C009      307  AUXZPON equ $C009
C00A      308  C3ROMOFF equ $C00A
C00B      309  C3ROMON equ $C00B
C00C      310  VID80OFF equ $C00C
C00D      311  VID80ON equ $C00D
C00E      312  ALTCHOFF equ $C00E
C00F      313  ALTCHON equ $C00F
0800      314  ;
C010      315  CLRKEY equ $C010
C011      316  RDBANK2 equ $C011
C012      317  RDLGRAM equ $C012
C013      318  RDRAMRD equ $C013
C014      319  RDRAMWR equ $C014
C015      320  RDCXROM equ $C015
C016      321  RDAUXZP equ $C016
C017      322  RDC3ROM equ $C017
C018      323  RDSTR80 equ $C018
C019      324  RDVRTBLK equ $C019
C01A      325  RDTEXT equ $C01A
C01B      326  RDMIXED equ $C01B
C01C      327  RDPAGE2 equ $C01C
C01D      328  RDHIRES equ $C01D
C01E      329  RDALTCH equ $C01E
C01F      330  RDVID80 equ $C01F
0800      331  ;
C020      332  TAPEOUT equ $C020
C030      333  SPKR equ $C030
0800      334  ;
C050      335  TEXTOFF equ $C050
C051      336  TEXTON equ $C051
C052      337  MIXEDOFF equ $C052
C053      338  MIXEDON equ $C053
C054      339  PAGE1ON equ $C054
C055      340  PAGE2ON equ $C055
C056      341  HIRESOFF equ $C056
C057      342  HIRESON equ $C057
C058      343  ANN1OFF equ $C058
C05A      344  ANN2OFF equ $C05A
C05D      345  ANN3ON equ $C05D
C05F      346  ANN4ON equ $C05F
0800      347  ;
C060      348  TAPEIN equ $C060
C061      349  PB1IN equ $C061
C062      350  PB2IN equ $C062
C064      351  GC1IN equ $C064
0800      352  ;
C070      353  GCTOGL equ $C070
0800      354  ;
C080      355  RAM2WP equ $C080
C081      356  ROM2WE equ $C081
C082      357  ROM2WP equ $C082
C083      358  RAM2WE equ $C083
C088      359  RAM1WP equ $C088
C08B      360  RAM1WE equ $C08B
0800      361  ;
D000      362  PAGED0 equ $D000
0800      363  ;
0800      364  ;
0800      365  ; BASIC mode bits
```

```

0800      366 ;
0800      367 ; 0..... BASIC active
0800      368 ; 1..... Pascal active
0800      369 ; .0.....
0800      370 ; .1.....
0800      371 ; ..0..... print control characters
0800      372 ; ..1..... do not print ctrl chars
0800      373 ; ...0....
0800      374 ; ...1....
0800      375 ; ....0... print next ctrl char
0800      376 ; ....1... do not print next ctrl char
0800      377 ; .....0..
0800      378 ; .....1..
0800      379 ; .....0.
0800      380 ; .....1.
0800      381 ; .....0 mouse text inactive
0800      382 ; .....1 mouse text active
0800      383 ;
0040      384 M.6      equ %01000000
0020      385 M.CTL2   equ %00100000      ; do not print controls
0010      386 M.4      equ %00010000
0008      387 M.CTL    equ %00001000      ; temp ctrl disable
0004      388 M.2      equ %00000100
0002      389 M.1      equ %00000010
0001      390 M.MOUSE   equ %00000001
0800      391 ;
0800      392 ;
0800      393 ; Pascal mode bits
0800      394 ;
0800      395 ; 0..... BASIC active
0800      396 ; 1..... Pascal active
0800      397 ; .0.....
0800      398 ; .1.....
0800      399 ; ..0.....
0800      400 ; ..1.....
0800      401 ; ...0.... cursor always on
0800      402 ; ...1.... cursor always off
0800      403 ; ....0... GOTOXY n/a
0800      404 ; ....1... GOTOXY in progress
0800      405 ; .....0.. normal video
0800      406 ; .....1.. inverse video
0800      407 ; .....0. Pascal 1.1 firmware active
0800      408 ; .....1. Pascal 1.0 interface
0800      409 ; .....0 mouse text inactive
0800      410 ; .....1 mouse text active
0800      411 ;
0080      412 M.PASCAL equ %10000000      ; Pascal active
0010      413 M.CURSOR equ %00010000      ; do not print cursor
0008      414 M.GOXY    equ %00001000      ; GOTOXY in progress
0004      415 M.VMODE   equ %00000100      ; Pascal video mode
0002      416 M.PAS1.0 equ %00000010      ; Pascal 1.0 mode
0800      417 ;
0800      418 ;
0800      419      icl "C0.L,D2"

```

```

LLOAD C0.L,D2,A$4000

```



```

0800          1          ttl "ROM Source Code, C0.L"
0800          2          ;
0800          3          ;
0800          4          ; C0.L
0800          5          ;
0800          6          ;
C000          7          org PAGEC0
C000          8          obj PAGE10
C000          9          usr
C000         10          ;
C000         11          ;
C000         12          IOSPACE:
C000         13          ;
C000         14          ;
C000         15          dfs PAGESIZE,ZERO
C100         16          ;
C100         17          ;
C100         18          ; DOCXCMD is called by the patched 0xF8 ROM. It provides
C100         19          ; an extension to the 0xF8 routines that do not work in 80
C100         20          ; columns.
C100         21          ;
C100         22          ; Before jumping here the 0xF8 ROM disables slot I/O and
C100         23          ; enables ROM I/O. This makes the entire space from 0xC100
C100         24          ; to 0xCFFF available except for the 0xC300 page.
C100         25          ;
C100         26          ; On exit slot I/O is restored if necessary.
C100         27          ;
C100         28          ; The stack has the PHP for status of the internal 0xCN00
C100         29          ; ROM.
C100         30          ;
C100         31          ; If VID80 is on and the XMODE byte is valid, this call
C100         32          ; will be handled by the 80 column routine. Otherwise it
C100         33          ; will be handled by the 40 column routine. Return to the
C100         34          ; Autostart ROM is done by CXEXIT.
C100         35          ;
C100         36          ;
C100 4C 11 C2      37          DOCXCMD jmp DOCMD
C103          38          ;
C103          39          ;
C103          40          ; CLREOP support.
C103          41          ;
C103 A4 24         42          XCLREOP ldy CH
C105 A5 25         43          lda CV
C107          44          ;
C107 48           45          XCLREOP1 pha
C108          46          ;
C108 20 03 CE      47          jsr XVTABZ
C10B 20 F3 C1      48          jsr XCLREOLZ
C10E          49          ;
C10E A0 00         50          ldy #ZERO
C110          51          ;
C110 68           52          pla
C111 69 00         53          adc #ZERO
C113          54          ;
C113 C5 23         55          cmp WNDBTM
C115 90 F0         56          bcc XCLREOP1
C117          57          ;
C117 B0 34         58          bcs XVTAB0          ; always taken
C119          59          ;
C119          60          ;

```

```

C119      61 ; HOME support.
C119      62 ;
C119 A5 22 63 XHOME      lda WNDTOP
C11B 85 25 64           sta CV
C11D      65 ;
C11D A0 00 66           ldy #ZERO
C11F 84 24 67           sty CH
C121      68 ;
C121 F0 E4 69           beq XCLREOP1      ; always taken
C123      70 ;
C123      71 ;
C123      72 ; SCROLL support.
C123      73 ;
C123 A5 22 74 XSCROLL    lda WNDTOP
C125 48    75           pha
C126      76 ;
C126 20 03 CE 77           jsr XVTABZ
C129      78 ;
C129 A5 28 79 XSCRL1     lda BASL
C12B 85 2A 80           sta BAS2L
C12D      81 ;
C12D A5 29 82           lda BASH
C12F 85 2B 83           sta BAS2H
C131      84 ;
C131 A4 21 85           ldy WNDWDTH
C133 88    86           dey
C134      87 ;
C134 68    88           pla
C135 69 01 89           adc #1
C137      90 ;
C137 C5 23 91           cmp WNDBTM
C139 B0 0D 92           bcs XSCRL3
C13B      93 ;
C13B 48    94           pha
C13C      95 ;
C13C 20 03 CE 96           jsr XVTABZ
C13F      97 ;
C13F B1 28 98 XSCRL2     lda (BASL),Y
C141 91 2A 99           sta (BAS2L),Y
C143     100 ;
C143 88    101           dey
C144 10 F9 102          bpl XSCRL2
C146     103 ;
C146 30 E1 104          bmi XSCRL1      ; always taken
C148     105 ;
C148 A0 00 106 XSCRL3     ldy #ZERO
C14A     107 ;
C14A 20 F3 C1 108          jsr XCLREOLZ
C14D     109 ;
C14D A5 25 110 XVTAB0     lda CV
C14F     111 ;
C14F 4C 03 CE 112 XVTAB0Z    jmp XVTABZ
C152     113 ;
C152     114 ;
C152     115 ; SETWND support.
C152     116 ;
C152 A9 28 117 XSETWND     lda #40
C154 85 21 118           sta WNDWDTH
C156     119 ;
C156 A9 18 120           lda #24
C158 85 23 121           sta WNDBTM

```

```
C15A          122 ;
C15A A9 17    123         lda #23
C15C 85 25    124         sta CV
C15E          125 ;
C15E D0 EF    126         bne XVTAB0Z           ; always taken
C160          127 ;
C160          128 ;
C160          129 ; CLEOLZ support.
C160          130 ;
C160 A4 2A    131 XCLEOLZ  ldy BAS2L
C162          132 ;
C162 4C F3 C1 133         jmp XCLREOLZ
C165          134 ;
C165          135 ;
C165          136 ; 80 column routines begin here.
C165          137 ;
C165          138 ; 80 column SCROLL support.
C165          139 ;
C165 4C EB CB 140 YSCROLL  jmp SCROLLUP
C168          141 ;
C168          142 ;
C168          143 ; 80 column CLREOL support.
C168          144 ;
C168 4C 9A CC 145 YCLREOL  jmp XGS
C16B          146 ;
C16B          147 ;
C16B          148 ; 80 column CLEOLZ support.
C16B          149 ;
C16B A4 2A    150 YCLEOLZ  ldy BAS2L
C16D          151 ;
C16D 4C 9D CC 152         jmp XGSEOLZ
C170          153 ;
C170          154 ;
C170          155 ; 80 column CLREOP support.
C170          156 ;
C170 4C 74 CC 157 YCLREOP  jmp XVT
C173          158 ;
C173          159 ;
C173          160 ; 80 column SETWND support.
C173          161 ;
C173 4C A5 C2 162 YSETWND  jmp XSETWNDX
C176          163 ;
C176          164 ;
C176          165 ; RESET support.
C176          166 ;
C176          167 XRESET:
C176 4C B5 C2 168 YRESET   jmp XRESETX
C179          169 ;
C179          170 ;
C179          171 ; 80 column RDKEY support.
C179          172 ;
C179 4C 14 CE 173 YRDKEY   jmp XRDKEYX
C17C          174 ;
C17C          175 ;
C17C          176 ; 80 column HOME support.
C17C          177 ;
C17C 20 90 CC 178 YHOME    jsr XFF
C17F          179 ;
C17F AD 7B 05 180         lda OURCH
C182 85 24    181         sta CH
C184 8D 7B 04 182         sta OLDCH
```

```

C187      183 ;
C187 4C FE CD 184      jmp XVTAB2
C18A      185 ;
C18A      186 ;
C18A      187 ; 80 column IOPRT support.
C18A      188 ;
C18A B4 00 189 YIOPRT    ldy LOC0,X
C18C F0 0F 190          beq XIOPRT2
C18E      191 ;
C18E C0 1B 192          cpy #KEYIN
C190 F0 0E 193          beq ISO
C192      194 ;
C192 20 80 CD 195      jsr QUIT
C195      196 ;
C195      197 ;
C195      198 ; IOPRT support.
C195      199 ;
C195 B4 00 200 XIOPRT    ldy LOC0,X
C197 F0 04 201          beq XIOPRT2
C199      202 ;
C199 A9 FD 203 XIOPRT1   lda /KEYIN
C19B 95 01 204          sta LOC1,X
C19D      205 ;
C19D B5 01 206 XIOPRT2   lda LOC1,X
C19F      207 ;
C19F 60      208          rts
C1A0      209 ;
C1A0      210 ;
C1A0 A5 37 211 ISO      lda CSWH
C1A2 C9 C3 212          cmp /C3SPACE
C1A4 D0 F3 213          bne XIOPRT1
C1A6      214 ;
C1A6 4C 32 C8 215      jmp C3IN
C1A9      216 ;
C1A9      217 ;
C1A9      218 ; RDKEY support.
C1A9      219 ;
C1A9 A4 24 220 XRDKEY    ldy CH
C1AB      221 ;
C1AB B1 28 222          lda (BASL),Y
C1AD 48      223          pha
C1AE      224 ;
C1AE 29 3F 225          and #$3F          ; set screen to flash
C1B0 09 40 226          ora #$40
C1B2 91 28 227          sta (BASL),Y
C1B4      228 ;
C1B4 68      229          pla
C1B5      230 ;
C1B5 60      231          rts
C1B6      232 ;
C1B6      233 ;
C1B6      234 ; Implemented BASCALC support that restores Y-reg.
C1B6      235 ;
C1B6 A4 28 236 XBASCLC   ldy BASL
C1B8      237 ;
C1B8 20 BA CA 238          jsr XBASCALC
C1BB 90 4B 239          bcc CXEXIT          ; always taken
C1BD      240 ;
C1BD      241 ;
C1BD      242 ; RDESC support.
C1BD      243 ;

```

```

C1BD      244 ; Map ^H to J, ^U to K, ^J to M, and ^K to I.
C1BD      245 ;
C1BD 20 01 FD 246 XRDESC      jsr UPRCASE
C1C0      247 ;
C1C0 A0 03   248             ldy #KBDOUT-KBDTBL+1
C1C2      249 ;
C1C2 D9 EB C2 250 ^1        cmp KBDTBL,Y
C1C5 D0 03   251             bne >2
C1C7      252 ;
C1C7 B9 EF C2 253             lda KBDOUT,Y
C1CA      254 ;
C1CA 88      255 ^2          dey
C1CB 10 F5   256             bpl <1
C1CD      257 ;
C1CD 30 39   258             bmi CXEXIT                ; always taken
C1CF      259 ;
C1CF      260 ;
C1CF      261 ; NEWVW support.
C1CF      262 ;
C1CF 20 70 C8 263 XNEWVW      jsr CXNEWVW
C1D2      264 ;
C1D2 4C 08 C2 265             jmp CXEXIT
C1D5      266 ;
C1D5      267 ;
C1D5      268 ; GETFMT support.
C1D5      269 ;
C1D5      270 XGETFMT:
C1D5 8A      271 YGETFMT    txa
C1D6      272 ;
C1D6 85 2E   273             sta FORMAT
C1D8      274 ;
C1D8 29 03   275             and #3
C1DA 85 2F   276             sta LENGTH
C1DC      277 ;
C1DC A5 2A   278             lda BAS2L                ; recall opcode index
C1DE      279 ;
C1DE 4C D5 C5 280             jmp XGETFMT2
C1E1      281 ;
C1E1      282 ;
C1E1      283 ; MINIASM support.
C1E1      284 ;
C1E1      285 XGOMINI:
C1E1 20 F0 FC 286 YGOMINI    jsr NXTLINE
C1E4      287 ;
C1E4 8A      288             txa
C1E5 85 34   289             sta YSAV
C1E7      290 ;
C1E7 60      291             rts
C1E8      292 ;
C1E8      293 ;
C1E8      294 ; PICKFIX support.
C1E8      295 ;
C1E8      296 XPICKFIX:
C1E8 AC 7B 05 297 YPICKFIX    ldy OURCH
C1EB      298 ;
C1EB 20 44 CE 299             jsr PICK
C1EE      300 ;
C1EE 09 80   301             ora #MSBSET
C1F0      302 ;
C1F0 60      303             rts
C1F1      304 ;

```

```

C1F1      305 ;
C1F1      306 ; CLREOL support.
C1F1      307 ;
C1F1 A4 24 308 XCLREOL ldy CH
C1F3      309 ;
C1F3 A9 A0 310 XCLREOLZ lda #SPACE
C1F5      311 ;
C1F5 2C 1E C0 312 bit RDALTCH
C1F8 10 06 313 bpl >1
C1FA      314 ;
C1FA 24 32 315 bit INVFLG
C1FC 30 02 316 bmi >1
C1FE      317 ;
C1FE A9 20 318 lda #$20 ; use inverse blank
C200      319 ;
C200 4C A8 CC 320 ^1 jmp CLR40
C203      321 ;
C203      322 ;
C203      323 ; VTAB support. Modified to save Y-reg in BASL. Fall
C203      324 ; into CXEXIT.
C203      325 ;
C203 A4 28 326 XVTAB ldy BASL
C205      327 ;
C205 20 03 CE 328 jsr XVTABZ
C208      329 ;
C208      330 ;
C208      331 ; If PLP is +, turn CX ROM off, otherwise leave CX ROM on.
C208      332 ;
C208 28 333 CXEXIT plp
C209 30 03 334 bmi CXEXIT2
C20B      335 ;
C20B 4C 3C FA 336 jmp CXOFF
C20E      337 ;
C20E 4C 3F FA 338 CXEXIT2 jmp CXRTN
C211      339 ;
C211      340 ;
C211 88 341 DOCMD dey
C212 30 BB 342 bmi XNEWVW ; Y-reg = 0
C214      343 ;
C214 88 344 dey
C215 30 A6 345 bmi XRDESC ; Y-reg = 1
C217      346 ;
C217 88 347 dey
C218 30 9C 348 bmi XBASCLC ; Y-reg = 2
C21A      349 ;
C21A 88 350 dey
C21B 30 3E 351 bmi XKEYIN ; Y-reg = 3
C21D      352 ;
C21D 88 353 dey
C21E 30 E3 354 bmi XVTAB ; Y-reg = 4
C220      355 ;
C220 A9 C2 356 lda /CXEXIT-1
C222 48 357 pha
C223      358 ;
C223 A9 07 359 lda #CXEXIT-1
C225 48 360 pha
C226      361 ;
C226 AD FB 04 362 lda XMODE
C229 29 D6 363 and #M.PASCAL|M.6|M.4|M.2|M.1
C22B D0 0E 364 bne >1
C22D      365 ;

```

```

C22D 98          366      tya
C22E            367      ;
C22E D8          368      cld                      ; added, clear DECIMAL
C22F 18          369      clc
C230            370      ;
C230 69 0C       371      adc #YREGTBLY-YREGTBLX
C232 48          372      pha
C233            373      ;
C233 20 50 C8    374      jsr CSETUP
C236 20 FE CD    375      jsr XVTAB2
C239            376      ;
C239 68          377      pla
C23A A8          378      tay
C23B            379      ;
C23B A9 C1       380      ^1      lda /PAGEC1
C23D 48          381      pha
C23E            382      ;
C23E B9 43 C2    383      lda YREGTBLX,Y
C241 48          384      pha
C242            385      ;
C242 60          386      rts
C243            387      ;
C243            388      ;
C243            389      YREGTBLX:
C243 18          390      byt XHOME-1          ; Y-reg = 5
C244 22          391      byt XSCROLL-1        ; Y-reg = 6
C245 F0          392      byt XCLREOL-1        ; Y-reg = 7
C246 5F          393      byt XCLEOLZ-1        ; Y-reg = 8
C247 75          394      byt XRESET-1         ; Y-reg = 9
C248 02          395      byt XCLREOP-1        ; Y-reg = 10
C249 A8          396      byt XRDKEY-1         ; Y-reg = 11
C24A 51          397      byt XSETWND-1        ; Y-reg = 12
C24B E0          398      byt XGOMINI-1        ; Y-reg = 13
C24C 94          399      byt XIOPRT-1         ; Y-reg = 14
C24D E7          400      byt XPICKFIX-1       ; Y-reg = 15
C24E D4          401      byt XGETFMT-1       ; Y-reg = 16
C24F            402      ;
C24F            403      YREGTBLY:
C24F 7B          404      byt YHOME-1          ; Y-reg = 5
C250 64          405      byt YSCROLL-1        ; Y-reg = 6
C251 67          406      byt YCLREOL-1        ; Y-reg = 7
C252 6A          407      byt YCLEOLZ-1        ; Y-reg = 8
C253 75          408      byt YRESET-1         ; Y-reg = 9
C254 6F          409      byt YCLREOP-1        ; Y-reg = 10
C255 78          410      byt YRDKEY-1         ; Y-reg = 11
C256 72          411      byt YSETWND-1        ; Y-reg = 12
C257 E0          412      byt YGOMINI-1        ; Y-reg = 13
C258 89          413      byt YIOPRT-1         ; Y-reg = 14
C259 E7          414      byt YPICKFIX-1       ; Y-reg = 15
C25A D4          415      byt YGETFMT-1       ; Y-reg = 16
C25B            416      ;
C25B            417      ;
C25B            418      ; KEYIN support.
C25B            419      ;
C25B 2C 1F C0    420      XKEYIN    bit RDVID80
C25E 10 06       421      bpl >2
C260            422      ;
C260 20 74 C8    423      jsr CXNEWVW2
C263            424      ;
C263 4C 08 C2    425      ^1      jmp CXEXIT
C266            426      ;

```

```

C266 A8          427 ^2      tay
C267            428 ;
C267 8A          429      txa
C268 48          430      pha
C269            431 ;
C269 98          432      tya
C26A 48          433      pha
C26B            434 ;
C26B 48          435      pha
C26C            436 ;
C26C 68          437 ^3      pla
C26D            438 ;
C26D C9 FF       439      cmp #NEGONE
C26F F0 04       440      beq >4
C271            441 ;
C271 A9 FF       442      lda #NEGONE
C273 D0 02       443      bne >5
C275            444 ;
C275 68          445 ^4      pla
C276 48          446      pha
C277            447 ;
C277 48          448 ^5      pha
C278            449 ;
C278 A4 24       450      ldy CH
C27A            451 ;
C27A 91 28       452      sta (BASL),Y
C27C            453 ;
C27C E6 4E       454 ^6      inc RNDL
C27E D0 0A       455      bne >7
C280            456 ;
C280 A5 4F       457      lda RNDH          ; time to blink?
C282            458 ;
C282 E6 4F       459      inc RNDH
C284            460 ;
C284 45 4F       461      eor RNDH
C286            462 ;
C286 29 40       463      and #$40
C288 D0 E2       464      bne <3          ; yes, blink it
C28A            465 ;
C28A AD 00 C0    466 ^7      lda KEY
C28D 10 ED       467      bpl <6
C28F            468 ;
C28F 68          469      pla
C290            470 ;
C290 A4 24       471      ldy CH
C292            472 ;
C292 68          473      pla
C293 91 28       474      sta (BASL),Y
C295            475 ;
C295 68          476      pla
C296 AA          477      tax
C297            478 ;
C297 AD 00 C0    479      lda KEY
C29A            480 ;
C29A 2C 10 C0    481      bit CLRKEY
C29D            482 ;
C29D C9 FF       483      cmp #NEGONE
C29F D0 C2       484      bne <1
C2A1            485 ;
C2A1 A9 88       486      lda #LARROW
C2A3 D0 BE       487      bne <1          ; always taken

```



```

C2A5          488 ;
C2A5          489 ;
C2A5 20 52 C1 490 XSETWNDX jsr XSETWND
C2A8          491 ;
C2A8 2C 1F C0 492          bit RDVID80
C2AB 10 02     493          bpl >1
C2AD          494 ;
C2AD 06 21     495          asl WNDWDTH
C2AF          496 ;
C2AF A5 25     497 ^1      lda CV
C2B1 8D FB 05  498          sta OURCV
C2B4          499 ;
C2B4 60        500          rts
C2B5          501 ;
C2B5          502 ;
C2B5          503 ; RESET support.
C2B5          504 ;
C2B5 D8        505 XRESETX cld
C2B6          506 ;
C2B6 20 08 FB  507          jsr RSETINIT
C2B9          508 ;
C2B9 A9 FF     509          lda #NEGONE
C2BB 8D FB 04  510          sta XMODE
C2BE          511 ;
C2BE          512 ;
C2BE          513 ; If the solid Apple key is pressed go to DIAGS.
C2BE          514 ;
C2BE          515 ;          lda PB2IN
C2BE          516 ;          bpl >1
C2BE          517 ;
C2BE          518 ;          jmp DIAGS
C2BE          519 ;
C2BE          520 ;
C2BE          521 ; If the open Apple key is pressed destroy memory and
C2BE          522 ; coldstart the system.
C2BE          523 ;
C2BE AD 61 C0  524 ^1      lda PB1IN
C2C1 10 16     525          bpl CXRESET
C2C3          526 ;
C2C3          527 ;
C2C3          528 ; Write 2 bytes of SPACE on each page including the RESET
C2C3          529 ; vector (rewritten using X-reg).
C2C3          530 ;
C2C3 A9 00     531          lda #PAGEBF
C2C5 85 3C     532          sta A1L
C2C7          533 ;
C2C7 A2 BF     534          ldx /PAGEBF
C2C9          535 ;
C2C9 A0 B0     536          ldy #$B0          ; starting page offset
C2CB          537 ;
C2CB A9 A0     538          lda #SPACE
C2CD          539 ;
C2CD 86 3D     540 ^2      stx A1H
C2CF          541 ;
C2CF 91 3C     542          sta (A1L),Y
C2D1          543 ;
C2D1 88        544          dey
C2D2          545 ;
C2D2 91 3C     546          sta (A1L),Y
C2D4          547 ;
C2D4 CA        548          dex

```

```

C2D5          549 ;
C2D5 E0 01    550         cpx #1                ; avoid the stack
C2D7 D0 F4    551         bne <2
C2D9          552 ;
C2D9          553 ;
C2D9          554 ; If there is a ROM card in slot 3 do not enable the
C2D9          555 ; internal C3 ROM space. If none, switch in the C3 ROM
C2D9          556 ; space only if there is a RAM card in the video slot.
C2D9          557 ;
C2D9          558 ; The //e powers up with internal C3 ROM switched in.
C2D9          559 ; TSTROMCD switches it out. CXRESET may or may not switch
C2D9          560 ; it back in.
C2D9          561 ;
C2D9 8D 0B C0 562 CXRESET sta C3ROMON
C2DC          563 ;
C2DC 20 89 CA 564         jsr TSTROMCD
C2DF D0 03    565         bne >1
C2E1          566 ;
C2E1 8D 0A C0 567         sta C3ROMOFF
C2E4          568 ;
C2E4 AD FF CF 569 ^1     lda CLRROM                ; disable extension ROM
C2E7          570 ;
C2E7 2C 10 C0 571         bit CLRKEY
C2EA          572 ;
C2EA 60       573         rts
C2EB          574 ;
C2EB          575 ;
C2EB 88 95 8A 576 KBDTBL  hex 88958A8B            ; ^H, ^U, ^J, ^K
C2EE 8B
C2EF          577 ;
C2EF CA CB CD 578 KBDOUT  asc "JKMI"
C2F2 C9
C2F3          579 ;
C2F3          580 ;
C2F3          581         dfs PAGESIZE-*)&NEGONE,ZERO
C300          582 ;
C300          583 ;
C300          584 C3SPACE:
C300          585 ;
C300          586 ;
C300          587 ; This page must not be used by any F8 ROM routines. When
C300          588 ; enabled it claims the C800 space. Thus peripheral cards
C300          589 ; cannot use AUXMOVE or XFER from their C800 space.
C300          590 ;
C300 2C 43 CE 591 BASICINT bit CXRTS6
C303 70 12    592         bvs BASICENT                ; always taken
C305          593 ;
C305 38       594 BASICIN  sec
C306          595 ;
C306 90 00    596         bcc *+2
C308          597         dfs !-1
C307          598 ;
C307 18       599 BASICOUT clc
C308          600 ;
C308 B8       601         clv
C309 50 0C    602         bvc BASICENT                ; always taken
C30B          603 ;
C30B          604 ;
C30B 01       605         hex 01                ; generic signature byte
C30C 88       606         hex 88                ; device signature byte
C30D          607 ;

```

```

C30D 4A          608          byt JPINIT          ; Pascal INIT
C30E 50          609          byt JPREAD          ; Pascal READ
C30F 56          610          byt JPWRITE         ; Pascal WRITE
C310 5C          611          byt JPSTAT          ; Pascal STATUS
C311            612          ;
C311            613          ;
C311            614          ; 128K support routines.
C311            615          ;
C311 4C 76 C3    616  AUXMOVE  jmp DOMOVE          ; memory move across banks
C314            617          ;
C314 4C C3 C3    618  XFER      jmp DOXFER          ; transfer across banks
C317            619          ;
C317            620          ;
C317 8D 7B 06    621  BASICENT sta CHAR
C31A            622          ;
C31A 98          623          tya
C31B 48          624          pha
C31C            625          ;
C31C 8A          626          txa
C31D 48          627          pha
C31E            628          ;
C31E 08          629          php
C31F            630          ;
C31F AD FB 04    631          lda XMODE
C322            632          ;
C322 2C F8 07    633          bit MSLOT
C325 30 05        634          bmi >2
C327            635          ;
C327 09 08        636          ora #M.CTL
C329 8D FB 04    637          sta XMODE
C32C            638          ;
C32C 20 6D C3    639  ^2      jsr SETC8
C32F            640          ;
C32F 28          641          plp
C330            642          ;
C330 70 15        643          bvs JBASINIT
C332 90 10        644          bcc JC8
C334            645          ;
C334 AA          646          tax
C335 10 0D        647          bpl JC8
C337            648          ;
C337 20 5B CD    649          jsr SETKEYIN
C33A            650          ;
C33A 68          651          pla
C33B AA          652          tax
C33C            653          ;
C33C 68          654          pla
C33D A8          655          tay
C33E            656          ;
C33E AD 7B 06    657          lda CHAR
C341            658          ;
C341 6C 38 00    659          jmp (KSWL)
C344            660          ;
C344            661          ;
C344 4C 7C C8    662  JC8      jmp CXVIDCK3
C347            663          ;
C347            664          ;
C347 4C 03 C8    665  JBASINIT jmp BASCINIT
C34A            666          ;
C34A            667          ;
C34A 20 6D C3    668  JPINIT  jsr SETC8

```

```

C34D      669 ;
C34D 4C B4 C9 670      jmp PPINIT
C350      671 ;
C350      672 ;
C350 20 6D C3 673 JPREAD      jsr SETC8
C353      674 ;
C353 4C D6 C9 675      jmp PPREAD
C356      676 ;
C356      677 ;
C356 20 6D C3 678 JPWRITE      jsr SETC8
C359      679 ;
C359 4C F0 C9 680      jmp PPWRITE
C35C      681 ;
C35C      682 ;
C35C AA      683 JPSTAT      tax
C35D F0 08    684      beq >1
C35F      685 ;
C35F CA      686      dex
C360 D0 07    687      bne >2
C362      688 ;
C362 2C 00 C0 689      bit KEY
C365 10 04    690      bpl >3
C367      691 ;
C367 38      692 ^1      sec
C368      693 ;
C368 60      694      rts
C369      695 ;
C369 A2 03    696 ^2      ldx #3          ; error flag
C36B      697 ;
C36B 18      698 ^3      clc
C36C      699 ;
C36C 60      700      rts
C36D      701 ;
C36D      702 ;
C36D A2 C3    703 SETC8      ldx /C3SPACE
C36F 8E F8 07 704      stx MSLOT
C372      705 ;
C372 AE FF CF 706      ldx CLRROM
C375      707 ;
C375 60      708      rts
C376      709 ;
C376      710 ;
C376      711 ; AUXMOVE routine; crossbank memory move.
C376      712 ;
C376      713 ; A1L/H = source start address
C376      714 ; A2L/H = source end address
C376      715 ; A4L/H = destination start address
C376      716 ;
C376      717 ; carry set = main -> aux
C376      718 ; carry clear = aux -> main
C376      719 ;
C376 48      720 DOMOVE      pha
C377      721 ;
C377 98      722      tya
C378 48      723      pha
C379      724 ;
C379 AD 13 C0 725      lda RDRAMRD
C37C 48      726      pha
C37D      727 ;
C37D AD 14 C0 728      lda RDRAMWR
C380 48      729      pha

```

```

C381          730 ;
C381 90 08     731      bcc >1
C383          732 ;
C383 8D 02 C0  733      sta RAMRDOFF
C386 8D 05 C0  734      sta RAMWRON
C389          735 ;
C389 B0 06     736      bcs >2
C38B          737 ;
C38B 8D 04 C0  738 ^1      sta RAMWROFF
C38E 8D 03 C0  739      sta RAMRDON
C391          740 ;
C391 A0 00     741 ^2      ldy #ZERO
C393          742 ;
C393 B1 3C     743 ^3      lda (A1L),Y
C395 91 42     744      sta (A4L),Y
C397          745 ;
C397 E6 42     746      inc A4L
C399 D0 02     747      bne >4
C39B          748 ;
C39B E6 43     749      inc A4H
C39D          750 ;
C39D A5 3C     751 ^4      lda A1L
C39F C5 3E     752      cmp A2L
C3A1          753 ;
C3A1 A5 3D     754      lda A1H
C3A3 E5 3F     755      sbc A2H
C3A5          756 ;
C3A5 E6 3C     757      inc A1L
C3A7 D0 02     758      bne >5
C3A9          759 ;
C3A9 E6 3D     760      inc A1H
C3AB          761 ;
C3AB 90 E6     762 ^5      bcc <3
C3AD          763 ;
C3AD 8D 04 C0  764      sta RAMWROFF
C3B0          765 ;
C3B0 68        766      pla
C3B1 10 03     767      bpl >6
C3B3          768 ;
C3B3 8D 05 C0  769      sta RAMWRON
C3B6          770 ;
C3B6 8D 02 C0  771 ^6      sta RAMRDOFF
C3B9          772 ;
C3B9 68        773      pla
C3BA 10 03     774      bpl >7
C3BC          775 ;
C3BC 8D 03 C0  776      sta RAMRDON
C3BF          777 ;
C3BF 68        778 ^7      pla
C3C0          779 ;
C3C0 A8        780      tay
C3C1 68        781      pla
C3C2          782 ;
C3C2 60        783      rts
C3C3          784 ;
C3C3          785 ;
C3C3          786 ; XFER routine.
C3C3          787 ;
C3C3          788 ; 0x3ED/0x3EE = destination address
C3C3          789 ;
C3C3          790 ; carry set = transfer to aux

```

```

C3C3      791 ; carry clear = transfer to main
C3C3      792 ;
C3C3      793 ; vflag set    = use aux ZP/STACK
C3C3      794 ; vflag clear = use main ZP/STACK
C3C3      795 ;
C3C3 48    796 DOXFER    pha
C3C4      797 ;
C3C4 AD ED 03 798          lda XFERADR
C3C7 48    799          pha
C3C8      800 ;
C3C8 AD EE 03 801          lda XFERADR+1
C3CB 48    802          pha
C3CC      803 ;
C3CC 90 08   804          bcc >1
C3CE      805 ;
C3CE 8D 03 C0 806          sta RAMRDON
C3D1 8D 05 C0 807          sta RAMWRON
C3D4      808 ;
C3D4 B0 06   809          bcs >2
C3D6      810 ;
C3D6 8D 02 C0 811 ^1          sta RAMRDOFF
C3D9 8D 04 C0 812          sta RAMWROFF
C3DC      813 ;
C3DC 68      814 ^2          pla
C3DD 8D EE 03 815          sta XFERADR+1
C3E0      816 ;
C3E0 68      817          pla
C3E1 8D ED 03 818          sta XFERADR
C3E4      819 ;
C3E4 68      820          pla
C3E5      821 ;
C3E5 70 05   822          bvs >3
C3E7      823 ;
C3E7 8D 08 C0 824          sta AUXZPOFF
C3EA      825 ;
C3EA 50 03   826          bvc >4
C3EC      827 ;
C3EC 8D 09 C0 828 ^3          sta AUXZPON
C3EF      829 ;
C3EF 6C ED 03 830 ^4          jmp (XFERADR)
C3F2      831 ;
C3F2      832 ;
C3F2      833          dfs 2,ZERO
C3F4      834 ;
C3F4      835 ;
C3F4      836 ; This is where the interrupt routine returns to. At
C3F4      837 ; this point the ROM is not necessarily enabled.
C3F4      838 ;
C3F4 8D 81 C0 839 IRQDONE  sta ROM2WE
C3F7      840 ;
C3F7 4C 7A FC 841          jmp IRQDONE2
C3FA      842 ;
C3FA      843 ;
C3FA      844 ; This is the main entry point for the interrupt handler.
C3FA      845 ; This enables the internal ROM and falls into the main
C3FA      846 ; part of the interrupt handler at 0xC400.
C3FA      847 ;
C3FA 2C 15 C0 848 IRQRTN   bit RDCXROM
C3FD      849 ;
C3FD 8D 07 C0 850          sta CXROMON
C400      851 ;

```

```
C400      852 ;  
C400      853      icl "C4.L"
```

```
LLOAD C4.L,A$4000
```

```

C400      1          ttl "ROM Source Code, C4.L"
C400      2      ;
C400      3      ;
C400      4      ; C4.L
C400      5      ;
C400      6      ;
C400      7      ; Interrupt Handler
C400      8      ;
C400      9      ; The bits of a system status byte is created and saved
C400     10      ; to 0x44. If a bit is on, that function is turned off.
C400     11      ; LC RAM is turned off.
C400     12      ;
C400     13      ; Bit 7      Bit 6      Bit 5      Bit 4
C400     14      ; -----
C400     15      ; RDAUXZP RDPAGE2 RDRAMRD RDRAMWR
C400     16      ; 0=main  0=off   0=off   0=off
C400     17      ; 1=AUX   1=on    1=on    1=on
C400     18      ;
C400     19      ; Bit 3      Bit 2      Bit 1      Bit 0
C400     20      ; -----
C400     21      ; LCRAM    BANK2    BANK1    RDCXROM
C400     22      ; 0=ROM    0=off   0=off   0=off
C400     23      ; 1=RAM    1=on    1=on    1=on
C400     24      ;
C400     25      ; If Bit 3 off, Bits 1 and 2 are off.
C400     26      ; If Bit 3 on, Bit 1 or Bit 2 is on.
C400     27      ;
C400     28      ;
C400 D8     29      cld
C401     30      ;
C401 38     31      sec                      ; C=1 for internal slot space
C402     32      ;
C402 30 01  33      bmi >1
C404     34      ;
C404 18     35      clc
C405     36      ;
C405 48     37      ^1 pha                      ; save on stack and not 0x45
C406 48     38      pha
C407 48     39      pha
C408     40      ;
C408 8A     41      txa
C409     42      ;
C409 BA     43      tsx
C40A     44      ;
C40A E8     45      inx                      ; ridiculous
C40B E8     46      inx
C40C E8     47      inx
C40D E8     48      inx
C40E     49      ;
C40E 48     50      pha
C40F     51      ;
C40F 98     52      tya
C410 48     53      pha
C411     54      ;
C411 BD 00 01 55      lda STACK,X          ; get BREAK status
C414 29 10     56      and #$10           ; mask for Z flag
C416 A8     57      tay                   ; save for later
C417     58      ;
C417     59      ;
C417     60      ; Determine current machine state.

```



```

C417      61 ;
C417 AD 18 C0      62      lda RDSTR80
C41A 2D 1C C0      63      and RDPAGE2
C41D      64 ;
C41D 29 80      65      and #MSBSET
C41F F0 05      66      beq >2
C421      67 ;
C421 A9 20      68      lda #$20
C423 8D 54 C0      69      sta PAGE1ON
C426      70 ;
C426 2A      71 ^2      rol
C427      72 ;
C427 2C 13 C0      73      bit RDRAMRD
C42A 10 05      74      bpl >3
C42C      75 ;
C42C 8D 02 C0      76      sta RAMRDOFF
C42F      77 ;
C42F 09 20      78      ora #$20
C431      79 ;
C431 2C 14 C0      80 ^3      bit RDRAMWR
C434 10 05      81      bpl >4
C436      82 ;
C436 8D 04 C0      83      sta RAMWROFF
C439      84 ;
C439 09 10      85      ora #$10
C43B      86 ;
C43B 2C 12 C0      87 ^4      bit RDLGRAM
C43E 10 0C      88      bpl >6
C440      89 ;
C440 09 0C      90      ora #$0C
C442      91 ;
C442 2C 11 C0      92      bit RDBANK2
C445 10 02      93      bpl >5
C447      94 ;
C447 49 06      95      eor #6
C449      96 ;
C449 8D 81 C0      97 ^5      sta ROM2WE
C44C      98 ;
C44C 2C 16 C0      99 ^6      bit RDAUXZP
C44F 10 0D      100     bpl >7
C451      101 ;
C451 BA      102     tsx
C452 8E 01 01      103     stx STACK+1      ; save aux stack pointer
C455      104 ;
C455 AE 00 01      105     ldx STACK      ; restore main stack pointer
C458 9A      106     txs
C459      107 ;
C459 8D 08 C0      108     sta AUXZPOFF
C45C      109 ;
C45C 09 80      110     ora #$80
C45E      111 ;
C45E 88      112 ^7     dey      ; check for BREAK
C45F 30 0C      113     bmi >8
C461      114 ;
C461 85 44      115     sta MACSTAT      ; save machine state
C463      116 ;
C463 68      117     pla
C464 A8      118     tay
C465      119 ;
C465 68      120     pla
C466 AA      121     tax

```

```

C467          122 ;
C467 68        123      pla
C468 68        124      pla
C469 68        125      pla
C46A          126 ;
C46A 4C 47 FA  127      jmp NEWBREAK
C46D          128 ;
C46D 48        129 ^8    pha                ; save machine state
C46E          130 ;
C46E AD F8 07  131      lda MSLOT
C471 48        132      pha
C472          133 ;
C472 A9 C3     134      lda /IRQDONE          ; save return RTI address
C474 48        135      pha
C475          136 ;
C475 A9 F4     137      lda #IRQDONE
C477 48        138      pha
C478          139 ;
C478 08        140      php
C479          141 ;
C479 4C 74 FC  142      jmp GOTOIRQ          ; enter user's IRQ handler
C47C          143 ;
C47C          144 ;
C47C          145 ; The ROM must be reenabled with a LDA ROM2WE if the
C47C          146 ; language card is write protected, write enabled, or
C47C          147 ; being write enabled. An INC ABS,X is used because
C47C          148 ; some of the switches are Read and some are Write since
C47C          149 ; both the 6502 and 65C02 do 2 reads before the write.
C47C          150 ;
C47C AD 81 C0  151  IRQFIX  lda ROM2WE
C47F          152 ;
C47F 68        153      pla                ; recall machine state
C480 10 07     154      bpl >1
C482          155 ;
C482 8D 09 C0  156      sta AUXZPON
C485          157 ;
C485 AE 01 01  158      ldx STACK+1          ; recall aux stack pointer
C488 9A        159      txs
C489          160 ;
C489 A0 06     161 ^1    ldy #SWTBLEN
C48B          162 ;
C48B 10 06     163 ^2    bpl >3
C48D          164 ;
C48D BE C1 C4  165      ldx RAMSWTBL,Y
C490          166 ;
C490 FE 00 C0  167      inc IOSPACE,X
C493          168 ;
C493 88        169 ^3    dey
C494 30 03     170      bmi >4
C496          171 ;
C496 0A        172      asl
C497 D0 F2     173      bne <2
C499          174 ;
C499 0A        175 ^4    asl                ; if internal slot space
C49A 0A        176      asl                ; then C=1
C49B          177 ;
C49B 68        178      pla
C49C A8        179      tay
C49D          180 ;
C49D BA        181      tsx
C49E          182 ;

```

```

C49E A9 00      183      lda #*-*          ; get RTI opcode
C4A0           184      dfs !-1
C49F 40        185      rti
C4A0 48        186      pha
C4A1           187      ;
C4A1 A9 C0     188      lda /CXROMOFF
C4A3 48        189      pha
C4A4           190      ;
C4A4 A9 06     191      lda #CXROMOFF
C4A6 69 00     192      adc #ZERO          ; add 1 if internal slot space
C4A8 48        193      pha
C4A9           194      ;
C4A9 A9 00     195      lda #*-*          ; get STA ABS opcode
C4AB           196      dfs !-1
C4AA 8D 00 00  197      sta *-*
C4AD           198      dfs !-2
C4AB 48        199      pha
C4AC           200      ;
C4AC           201      ;
C4AC           202      ; Make return address point to code just pushed onto the
C4AC           203      ; stack.
C4AC           204      ;
C4AC 9A        205      txs
C4AD 8A        206      txa
C4AE           207      ;
C4AE 69 03     208      adc #3
C4B0 AA        209      tax
C4B1           210      ;
C4B1 38        211      sec
C4B2           212      ;
C4B2 E9 07     213      sbc #7
C4B4 9D 00 01  214      sta STACK,X
C4B7           215      ;
C4B7 E8        216      inx
C4B8           217      ;
C4B8 A9 01     218      lda /STACK
C4BA 9D 00 01  219      sta STACK,X
C4BD           220      ;
C4BD 68        221      pla
C4BE AA        222      tax
C4BF           223      ;
C4BF 68        224      pla
C4C0           225      ;
C4C0 60        226      rts          ; go to code on stack
C4C1           227      ;
C4C1           228      ;
C4C1           229      RAMSWTBL:
C4C1 83        230      byt RAM2WE
C4C2 8B        231      byt RAM1WE
C4C3 8B        232      byt RAM1WE
C4C4 05        233      byt RAMWRON
C4C5 03        234      byt RAMRDON
C4C6 55        235      byt PAGE2ON
C4C7           236      ;
0006           237      SWTBLEN equ *-RAMSWTBL
C4C7           238      ;
C4C7           239      ;
C4C7           240      dfs 1,ZERO
C4C8           241      ;
C4C8           242      ;
C4C8           243      ; Continuation of NXTM2.

```

```

C4C8      244 ;
C4C8 20 00 C5 245 FORM2      jsr GETNSP
C4CB      246 ;
C4CB 84 34      247      sty YSAV
C4CD      248 ;
C4CD DD 30 FA 249      cmp CHAR1,X
C4D0 D0 13      250      bne FORM3
C4D2      251 ;
C4D2 20 00 C5 252      jsr GETNSP
C4D5      253 ;
C4D5 DD 36 FA 254      cmp CHAR2,X
C4D8 F0 0D      255      beq FORM5
C4DA      256 ;
C4DA BD 36 FA 257      lda CHAR2,X
C4DD F0 07      258      beq FORM4
C4DF      259 ;
C4DF C9 A4      260      cmp #"$"
C4E1 F0 03      261      beq FORM4
C4E3      262 ;
C4E3 A4 34      263      ldy YSAV
C4E5      264 ;
C4E5 18      265 FORM3      clc
C4E6      266 ;
C4E6 88      267 FORM4      dey
C4E7      268 ;
C4E7 26 44      269 FORM5      rol OPRND
C4E9      270 ;
C4E9 E0 03      271      cpx #3
C4EB D0 0D      272      bne FORM7
C4ED      273 ;
C4ED 20 A7 FF 274      jsr GETNUM
C4F0      275 ;
C4F0 A5 3F      276      lda A2H
C4F2 F0 01      277      beq FORM6
C4F4      278 ;
C4F4 E8      279      inx
C4F5      280 ;
C4F5 86 35      281 FORM6      stx YSAV1
C4F7      282 ;
C4F7 A2 03      283      ldx #3
C4F9      284 ;
C4F9 88      285      dey
C4FA      286 ;
C4FA 86 3D      287 FORM7      stx A1H
C4FC      288 ;
C4FC CA      289      dex
C4FD 10 C9      290      bpl FORM2
C4FF      291 ;
C4FF 60      292      rts
C500      293 ;
C500      294 ;
C500      295 ; GETNSP gets the next non-blank character for the
C500      296 ; Mini-Assembler.
C500      297 ;
C500 20 FD FC 298 GETNSP      jsr UPMON
C503      299 ;
C503 C9 A0      300      cmp #SPACE
C505 F0 F9      301      beq GETNSP
C507      302 ;
C507 60      303      rts
C508      304 ;

```

```

C508      305 ;
C508 20 75 FE 306 CXSTEP      jsr A1PC
C50B 20 D0 F8 307      jsr INSTDSP
C50E      308 ;
C50E 68      309      pla
C50F 68      310      pla
C510      311 ;
C510 A2 08    312      ldx #INITBLEN
C512      313 ;
C512 BD CC C5 314 XQINIT      lda INITBL-1,X
C515 95 3C    315      sta A1L,X
C517      316 ;
C517 CA      317      dex
C518 D0 F8    318      bne XQINIT
C51A      319 ;
C51A AD 00 C0 320      lda KEY
C51D 10 19    321      bpl >3
C51F      322 ;
C51F 2C 10 C0 323      bit CLRKEY
C522      324 ;
C522 C9 A0    325      cmp #" "
C524 D0 0E    326      bne >2
C526      327 ;
C526 AD 00 C0 328 ^1      lda KEY
C529 10 FB    329      bpl <1
C52B      330 ;
C52B 2C 10 C0 331      bit CLRKEY
C52E      332 ;
C52E C9 9B    333      cmp #ESCAPE      ; ESC check
C530 D0 02    334      bne >2
C532      335 ;
C532 E6 34    336      inc YSAV
C534      337 ;
C534 C9 83    338 ^2      cmp #$83      ; ^C break
C536 F0 04    339      beq >4
C538      340 ;
C538 A1 3A    341 ^3      lda (PCL,X)
C53A D0 03    342      bne >5
C53C      343 ;
C53C 38      344 ^4      sec      ; break return
C53D      345 ;
C53D B0 77    346      bcs STEPEXIT      ; always taken
C53F      347 ;
C53F A4 2F    348 ^5      ldy LENGTH
C541      349 ;
C541 C9 00    350      cmp #*- *
C543      351      dfs !-1
C542 60      352      rts
C543      353 ;
C543 F0 43    354      beq XRTS
C545      355 ;
C545 C9 00    356      cmp #*- *
C547      357      dfs !-1
C546 20 00 00 358      jsr *- *
C549      359      dfs !-2
C547      360 ;
C547 F0 4F    361      beq XJSR
C549      362 ;
C549 C9 00    363      cmp #*- *
C54B      364      dfs !-1
C54A 4C 00 00 365      jmp *- *

```

```

C54D          366      dfs !-2
C54B          367      ;
C54B F0 56     368      beq XJMP
C54D          369      ;
C54D C9 00     370      cmp #*- *
C54F          371      dfs !-1
C54E 6C 00 00 372      jmp (*- *)
C551          373      dfs !-2
C54F          374      ;
C54F F0 53     375      beq XJMPAT
C551          376      ;
C551 C9 00     377      cmp #*- *
C553          378      dfs !-1
C552 7C 00 00 379      jmp (*- *, X)
C555          380      dfs !-2
C553          381      ;
C553 F0 20     382      beq XJMPX
C555          383      ;
C555 C9 00     384      cmp #*- *
C557          385      dfs !-1
C556 40        386      rti
C557          387      ;
C557 F0 2B     388      beq XR TI
C559          389      ;
C559 C9 00     390      cmp #*- *
C55B          391      dfs !-1
C55A 80 00     392      bra *+2
C55C          393      dfs !-1
C55B          394      ;
C55B D0 02     395      bne >6
C55D          396      ;
C55D A9 10     397      lda #$10
C55F          398      ;
C55F 29 1F     399      ^6 and #$1F
C561 49 14     400      eor #$14
C563          401      ;
C563 C9 04     402      cmp #4
C565 F0 02     403      beq XQ2
C567          404      ;
C567 B1 3A     405      XQ1 lda (PCL), Y
C569          406      ;
C569 99 3C 00  407      XQ2 sta A1L, Y
C56C          408      ;
C56C 88        409      dey
C56D 10 F8     410      bpl XQ1
C56F          411      ;
C56F 20 3F FF  412      jsr RESTORE
C572          413      ;
C572 4C 3C 00  414      jmp A1L
C575          415      ;
C575          416      ;
C575 B1 3A     417      XJMPX lda (PCL), Y
C577 AA        418      tax
C578          419      ;
C578 88        420      dey
C579          421      ;
C579 18        422      clc
C57A          423      ;
C57A B1 3A     424      lda (PCL), Y
C57C 65 46     425      adc XREG
C57E 90 01     426      bcc >1

```

```

C580          427 ;
C580 E8       428      inx
C581          429 ;
C581 38       430 ^1      sec
C582 B0 26    431      bcs >2      ; always taken
C584          432 ;
C584 18       433 XRTI      clc
C585          434 ;
C585 68       435      pla
C586 85 48    436      sta PREG
C588          437 ;
C588 68       438 XRTS      pla
C589 85 3A    439      sta PCL
C58B          440 ;
C58B 68       441      pla
C58C          442 ;
C58C 85 3B    443 PCINC2     sta PCH
C58E          444 ;
C58E A5 2F    445 PCINC3     lda LENGTH
C590          446 ;
C590 20 56 F9 447      jsr PCADJ3
C593          448 ;
C593 84 3B    449      sty PCH
C595          450 ;
C595 18       451      clc
C596 90 14    452      bcc NEWPCL      ; always taken
C598          453 ;
C598 18       454 XJSR      clc
C599          455 ;
C599 20 54 F9 456      jsr PCADJ2
C59C          457 ;
C59C AA       458      tax
C59D          459 ;
C59D 98       460      tya
C59E 48       461      pha
C59F          462 ;
C59F 8A       463      txa
C5A0 48       464      pha
C5A1          465 ;
C5A1 A0 02    466      ldy #2
C5A3          467 ;
C5A3 18       468 XJMP      clc
C5A4          469 ;
C5A4 B1 3A    470 XJMPAT     lda (PCL),Y
C5A6 AA       471      tax
C5A7          472 ;
C5A7 88       473      dey
C5A8          474 ;
C5A8 B1 3A    475      lda (PCL),Y
C5AA          476 ;
C5AA 86 3B    477 ^2      stx PCH
C5AC          478 ;
C5AC 85 3A    479 NEWPCL     sta PCL
C5AE          480 ;
C5AE B0 F3    481      bcs XJMP
C5B0          482 ;
C5B0 20 D7 FA 483      jsr REGDSP
C5B3          484 ;
C5B3 A4 34    485      ldy YSAV
C5B5          486 ;
C5B5 18       487      clc      ; normal return

```

```

C5B6      488 ;
C5B6 4C CA FC 489 STEPEXIT jmp STEPRTN
C5B9      490 ;
C5B9      491 ;
C5B9 18      492 BRANCH    clc
C5BA      493 ;
C5BA A0 01    494          ldy #1
C5BC      495 ;
C5BC B1 3A    496          lda (PCL),Y
C5BE 20 56 F9 497          jsr PCADJ3
C5C1      498 ;
C5C1 85 3A    499          sta PCL
C5C3      500 ;
C5C3 98      501          tya
C5C4      502 ;
C5C4 38      503          sec
C5C5 B0 C5    504          bcs PCINC2          ; always taken
C5C7      505 ;
C5C7      506 ;
C5C7 20 4A FF 507 NBRNCH    jsr SAVE
C5CA      508 ;
C5CA 38      509          sec
C5CB B0 C1    510          bcs PCINC3          ; always taken
C5CD      511 ;
C5CD      512 ;
C5CD EA      513 INITBL    nop
C5CE EA      514          nop
C5CF      515 ;
C5CF 4C C7 C5 516          jmp NBRNCH
C5D2      517 ;
C5D2 4C B9 C5 518          jmp BRANCH
C5D5      519 ;
0008      520 INITBLEN equ *-INITBL
C5D5      521 ;
C5D5      522 ;
C5D5      523 ; Form index into mnemonic table.
C5D5      524 ;
C5D5      525 ; 1) 1XXX1010 => 00101XXX
C5D5      526 ; 2) XXXYYY01 => 00111XXX
C5D5      527 ; 3) XXXYYY10 => 00110XXX
C5D5      528 ; 4) XXXYY100 => 00100XXX
C5D5      529 ; 5) XXXXX000 => 000XXXXX
C5D5      530 ;
C5D5 A2 0B    531 XGETFMT2 ldx #TBLL-TBLC+1
C5D7      532 ;
C5D7 DD 71 CA 533 ^1      cmp TBLC,X
C5DA D0 06    534          bne >2
C5DC      535 ;
C5DC BD 7D CA 536          lda TBLL,X
C5DF      537 ;
C5DF A0 00    538          ldy #ZERO
C5E1      539 ;
C5E1 60      540          rts
C5E2      541 ;
C5E2 CA      542 ^2      dex
C5E3 10 F2    543          bpl <1
C5E5      544 ;
C5E5 29 8F    545          and #$8F
C5E7      546 ;
C5E7 AA      547          tax
C5E8      548 ;

```


C5E8	A5 2A	549	lda BAS2L	; get OPCODE
C5EA		550		;
C5EA	A0 03	551	ldy #3	
C5EC		552		;
C5EC	E0 8A	553	cpx #\$8A	
C5EE	F0 0B	554	beq >5	
C5F0		555		;
C5F0	4A	556	lsr	^3
C5F1	90 08	557	bcc >5	
C5F3		558		;
C5F3	4A	559	lsr	
C5F4		560		;
C5F4	4A	561	lsr	^4
C5F5	09 20	562	ora #\$20	
C5F7		563		;
C5F7	88	564	dey	
C5F8	D0 FA	565	bne <4	
C5FA		566		;
C5FA	C8	567	iny	
C5FB		568		;
C5FB	88	569	dey	^5
C5FC	D0 F2	570	bne <3	
C5FE		571		;
C5FE	60	572	rts	
C5FF		573		;
C5FF		574		;
C5FF		575	dfs 1,ZERO	
C600		576		;
C600		577		;
C600		578	icl "SW.L"	

LLOAD SW.L,A\$4000

```

C600          1          ttl "ROM Source Code, SW.L"
C600          2          ;
C600          3          ;
C600          4          ; SW.L
C600          5          ;
C600          6          ;
C600          7          ; Implementation of Cornelis Bongers Garbage Collection
C600          8          ; algorithm.
C600          9          ;
C600 24 95      10 PROCVAR bit PROCESS
C602 30 4A      11          bmi PROCSPCL
C604          12          ;
C604 B1 9B      13          lda (LOWTR),Y
C606 85 5E      14          sta INDEX
C608          15          ;
C608 C5 6F      16          cmp FRETOP
C60A          17          ;
C60A C8         18          iny
C60B          19          ;
C60B B1 9B      20          lda (LOWTR),Y
C60D 85 5F      21          sta INDEX+1
C60F          22          ;
C60F E5 70      23          sbc FRETOP+1
C611 90 3A      24          bcc >4
C613          25          ;
C613 A0 00      26          ldy #ZERO
C615          27          ;
C615 B1 5E      28          lda (INDEX),Y
C617 48         29          pha
C618          30          ;
C618 B1 9B      31          lda (LOWTR),Y
C61A F0 31      32          beq >4
C61C          33          ;
C61C C8         34          iny
C61D          35          ;
C61D C9 02      36          cmp #2
C61F F0 05      37          beq >1
C621          38          ;
C621 B0 12      39          bcs >2
C623          40          ;
C623 A9 FF      41          lda #NEGONE
C625          42          ;
C625 2C 00 00   43          bit *-*
C628          44          dfs !-2
C626          45          ;
C626 B1 5E      46          ^1 lda (INDEX),Y
C628          47          ;
C628 91 9B      48          sta (LOWTR),Y
C62A          49          ;
C62A C8         50          iny
C62B          51          ;
C62B A9 FF      52          lda #NEGONE
C62D 85 8F      53          sta SPCLFLAG
C62F          54          ;
C62F 91 9B      55          sta (LOWTR),Y
C631          56          ;
C631 A0 00      57          ldy #ZERO
C633 F0 15      58          beq >3
C635          59          ;
C635 B1 5E      60          ^2 lda (INDEX),Y

```

```

C637          61 ;
C637 C8       62      iny
C638          63 ;
C638 91 9B    64      sta (LOWTR),Y
C63A          65 ;
C63A B1 5E    66      lda (INDEX),Y
C63C 09 80    67      ora #MSBSET
C63E 91 5E    68      sta (INDEX),Y
C640          69 ;
C640 A0 00    70      ldy #ZERO
C642          71 ;
C642 A5 9B    72      lda LOWTR
C644 91 5E    73      sta (INDEX),Y
C646          74 ;
C646 C8       75      iny
C647          76 ;
C647 8A       77      txa
C648 91 5E    78      sta (INDEX),Y
C64A          79 ;
C64A 68       80 ^3     pla
C64B 91 9B    81      sta (LOWTR),Y
C64D          82 ;
C64D 60       83 ^4     rts
C64E          84 ;
C64E          85 ;
C64E C8       86 PROCSPCL iny
C64F 84 94    87      sty LEN
C651          88 ;
C651 A9 FF    89      lda #NEGONE
C653 D1 9B    90      cmp (LOWTR),Y
C655 D0 F6    91      bne <4
C657          92 ;
C657 88       93      dey
C658          94 ;
C658 D1 9B    95      cmp (LOWTR),Y
C65A D0 02    96      bne >1
C65C          97 ;
C65C C6 94    98      dec LEN
C65E          99 ;
C65E 20 73 E5 100 ^1    jsr COPYVAR
C661          101 ;
C661 A5 94    102      lda LEN
C663 91 9B    103      sta (LOWTR),Y
C665          104 ;
C665 C8       105      iny
C666          106 ;
C666 A5 8A    107      lda TEMP3
C668 91 9B    108      sta (LOWTR),Y
C66A          109 ;
C66A C8       110      iny
C66B          111 ;
C66B A5 8B    112      lda TEMP3+1
C66D 91 9B    113      sta (LOWTR),Y
C66F          114 ;
C66F 60       115      rts
C670          116 ;
C670          117 ;
C670          118 ;      dfs $C670-*,ZERO
C670          119 ;
C670          120 ;
C670          121 ; This version of the Sweet 16 Metaprocessor has been

```

```

C670      122 ; revised from the original.
C670      123 ;
C670      124 ;
C670      125 ; Sweet 16 Registers
C670      126 ;
C670      127 ; Register   Description
C670      128 ; -----
C670      129 ;   R0       Sweet 16 Accumulator (ACC)
C670      130 ;   R1-R11   Sweet 16 user registers
C670      131 ;   R12      Sweet 16 subroutine return Stack Pointer
C670      132 ;   R13      Sweet 16 compare instruction results
C670      133 ;   R14      Sweet 16 Status Register (PR & carry flag)
C670      134 ;   R15      Sweet 16 Program Counter (PC)
C670      135 ;
C670      136 ;
C670      137 ; Sweet 16 Non-Register Opcodes
C670      138 ;
C670      139 ; Opcode   Mnemonic   Description
C670      140 ; -----
C670      141 ;   00      RTN       Return to 6502 mode
C670      142 ;   01      BR   adr  Branch always, PC+=adr+2
C670      143 ;   02      BNC   adr  Branch if no carry, PC+=adr+2
C670      144 ;   03      BC    adr  Branch if carry, PC+=adr+2
C670      145 ;   04      BP    adr  Branch if plus, PC+=adr+2
C670      146 ;   05      BM    adr  Branch if minus, PC+=adr+2
C670      147 ;   06      BZ    adr  Branch if zero, PC+=adr+2
C670      148 ;   07      BNZ   adr  Branch if not zero, PC+=adr+2
C670      149 ;   08      BM1   adr  Branch if minus 1, PC+=adr+2
C670      150 ;   09      BNM1  adr  Branch if not minus 1, PC+=adr+2
C670      151 ;   0A      SOUT  chr  Send "chr" to COUT
C670      152 ;   0B      RS       Return from subroutine, PC=(R12--)
C670      153 ;   0C      BS   adr  Branch to subroutine, (R12++)=PC
C670      154 ;   0D      RSNS      Return from subroutine, PC=R12
C670      155 ;   0E      BSNS  adr  Branch to subroutine, R12=PC
C670      156 ;   0F      SJMP  adr  Jump to address, PC=adr
C670      157 ;
C670      158 ;
C670      159 ; Sweet 16 Register Opcodes
C670      160 ;
C670      161 ; Opcode   Mnemonic   Description
C670      162 ; -----
C670      163 ;   1n      SET  Rn,C   Load Rn immediate (with constant)
C670      164 ;   2n      LD    Rn   Load LO ACC from Rn
C670      165 ;   3n      ST    Rn   Store LO ACC into Rn
C670      166 ;   4n      LD@   Rn   Load LO ACC indirectly using Rn, Rn+1
C670      167 ;   5n      ST@   Rn   Store LO ACC indirectly using Rn, Rn+1
C670      168 ;   6n      LDD@  Rn   Load ACC indirectly using Rn, Rn+2
C670      169 ;   7n      STD@  Rn   Store ACC indirectly using Rn, Rn+2
C670      170 ;   8n      POP@  Rn   Rn-1, load LO ACC indirectly using Rn
C670      171 ;   9n      STP@  Rn   Rn-1, store LO ACC indirectly using Rn
C670      172 ;   An      ADD    Rn   Add Rn to ACC with carry out
C670      173 ;   Bn      SUB    Rn   Subtract Rn from ACC, with carry out
C670      174 ;   Cn      POPD@ Rn   Rn-1, HO ACC, Rn-1, LO ACC indirectly
C670      175 ;   Dn      CPR    Rn   ACC-Rn->R13, with carry out
C670      176 ;   En      INR    Rn   Rn+1->Rn
C670      177 ;   Fn      DCR    Rn   Rn-1->Rn
C670      178 ;
C670      179 ;
C670      180 ; The Status Register contains the previous register*2 in
C670      181 ; the LO byte and the carry flag in bit 0 of the HO byte.
C670      182 ;

```

```

C670      183 ; Branch opcodes depend on the results of the prior opcode.
C670      184 ; The register*2 of the prior opcode is saved in LO R14.
C670      185 ; It is the value currently in the prior register that is
C670      186 ; tested for the selected branch opcode.
C670      187 ;
C670      188 ; Before the BS/RS opcodes can be used, R12 must be
C670      189 ; initialized with the address of the stack containing the
C670      190 ; return from subroutine addresses.
C670      191 ;
C670      192 ;
C670      193 ; Preserve 6502 registers and init SW16 program counter.
C670      194 ;
C670 20 4A FF 195 SW16      jsr SAVE
C673      196 ;
C673 68      197          pla
C674 85 1E    198          sta R15L
C676      199 ;
C676 68      200          pla
C677 85 1F    201          sta R15H
C679      202 ;
C679      203 ;
C679      204 ; Interpret a single SW16 opcode, then fetch the next SW16
C679      205 ; opcode.
C679      206 ;
C679 20 7F C6 207 SW16B      jsr SW16C
C67C      208 ;
C67C 4C 79 C6 209          jmp SW16B
C67F      210 ;
C67F      211 ;
C67F      212 ; Increment the SW16 program counter.
C67F      213 ;
C67F E6 1E    214 SW16C      inc R15L
C681 D0 02    215          bne SW16D
C683      216 ;
C683 E6 1F    217          inc R15H
C685      218 ;
C685      219 ;
C685      220 ; Push the common H0 routine address byte onto the stack
C685      221 ; and process the SW16 opcode.
C685      222 ;
C685 A9 C7    223 SW16D      lda /RTNCMD
C687 48      224          pha
C688      225 ;
C688 A0 00    226          ldy #ZERO
C68A      227 ;
C68A      228 ;
C68A      229 ; Mask the specified SW16 register and double it for
C68A      230 ; non-register address table indexing or prior register.
C68A      231 ;
C68A B1 1E    232          lda (R15L),Y
C68C 29 0F    233          and #$0F
C68E      234 ;
C68E 0A      235          asl
C68F AA      236          tax
C690      237 ;
C690      238 ;
C690      239 ; Extract opcode. If it is zero then process a
C690      240 ; non-register opcode routine.
C690      241 ;
C690 4A      242          lsr
C691      243 ;

```

```

C691 51 1E      244          eor (R15L),Y
C693 F0 0D      245          beq TOBR
C695            246          ;
C695            247          ;
C695            248          ; Save register*2 in LO status byte and clear HO status
C695            249          ; byte.  Form opcode*2 for register address table indexing.
C695            250          ;
C695 86 1C      251          stx R14L
C697 84 1D      252          sty R14H
C699            253          ;
C699 4A          254          lsr
C69A 4A          255          lsr
C69B 4A          256          lsr
C69C            257          ;
C69C A8          258          tay
C69D            259          ;
C69D            260          ;
C69D            261          ; Save the LO address onto the stack to process this SW16
C69D            262          ; register opcode.  Also C-flag = 0; N-flag = 0 for SETCMD.
C69D            263          ;
C69D B9 E1 C6   264          lda OPTBL-2,Y
C6A0 48          265          pha
C6A1            266          ;
C6A1 60          267          rts
C6A2            268          ;
C6A2            269          ;
C6A2            270          ; Increment the SW16 program counter for the expected
C6A2            271          ; branch address.  Save the LO address onto the stack to
C6A2            272          ; process this SW16 non-register opcode.
C6A2            273          ;
C6A2 E6 1E      274 TOBR      inc R15L
C6A4 D0 02      275          bne TOBR2
C6A6            276          ;
C6A6 E6 1F      277          inc R15H
C6A8            278          ;
C6A8 BD E2 C6   279 TOBR2     lda BRTBL,X
C6AB 48          280          pha
C6AC            281          ;
C6AC            282          ;
C6AC            283          ; Recall prior register*2 in LO status byte and set up
C6AC            284          ; carry flag from HO status byte for BC and BNC opcodes.
C6AC            285          ; Also N-flag = 0 and Y-reg = 0.
C6AC            286          ;
C6AC A6 1C      287          ldx R14L
C6AE            288          ;
C6AE A5 1D      289          lda R14H
C6B0 4A          290          lsr
C6B1            291          ;
C6B1 60          292          rts
C6B2            293          ;
C6B2            294          ;
C6B2            295          ; Y-reg set to 2 by SET opcode index*2.  First get HO byte,
C6B2            296          ; then LO byte for designated register.
C6B2            297          ;
C6B2 B1 1E      298 SETZ      lda (R15L),Y
C6B4 95 01      299          sta R0H,X
C6B6            300          ;
C6B6 88          301          dey
C6B7            302          ;
C6B7 B1 1E      303          lda (R15L),Y
C6B9 95 00      304          sta R0L,X

```

```

C6BB      305 ;
C6BB      306 ;
C6BB      307 ; Increment the SW16 program counter by 2.  C-flag = 0.
C6BB      308 ;
C6BB A5 1E 309      lda R15L
C6BD 69 02 310      adc #2
C6BF 85 1E 311      sta R15L
C6C1      312 ;
C6C1 90 02 313      bcc SET2
C6C3      314 ;
C6C3 E6 1F 315      inc R15H
C6C5      316 ;
C6C5 60    317 SET2   rts
C6C6      318 ;
C6C6      319 ;
C6C6      320 ; R12 must contain the stack address where to pop the
C6C6      321 ; return SW16 program counter.  Pop the HO byte, then
C6C6      322 ; the LO byte.  Then R12 - 2 -> R12.
C6C6      323 ;
C6C6      324 ;
C6C6 A2 18 325 RSZ     ldx #R12L
C6C8      326 ;
C6C8 20 F7 C7 327      jsr DCRCMD
C6CB      328 ;
C6CB A1 00 329      lda (R0L,X)
C6CD 85 1F 330      sta R15H
C6CF      331 ;
C6CF 20 F7 C7 332      jsr DCRCMD
C6D2      333 ;
C6D2 A1 00 334      lda (R0L,X)
C6D4 85 1E 335      sta R15L
C6D6      336 ;
C6D6 60    337      rts
C6D7      338 ;
C6D7      339 ;
C6D7      340 ; Copy the current SW16 program counter in R15 to R12.
C6D7      341 ;
C6D7 A5 1E 342 BSNSZ   lda R15L
C6D9 85 18 343      sta R12L
C6DB      344 ;
C6DB A5 1F 345      lda R15H
C6DD 85 19 346      sta R12H
C6DF      347 ;
C6DF 4C 9C C7 348      jmp BRCMD
C6E2      349 ;
C6E2      350 ;
C6E2      351 ; The byte-pairs of this table have been swapped to remove
C6E2      352 ; the unused Fn+1 entry.
C6E2      353 ;
C6E2 00    354 BRTBL   byt RTNCMD-1      ; 0
C6E3 08    355 OPTBL   byt SETCMD-1      ; 1n
C6E4 9B    356      byt BRCMD-1      ; 1
C6E5 0E    357      byt LDCMD-1      ; 2n
C6E6 9C    358      byt BNCCMD-1     ; 2
C6E7 17    359      byt STCMD-1      ; 3n
C6E8 AD    360      byt BCCMD-1      ; 3
C6E9 20    361      byt LD@CMD-1     ; 4n
C6EA B0    362      byt BPCMD-1      ; 4
C6EB 2A    363      byt ST@CMD-1     ; 5n
C6EC B5    364      byt BMCMD-1      ; 5
C6ED 39    365      byt LDD@CMD-1     ; 6n

```

```

C6EE BA          366          byt BZCMD-1          ; 6
C6EF 42          367          byt STD@CMD-1         ; 7n
C6F0 C1          368          byt BNZCMD-1          ; 7
C6F1 52          369          byt POP@CMD-1         ; 8n
C6F2 C8          370          byt BM1CMD-1          ; 8
C6F3 62          371          byt STP@CMD-1         ; 9n
C6F4 D1          372          byt BNM1CMD-1         ; 9
C6F5 6B          373          byt ADDCMD-1          ; An
C6F6 DA          374          byt SOUTCMD-1         ; A
C6F7 79          375          byt SUBCMD-1          ; Bn
C6F8 0A          376          byt RSCMD-1           ; B
C6F9 4B          377          byt POPD@CMD-1        ; Cn
C6FA 8F          378          byt BSCMD-1           ; C
C6FB 7B          379          byt CPRCMD-1          ; Dn
C6FC DF          380          byt RSNSCMD-1         ; D
C6FD 32          381          byt INRCMD-1          ; En
C6FE 0C          382          byt BSNSCMD-1         ; E
C6FF F6          383          byt DCRCMD-1          ; Fn
C700 E8          384          byt SJMPCMD-1         ; F
C701             385          ;
C701             386          ;
C701             387          ; These routines must reside on the same page.
C701             388          ;
C701             389          ;
C701             390          ; RTN opcode returns to 6502 processing mode. Pop the
C701             391          ; SW16C return address, restore the 6502 registers, and
C701             392          ; return to 6502 mode using the SW16 program counter.
C701             393          ;
C701 68           394          RTNCMD      pla
C702 68           395          pla
C703             396          ;
C703 20 3F FF     397          jsr RESTORE
C706             398          ;
C706 4C 78 FA     399          jmp SW16RTN
C709             400          ;
C709             401          ;
C709             402          ; SET opcode gets a 2-byte immediate constant.
C709             403          ;
C709 10 A7        404          SETCMD      bpl SETZ          ; always taken
C70B             405          ;
C70B             406          ;
C70B             407          ; RS opcode is return from a BS subroutine call.
C70B             408          ;
C70B 10 B9        409          RSCMD      bpl RSZ          ; always taken
C70D             410          ;
C70D             411          ;
C70D             412          ; BSNS opcode is branch to subroutine using no address
C70D             413          ; stack.
C70D             414          ;
C70D 10 C8        415          BSNSCMD    bpl BSNSZ          ; always taken
C70F             416          ;
C70F             417          ;
C70F             418          ; LD opcode moves the contents of Rn to ACC.
C70F             419          ;
C70F B5 00        420          LDCMD      lda R0L,X
C711 85 00        421          sta R0L
C713             422          ;
C713 B5 01        423          lda R0H,X
C715 85 01        424          sta R0H
C717             425          ;
C717 60           426          rts

```



```

C718          427 ;
C718          428 ;
C718          429 ; ST opcode moves the contents of ACC to Rn.
C718          430 ;
C718 A5 00    431 STCMD      lda R0L
C71A 95 00    432          sta R0L,X
C71C          433 ;
C71C A5 01    434          lda R0H
C71E 95 01    435          sta R0H,X
C720          436 ;
C720 60       437          rts
C721          438 ;
C721          439 ;
C721          440 ; LD@ opcode loads the LO ACC indirectly from memory
C721          441 ; using the address in Rn. HO ACC is cleared. Make R0
C721          442 ; the prior register.
C721          443 ;
C721 A1 00    444 LD@CMD     lda (R0L,X)
C723 85 00    445          sta R0L
C725          446 ;
C725 A0 00    447          ldy #ZERO
C727 84 01    448          sty R0H
C729          449 ;
C729 F0 06    450          beq ST@3          ; always taken
C72B          451 ;
C72B          452 ;
C72B          453 ; ST@ opcode stores the contents of LO ACC indirectly to
C72B          454 ; memory using the address in Rn. Make R0 the prior
C72B          455 ; register. Fall into INRCMD.
C72B          456 ;
C72B A5 00    457 ST@CMD     lda R0L
C72D          458 ;
C72D 81 00    459 ST@2      sta (R0L,X)
C72F          460 ;
C72F A0 00    461          ldy #ZERO
C731          462 ;
C731 84 1C    463 ST@3      sty R14L
C733          464 ;
C733          465 ;
C733          466 ; INR opcode increments the register Rn.
C733          467 ;
C733 F6 00    468 INRCMD     inc R0L,X
C735 D0 02    469          bne INR2
C737          470 ;
C737 F6 01    471          inc R0H,X
C739          472 ;
C739 60       473 INR2      rts
C73A          474 ;
C73A          475 ;
C73A          476 ; LDD@ opcode loads the ACC indirectly from memory using
C73A          477 ; the address in Rn. The LO byte is loaded first. Make
C73A          478 ; R0 the prior register.
C73A          479 ;
C73A 20 21 C7 480 LDD@CMD    jsr LD@CMD
C73D          481 ;
C73D A1 00    482          lda (R0L,X)
C73F 85 01    483          sta R0H
C741          484 ;
C741 90 F0    485          bcc INRCMD          ; always taken
C743          486 ;
C743          487 ;

```

```

C743      488 ; STD@ opcode stores the contents of the ACC indirectly to
C743      489 ; memory using the address in Rn. LO ACC is stored first.
C743      490 ; Make R0 the prior register.
C743      491 ;
C743 20 2B C7 492 STD@CMD jsr ST@CMD
C746      493 ;
C746 A5 01 494 lda R0H
C748 81 00 495 sta (R0L,X)
C74A      496 ;
C74A 90 E7 497 bcc INRCMD ; always taken
C74C      498 ;
C74C      499 ;
C74C      500 ; POPD@ opcode decrements Rn and gets the H0 byte
C74C      501 ; indirectly from memory using the address in Rn.
C74C      502 ; Fall into POP@CMD.
C74C      503 ;
C74C 20 F7 C7 504 POPD@CMD jsr DCRCMD
C74F      505 ;
C74F A1 00 506 lda (R0L,X)
C751 A8 507 tay
C752      508 ;
C752 2C 00 00 509 bit *-*
C755      510 dfs !-2
C753      511 ;
C753      512 ;
C753      513 ; POP@ opcode sets the H0 byte to zero, then decrements Rn
C753      514 ; and gets the LO byte indirectly from memory using the
C753      515 ; address in Rn. Store the H0 and LO bytes into the ACC.
C753      516 ; Make R0 the prior register.
C753      517 ;
C753 A0 00 518 POP@CMD ldy #ZERO
C755      519 ;
C755 20 F7 C7 520 jsr DCRCMD
C758      521 ;
C758 A1 00 522 lda (R0L,X)
C75A 85 00 523 sta R0L
C75C      524 ;
C75C 84 01 525 sty R0H
C75E      526 ;
C75E A0 00 527 POP@3 ldy #ZERO
C760 84 1C 528 sty R14L
C762      529 ;
C762 60 530 rts
C763      531 ;
C763      532 ;
C763      533 ; STP@ opcode decrements Rn and stores the LO ACC
C763      534 ; indirectly to memory using the address in Rn. Make R0
C763      535 ; the prior register.
C763      536 ;
C763 20 F7 C7 537 STP@CMD jsr DCRCMD
C766      538 ;
C766 A5 00 539 lda R0L
C768 81 00 540 sta (R0L,X)
C76A      541 ;
C76A 90 F2 542 bcc POP@3 ; always taken
C76C      543 ;
C76C      544 ;
C76C      545 ; ADD opcode sets Y-reg to 0 so ACC + Rn -> ACC, carry
C76C      546 ; saved to H0 status byte. Make R0 the prior register.
C76C      547 ;
C76C A5 00 548 ADDCMD lda R0L

```

```

C76E 75 00      549      adc R0L,X
C770 85 00      550      sta R0L
C772           551      ;
C772 A5 01      552      lda R0H
C774 75 01      553      adc R0H,X
C776           554      ;
C776 A0 00      555      ldY #ZERO
C778 F0 0E      556      beq CPR2           ; always taken
C77A           557      ;
C77A           558      ;
C77A           559      ; SUB opcode sets Y-reg to 0 so ACC - Rn -> ACC, carry
C77A           560      ; saved to HO status byte.  Make R0 the prior register.
C77A           561      ;
C77A A0 00      562      SUBCMD    ldY #ZERO
C77C           563      ;
C77C           564      ;
C77C           565      ; CPR opcode leaves Y-reg set to 13*2 (SET opcode index*2)
C77C           566      ; so ACC - Rn -> R13, carry saved to HO status byte.  Make
C77C           567      ; R13 the prior register.
C77C           568      ;
C77C 38         569      CPRCMD    sec
C77D           570      ;
C77D A5 00      571      lda R0L
C77F F5 00      572      sbc R0L,X
C781 99 00 00   573      sta R0L,Y
C784           574      ;
C784 A5 01      575      lda R0H
C786 F5 01      576      sbc R0H,X
C788           577      ;
C788 99 01 00   578      CPR2     sta R0H,Y
C78B           579      ;
C78B 84 1C      580      sty R14L
C78D           581      ;
C78D           582      ;
C78D           583      ; Save carry out bit.
C78D           584      ;
C78D 26 1D      585      rol R14H
C78F           586      ;
C78F 60         587      rts
C790           588      ;
C790           589      ;
C790           590      ; BS opcode is branch to subroutine.  Save the current
C790           591      ; SW16 program counter indirectly to memory using the
C790           592      ; address in R12.  R15L is saved first, then R15H; finally
C790           593      ; R12 + 2 -> R12.  Fall into BRCMD.
C790           594      ;
C790 A2 18      595      BSCMD     ldx #R12L
C792           596      ;
C792 A5 1E      597      lda R15L
C794 20 2D C7   598      jsr ST@2
C797           599      ;
C797 A5 1F      600      lda R15H
C799 20 2D C7   601      jsr ST@2
C79C           602      ;
C79C           603      ;
C79C           604      ; BR opcode is branch always.  Fall into BNCCMD.
C79C           605      ;
C79C 18         606      BRCMD     clc
C79D           607      ;
C79D           608      ;
C79D           609      ; BNC opcode is branch if carry is clear from prior opcode.

```

```

C79D          610 ;
C79D B0 0E    611 BNCCMD    bcs BRTS
C79F          612 ;
C79F          613 ;
C79F          614 ; Get displacement byte.  If it is negative set Y-reg to
C79F          615 ; minus one for 2's compliment addition.  Y-reg = 0.
C79F          616 ;
C79F B1 1E    617          lda (R15L),Y
C7A1 10 01    618          bpl BR2
C7A3          619 ;
C7A3 88       620          dey
C7A4          621 ;
C7A4          622 ;
C7A4          623 ; Add displacement to program counter.
C7A4          624 ;
C7A4 65 1E    625 BR2      adc R15L
C7A6 85 1E    626          sta R15L
C7A8          627 ;
C7A8 98       628          tya
C7A9          629 ;
C7A9 65 1F    630          adc R15H
C7AB 85 1F    631          sta R15H
C7AD          632 ;
C7AD 60       633 BRTS      rts
C7AE          634 ;
C7AE          635 ;
C7AE          636 ; BC opcode is branch if carry is set from prior opcode.
C7AE          637 ;
C7AE B0 EC    638 BCCMD     bcs BRCMD
C7B0          639 ;
C7B0 60       640          rts
C7B1          641 ;
C7B1          642 ;
C7B1          643 ; BP opcode is branch if prior register's value is
C7B1          644 ; postive.
C7B1          645 ;
C7B1 B5 01    646 BPCMD     lda R0H,X
C7B3 10 E7    647          bpl BRCMD
C7B5          648 ;
C7B5 60       649          rts
C7B6          650 ;
C7B6          651 ;
C7B6          652 ; BM opcode is branch if prior register's value is
C7B6          653 ; negative.
C7B6          654 ;
C7B6 B5 01    655 BMCMD     lda R0H,X
C7B8 30 E2    656          bmi BRCMD
C7BA          657 ;
C7BA 60       658          rts
C7BB          659 ;
C7BB          660 ;
C7BB          661 ; BZ opcode is branch if prior register's value is zero.
C7BB          662 ;
C7BB B5 00    663 BZCMD     lda R0L,X
C7BD 15 01    664          ora R0H,X
C7BF F0 DB    665          beq BRCMD
C7C1          666 ;
C7C1 60       667          rts
C7C2          668 ;
C7C2          669 ;
C7C2          670 ; BNZ opcode is branch if prior register's value is not

```

```

C7C2          671 ; zero.
C7C2          672 ;
C7C2 B5 00    673 BNZCMD   lda R0L,X
C7C4 15 01    674          ora R0H,X
C7C6 D0 D4    675          bne BRCMD
C7C8          676 ;
C7C8 60       677          rts
C7C9          678 ;
C7C9          679 ;
C7C9          680 ; BM1 opcode is branch if prior register's value is
C7C9          681 ; negative one.
C7C9          682 ;
C7C9 B5 00    683 BM1CMD   lda R0L,X
C7CB 35 01    684          and R0H,X
C7CD          685 ;
C7CD 49 FF    686          eor #NEGONE
C7CF F0 CB    687          beq BRCMD
C7D1          688 ;
C7D1 60       689          rts
C7D2          690 ;
C7D2          691 ;
C7D2          692 ; BNM1 opcode is branch if prior register's value is not
C7D2          693 ; negative one.
C7D2          694 ;
C7D2 B5 00    695 BNM1CMD  lda R0L,X
C7D4 35 01    696          and R0H,X
C7D6          697 ;
C7D6 49 FF    698          eor #NEGONE
C7D8 D0 C2    699          bne BRCMD
C7DA          700 ;
C7DA 60       701          rts
C7DB          702 ;
C7DB          703 ;
C7DB          704 ; SOUT opcode sends the "chr" value to COUT.
C7DB          705 ;
C7DB B1 1E    706 SOUTCMD  lda (R15L),Y
C7DD          707 ;
C7DD 4C ED FD 708          jmp COUT
C7E0          709 ;
C7E0          710 ;
C7E0          711 ; RSNS opcode is return from a BSNS subroutine call using
C7E0          712 ; no address stack. Copy the saved SW16 program counter
C7E0          713 ; in R12 to R15.
C7E0          714 ;
C7E0 A5 18    715 RSNSCMD  lda R12L
C7E2 85 1E    716          sta R15L
C7E4          717 ;
C7E4 A5 19    718          lda R12H
C7E6 85 1F    719          sta R15H
C7E8          720 ;
C7E8 60       721          rts
C7E9          722 ;
C7E9          723 ;
C7E9          724 ; SJMP opcode gets a 2-byte immediate address for the SW16
C7E9          725 ; program counter. Get the LO byte, then the HO byte, and
C7E9          726 ; save the address to R15. Make R15 the prior register.
C7E9          727 ; Fall into DCRCMD.
C7E9          728 ;
C7E9 B1 1E    729 SJMPCMD  lda (R15L),Y
C7EB AA       730          tax
C7EC          731 ;

```

```
C7EC C8          732      iny
C7ED            733      ;
C7ED B1 1E      734      lda (R15L),Y
C7EF            735      ;
C7EF 86 1E      736      stx R15L
C7F1 85 1F      737      sta R15H
C7F3            738      ;
C7F3 A2 1E      739      ldx #R15L
C7F5 86 1C      740      stx R14L
C7F7            741      ;
C7F7            742      ;
C7F7            743      ; DCR opcode decrements the register Rn.
C7F7            744      ;
C7F7 B5 00      745      DCRCMD   lda R0L,X
C7F9 D0 02      746      bne DCR2
C7FB            747      ;
C7FB D6 01      748      dec R0H,X
C7FD            749      ;
C7FD D6 00      750      DCR2     dec R0L,X
C7FF            751      ;
C7FF 60          752      rts
C800            753      ;
C800            754      ;
C800            755      icl "C8.L"
```

LLOAD C8.L,A\$4000

```

C800          1          ttl "ROM Source Code, C8.L"
C800          2          ;
C800          3          ;
C800          4          ; C8.L
C800          5          ;
C800          6          ;
C800          7          ; This entry point is only used by Pascal 1.0.
C800          8          ;
C800 4C B0 C9    9  PXINIT    jmp PINIT1
C803         10          ;
C803         11          ;
C803         12          ; BASIC initialization. This is called by the 0xC3 space
C803         13          ; only after a PR#3 or a JSR $C300.
C803         14          ;
C803         15          ; If the language card is enabled and the ID byte does not
C803         16          ; match the 0xF8 ROM is copied to the language card. If
C803         17          ; an 80 column card is detected it is enabled, otherwise
C803         18          ; 40 column is enabled. The screen is cleared and the
C803         19          ; character in A-reg is printed.
C803         20          ;
C803 20 F4 CE    21  BASCINIT  jsr COPYROM
C806 20 2A C8    22              jsr C3HOOKS
C809 20 2E CD    23              jsr DO40
C80C         24          ;
C80C A9 01       25              lda #M.MOUSE
C80E 8D FB 04    26              sta XMODE
C811         27          ;
C811 20 90 CA    28              jsr TESTCARD
C814 D0 08       29              bne >1
C816         30          ;
C816 06 21       31              asl WNDWDTH
C818         32          ;
C818 8D 01 C0    33              sta STR80ON
C81B 8D 0D C0    34              sta VID80ON
C81E         35          ;
C81E 8D 0F C0    36          ^1    sta ALTCHON
C821         37          ;
C821 20 90 CC    38              jsr XFF
C824         39          ;
C824 AC 7B 05    40              ldy OURCH
C827         41          ;
C827 4C 7E C8    42              jmp CXVIDCK4
C82A         43          ;
C82A         44          ;
C82A A9 07       45  C3HOOKS  lda #BASICOUT
C82C 85 36       46              sta CSWL
C82E         47          ;
C82E A9 C3       48              lda /BASICOUT
C830 85 37       49              sta CSWH
C832         50          ;
C832         51          ;
C832 A9 05       52  C3IN     lda #BASICIN
C834 85 38       53              sta KSWL
C836         54          ;
C836 A9 C3       55              lda /BASICIN
C838 85 39       56              sta KSWH
C83A         57          ;
C83A 60          58              rts
C83B         59          ;
C83B         60          ;

```

```

C83B      61 ; ESCCHAR table moved from 0xC96B in order to make room
C83B      62 ; for CXKEYIN in order to check for DELETE key input.
C83B      63 ;
C83B      64 ESCCHAR:
C83B 0C    65         hex 0C             ; @, formfeed
C83C 1C    66         hex 1C             ; A, FS
C83D 08    67         hex 08             ; B, BS
C83E 0A    68         hex 0A             ; C, LF
C83F 1F    69         hex 1F             ; D, US
C840 1D    70         hex 1D             ; E, GS
C841 0B    71         hex 0B             ; F, VT
C842 9F    72         hex 9F             ; I, US (stay ESC)
C843 88    73         hex 88             ; J, BS (stay ESC)
C844 9C    74         hex 9C             ; K, FS (stay ESC)
C845 8A    75         hex 8A             ; M, LF (stay ESC)
C846 11    76         hex 11             ; 4, DC1
C847 12    77         hex 12             ; 8, DC2
C848 88    78         hex 88             ; <-, BS (stay ESC)
C849 8A    79         hex 8A             ; DN, LF (stay ESC)
C84A 9F    80         hex 9F             ; UP, US (stay ESC)
C84B 9C    81         hex 9C             ; ->, FS (stay ESC)
C84C      82 ;
0011      83 ESCHRLen equ *-ESCCHAR
C84C      84 ;
C84C      85 ;
C84C      86         dfs $C84D-*,ZERO
C84D      87 ;
C84D      88 ;
C84D      89 ; Pascal 1.0 input entry point. Must be at 0xC84D.
C84D      90 ;
C84D 4C 50 C3 91 PXREAD    jmp JPREAD
C850      92 ;
C850      93 ;
C850      94 ; CSETUP compensates for changes to CV, CH, OURCH, and
C850      95 ; WNDWDTH. It updates the video firmware's versions of
C850      96 ; these values.
C850      97 ;
C850 A5 25    98 CSETUP    lda CV
C852 8D FB 05 99         sta OURCV
C855      100 ;
C855 A4 24    101         ldy CH
C857      102 ;
C857 CC 7B 04 103         cpy OLDCH
C85A F0 03    104         beq >1
C85C      105 ;
C85C 8C 7B 05 106         sty OURCH
C85F      107 ;
C85F A5 21    108 ^1      lda WNDWDTH
C861      109 ;
C861 18      110         clc
C862      111 ;
C862 ED 7B 05 112         sbc OURCH
C865 B0 05    113         bcs >2
C867      114 ;
C867 A0 00    115         ldy #ZERO
C869 8C 7B 05 116         sty OURCH
C86C      117 ;
C86C AC 7B 05 118 ^2      ldy OURCH
C86F      119 ;
C86F 60      120         rts
C870      121 ;

```



```

C870      122 ;
C870      123 ; NEWVW support. CXNEWVW and CXNEWVW2 are used by the
C870      124 ; 0xF8 ROM to input and output characters while VID80 is
C870      125 ; on. These routines are only called by the 0xC100 to
C870      126 ; 0xC2FF space so as not to cause possible conflict with
C870      127 ; other 0xC800 users.
C870      128 ;
C870 A4 35 129 CXNEWVW ldy YSAV1
C872      130 ;
C872 18    131         clc
C873      132 ;
C873 B0 00 133         bcs *+2
C875      134         dfs !-1
C874      135 ;
C874 38    136 CXNEWVW2 sec
C875      137 ;
C875 8D 7B 06 138         sta CHAR
C878      139 ;
C878 98    140         tya
C879 48    141         pha
C87A      142 ;
C87A 8A    143         txa
C87B 48    144         pha
C87C      145 ;
C87C B0 5E 146 CXVIDCK3 bcs >5
C87E      147 ;
C87E 20 50 C8 148 CXVIDCK4 jsr CSETUP
C881      149 ;
C881 AD 7B 06 150         lda CHAR
C884      151 ;
C884 C9 8D 152         cmp #RETURN
C886 D0 18 153         bne >2
C888      154 ;
C888 AE 00 C0 155         ldx KEY
C88B 10 13 156         bpl >2
C88D      157 ;
C88D E0 93 158         cpx #CTRLS           ; CTRL-S check
C88F D0 0F 159         bne >2
C891      160 ;
C891 2C 10 C0 161         bit CLRKEY
C894      162 ;
C894 AE 00 C0 163 ^1      ldx KEY
C897 10 FB 164         bpl <1
C899      165 ;
C899 E0 83 166         cpx #CTRLC           ; CTRL-C check
C89B F0 03 167         beq >2
C89D      168 ;
C89D 2C 10 C0 169         bit CLRKEY
C8A0      170 ;
C8A0 29 7F 171 ^2      and #MSBCLR           ; clear MSB
C8A2      172 ;
C8A2 C9 20 173         cmp #$20           ; control character check
C8A4 B0 06 174         bcs >3
C8A6      175 ;
C8A6 20 D2 CA 176         jsr CTLCHAR0
C8A9      177 ;
C8A9 4C BD C8 178         jmp CTLON
C8AC      179 ;
C8AC AD 7B 06 180 ^3      lda CHAR
C8AF 20 38 CE 181         jsr STORCHAR
C8B2      182 ;

```

```

C8B2 C8          183      iny
C8B3          184      ;
C8B3 8C 7B 05   185      sty OURCH
C8B6          186      ;
C8B6 C4 21      187      cpy WNDWDTH
C8B8 90 03      188      bcc CTLOn
C8BA          189      ;
C8BA 20 51 CB   190      jsr XCR
C8BD          191      ;
C8BD          192      ;
C8BD AD FB 04   193      CTLOn lda XMODE
C8C0 29 F7      194      and #NEGONE-M.CTL
C8C2 8D FB 04   195      sta XMODE
C8C5          196      ;
C8C5          197      ;
C8C5 AD 7B 05   198      BIORET lda OURCH
C8C8          199      ;
C8C8 2C 1F C0   200      bit RDVID80
C8CB 10 02      201      bpl >4
C8CD          202      ;
C8CD A9 00      203      lda #ZERO
C8CF          204      ;
C8CF 85 24      205      ^4 sta CH
C8D1 8D 7B 04   206      sta OLDCH
C8D4          207      ;
C8D4 68         208      pla
C8D5 AA         209      tax
C8D6          210      ;
C8D6 68         211      pla
C8D7 A8         212      tay
C8D8          213      ;
C8D8 AD 7B 06   214      lda CHAR
C8DB          215      ;
C8DB 60         216      rts
C8DC          217      ;
C8DC A4 24      218      ^5 ldy CH
C8DE          219      ;
C8DE AD 7B 06   220      lda CHAR
C8E1 91 28      221      sta (BASL),Y
C8E3          222      ;
C8E3 20 50 C8   223      jsr CSETUP
C8E6          224      ;
C8E6          225      ;
C8E6 20 26 CE   226      XINPUT jsr INVERT
C8E9 20 93 C9   227      jsr CXKEYIN
C8EC          228      ;
C8EC 8D 7B 06   229      sta CHAR
C8EF          230      ;
C8EF 20 26 CE   231      jsr INVERT
C8F2          232      ;
C8F2 A8         233      tay
C8F3          234      ;
C8F3 AD FB 04   235      lda XMODE
C8F6 29 08      236      and #M.CTL
C8F8 F0 CB      237      beq BIORET
C8FA          238      ;
C8FA C0 8D      239      cpy #RETURN
C8FC D0 08      240      bne >6
C8FE          241      ;
C8FE AD FB 04   242      lda XMODE
C901 29 F7      243      and #NEGONE-M.CTL

```

```

C903 8D FB 04      244      sta XMODE
C906              245      ;
C906 C0 9B        246      ^6      cpy #ESCAPE          ; ESC check
C908 F0 11        247      beq >7
C90A              248      ;
C90A C0 95        249      cpy #RARROW
C90C D0 B7        250      bne BIORET
C90E              251      ;
C90E AC 7B 05     252      ldy OURCH
C911 20 44 CE     253      jsr PICK
C914              254      ;
C914 09 80        255      ora #MSBSET          ; set MSB
C916 8D 7B 06     256      sta CHAR
C919 D0 AA        257      bne BIORET          ; always taken
C91B              258      ;
C91B              259      ;
C91B              260      ; Escape sequence start. Only if one of the following
C91B              261      ; characters is pressed is it executed, otherwise it is
C91B              262      ; ignored.
C91B              263      ;
C91B              264      ; @ - home and clear
C91B              265      ; E - clear to end of line
C91B              266      ; F - clear to end of screen
C91B              267      ; I - move cursor up
C91B              268      ; J - move cursor left
C91B              269      ; K - move cursor right
C91B              270      ; M - move cursor down
C91B              271      ; 4 - enter 40 column mode
C91B              272      ; 8 - enter 80 column mode
C91B              273      ;
C91B              274      ; ^D - disable printing of control characters
C91B              275      ; ^E - enable printing of control characters
C91B              276      ; ^Q - quit, like PR#0 or IN#0
C91B              277      ;
C91B 20 B1 CE     278      ^7      jsr ESCON
C91E 20 93 C9     279      jsr CXKEYIN
C921 20 C4 CE     280      jsr ESCOFF
C924 20 01 FD     281      jsr UPRCASE
C927              282      ;
C927 29 7F        283      and #MSBCLR          ; clear MSB
C929              284      ;
C929              285      ; ldy #ESCTABL-ESCCHAR+1
C929 A0 10        286      ldy #ESCHLEN-1
C92B              287      ;
C92B D9 6B C9     288      ^8      cmp ESCTABL,Y
C92E F0 05        289      beq >9
C930              290      ;
C930 88           291      dey
C931 10 F8        292      bpl <8
C933              293      ;
C933 30 0F        294      bmi >1
C935              295      ;
C935 B9 3B C8     296      ^9      lda ESCCHAR,Y
C938 29 7F        297      and #MSBCLR          ; clear MSB
C93A              298      ;
C93A 20 D6 CA     299      jsr CTLCHAR
C93D              300      ;
C93D B9 3B C8     301      lda ESCCHAR,Y
C940 30 D9        302      bmi <7
C942              303      ;
C942 10 A2        304      bpl XINPUT

```

```

C944          305 ;
C944 A8       306 ^1   tay
C945          307 ;
C945 AD FB 04 308     lda XMODE
C948          309 ;
C948 C0 11     310     cpy #17           ; was it Quit (DC1)?
C94A D0 0B     311     bne >2
C94C          312 ;
C94C 20 4D CD 313     jsr XNAK
C94F          314 ;
C94F A9 98     315     lda #CTRLX       ; fake a ^X
C951 8D 7B 06 316     sta CHAR
C954          317 ;
C954 4C C5 C8 318     jmp BIORET
C957          319 ;
C957 C0 05     320     ^2   cpy #5           ; was it a ^E?
C959 D0 08     321     bne >5
C95B          322 ;
C95B 29 DF     323     and #NEGONE-M.CTL2 ; enable control characters
C95D          324 ;
C95D 8D FB 04 325     ^3   sta XMODE
C960          326 ;
C960 4C E6 C8 327     ^4   jmp XINPUT
C963          328 ;
C963 C0 04     329     ^5   cpy #4           ; was it a ^D?
C965 D0 F9     330     bne <4
C967          331 ;
C967 09 20     332     ora #M.CTL2       ; disable control characters
C969 D0 F2     333     bne <3
C96B          334 ;
C96B          335 ;
C96B          336 ; These control characters perform the escape functions
C96B          337 ; when they execute. If the MSB is set, escape mode is
C96B          338 ; not exited after they execute their function.
C96B          339 ;
C96B          340 ; ESCCHAR table moved to 0xC83B in order to make room
C96B          341 ; for CXKEYIN in order to check for DELETE key input.
C96B          342 ;
C96B          343 ESCTABL:
C96B 40       344     asc '@'
C96C 41       345     asc 'A'           ; handle old escapes
C96D 42       346     asc 'B'
C96E 43       347     asc 'C'
C96F 44       348     asc 'D'
C970 45       349     asc 'E'
C971 46       350     asc 'F'
C972 49       351     asc 'I'
C973 4A       352     asc 'J'
C974 4B       353     asc 'K'
C975 4D       354     asc 'M'
C976 34       355     asc '4'
C977 38       356     asc '8'
C978 08       357     byt LARROW^MSBSET ; left arrow
C979 0A       358     byt DARROW^MSBSET ; down arrow
C97A 0B       359     byt UARROW^MSBSET ; up arrow
C97B 15       360     byt RARROW^MSBSET ; right arrow
C97C          361 ;
C97C          362 ;
C97C 2C 13 C0 363     STAUX   bit RDRAMRD
C97F 30 11     364     bmi >1
C981          365 ;

```

```

C981 A9 EE      366      lda #$EE
C983 8D 05 C0   367      sta RAMWRON
C986 8D 03 C0   368      sta RAMRDON
C989           369      ;
C989 8D 00 0C   370      sta PAGE0C
C98C 8D 00 08   371      sta PAGE08
C98F           372      ;
C98F CD 00 0C   373      cmp PAGE0C
C992           374      ;
C992 60         375      ^1      rts
C993           376      ;
C993           377      ;
C993 E6 4E      378      CXKEYIN inc RNDL
C995 D0 02      379      bne CXKEYIN2
C997           380      ;
C997 E6 4F      381      inc RNDH
C999           382      ;
C999 AD 00 C0   383      CXKEYIN2 lda KEY
C99C 10 F5      384      bpl CXKEYIN
C99E           385      ;
C99E 2C 10 C0   386      bit CLRKEY
C9A1           387      ;
C9A1 C9 FF      388      cmp #NEGONE
C9A3 D0 02      389      bne >1
C9A5           390      ;
C9A5 A9 88      391      lda #LARROW
C9A7           392      ;
C9A7 60         393      ^1      rts
C9A8           394      ;
C9A8           395      ;
C9A8           396      dfs $C9AA-*,ZERO
C9AA           397      ;
C9AA           398      ;
C9AA           399      ; Pascal 1.0 output entry point. Must be at 0xC9AA.
C9AA           400      ;
C9AA AD 7B 06   401      PXWRITE  lda CHAR
C9AD 4C 56 C3   402      jmp JPWRITE
C9B0           403      ;
C9B0           404      ;
C9B0 A9 83      405      PINIT1  lda #M.PASCAL+M.PAS1.0+M.MOUSE
C9B2 D0 02      406      bne >1          ; always taken
C9B4           407      ;
C9B4           408      ;
C9B4 A9 81      409      PPINIT  lda #M.PASCAL+M.MOUSE
C9B6           410      ;
C9B6 48         411      ^1      pha
C9B7           412      ;
C9B7 20 90 CA   413      jsr TESTCARD
C9BA F0 04      414      beq >2
C9BC           415      ;
C9BC 68         416      pla
C9BD           417      ;
C9BD A2 09      418      ldx #9          ; 'NO DEVICE'
C9BF           419      ;
C9BF 60         420      rts
C9C0           421      ;
C9C0 68         422      ^2      pla
C9C1 8D FB 04   423      sta XMODE
C9C4           424      ;
C9C4 8D 01 C0   425      sta STR80ON
C9C7 8D 0D C0   426      sta VID80ON

```

```

C9CA 8D 0F C0    427          sta ALTCHON
C9CD              428      ;
C9CD 20 D4 CE    429          jsr PSETUP
C9D0 20 90 CC    430          jsr XFF
C9D3              431      ;
C9D3 4C 1F CA    432          jmp DOBASL
C9D6              433      ;
C9D6              434      ;
C9D6              435      ; Character always returned with MSB off.
C9D6              436      ;
C9D6 20 D4 CE    437  PPREAD  jsr PSETUP
C9D9 20 93 C9    438          jsr CXKEYIN
C9DC              439      ;
C9DC 29 7F       440          and #MSBCLR          ; clear MSB
C9DE 8D 7B 06    441          sta CHAR
C9E1              442      ;
C9E1 A2 00       443          ldx #ZERO
C9E3              444      ;
C9E3 AD FB 04    445          lda XMODE
C9E6 29 02       446          and #M.PAS1.0
C9E8 F0 02       447          beq >1
C9EA              448      ;
C9EA A2 C3       449          ldx /C3SPACE
C9EC              450      ;
C9EC AD 7B 06    451      ^1    lda CHAR
C9EF              452      ;
C9EF 60          453          rts
C9F0              454      ;
C9F0              455      ;
C9F0 29 7F       456  PPWRITE and #MSBCLR          ; clear MSB
C9F2 AA          457          tax
C9F3              458      ;
C9F3 20 D4 CE    459          jsr PSETUP
C9F6              460      ;
C9F6 A9 08       461          lda #M.GOXY
C9F8              462      ;
C9F8 2C FB 04    463          bit XMODE
C9FB D0 32       464          bne >2
C9FD              465      ;
C9FD 8A          466          txa
C9FE              467      ;
C9FE 2C 2E CA    468          bit PRTS
CA01 F0 50       469          beq >3
CA03              470      ;
CA03 AC 7B 05    471          ldy OURCH
CA06              472      ;
CA06 24 32       473          bit INVFLG
CA08 10 02       474          bpl >1
CA0A              475      ;
CA0A 09 80       476          ora #MSBSET          ; set MSB
CA0C              477      ;
CA0C 20 70 CE    478      ^1    jsr STORIT
CA0F              479      ;
CA0F C8          480          iny
CA10 8C 7B 05    481          sty OURCH
CA13              482      ;
CA13 C4 21       483          cpy WNDWDTH
CA15 90 08       484          bcc DOBASL
CA17              485      ;
CA17 A9 00       486          lda #ZERO          ; carriage return
CA19 8D 7B 05    487          sta OURCH

```

```

CA1C          488 ;
CA1C 20 D8 CB 489      jsr XLF
CA1F          490 ;
CA1F          491 ;
CA1F A5 28    492 DOBASL  lda BASL
CA21 8D 7B 07 493      sta OLDBASL
CA24          494 ;
CA24 A5 29    495      lda BASH
CA26 8D FB 07 496      sta OLDBASH
CA29          497 ;
CA29          498 ;
CA29 20 1F CE 499 PWRITER jsr PASINV
CA2C          500 ;
CA2C A2 00    501      ldx #ZERO          ; return, no error
CA2E          502 ;
CA2E 60       503 PRTS    rts
CA2F          504 ;
CA2F          505 ;
CA2F          506 ; Handle GOTOXY stuff.
CA2F          507 ;
CA2F 20 1F CE 508 ^2      jsr PASINV
CA32          509 ;
CA32 8A       510      txa
CA33          511 ;
CA33 38       512      sec
CA34          513 ;
CA34 E9 20    514      sbc #$20          ; make binary
CA36          515 ;
CA36 2C FB 06 516      bit XCOORD
CA39 30 30    517      bmi >5
CA3B          518 ;
CA3B 8D FB 05 519      sta OURCV
CA3E 85 25    520      sta CV
CA40          521 ;
CA40 20 BA CA 522      jsr XBASCALC
CA43          523 ;
CA43 AD FB 06 524      lda XCOORD
CA46 8D 7B 05 525      sta OURCH
CA49          526 ;
CA49 A9 F7    527      lda #NEGONE-M.GOXY
CA4B 2D FB 04 528      and XMODE
CA4E          529 ;
CA4E 8D FB 04 530      sta XMODE
CA51 D0 CC    531      bne DOBASL          ; always taken
CA53          532 ;
CA53 20 1F CE 533 ^3      jsr PASINV
CA56          534 ;
CA56 8A       535      txa
CA57          536 ;
CA57 C9 1E    537      cmp #$1E          ; GOTOXY command?
CA59 F0 06    538      beq >4
CA5B          539 ;
CA5B 20 D6 CA 540      jsr CTLCHAR
CA5E          541 ;
CA5E 4C 1F CA 542      jmp DOBASL
CA61          543 ;
CA61          544 ;
CA61          545 ; Start the GOTOXY sequence.
CA61          546 ;
CA61 A9 08    547 ^4      lda #M.GOXY
CA63 0D FB 04 548      ora XMODE

```

```

CA66 8D FB 04      549      sta XMODE
CA69              550      ;
CA69 A9 FF        551      lda #NEGONE
CA6B              552      ;
CA6B 8D FB 06     553      ^5 sta XCOORD
CA6E              554      ;
CA6E 4C 29 CA     555      jmp PWRITER
CA71              556      ;
CA71              557      ;
CA71              558      ; 65C02 opcode remapping to MNEML/MNEMR index.
CA71              559      ;
CA71              560      ; If the opcode matches in TBLC, then TBLL contains the
CA71              561      ; MNEML/MNEMR index.
CA71              562      ;
CA71              563      TBLC:
CA71 1A 3A 89     564      hex 1A3A8903
CA74 03
CA75 5A 7A 14     565      hex 5A7A141C
CA78 1C
CA79 64 74 9C     566      hex 64749C9E
CA7C 9E
CA7D              567      ;
CA7D              568      TBLL:
CA7D 37 36 21     569      hex 37362140
CA80 40
CA81 41 42 43     570      hex 41424343
CA84 43
CA85 44 44 44     571      hex 44444444
CA88 44
CA89              572      ;
CA89              573      ;
CA89              574      ; Enable slot 3 and test for a ROM card.  If none, test
CA89              575      ; for an 80 column card.  If none, return with a BNE.
CA89              576      ;
CA89 20 B6 F8     577      TSTROMCD jsr TESTROM
CA8C D0 02        578      bne TESTCARD
CA8E              579      ;
CA8E C8           580      iny
CA8F              581      ;
CA8F 60           582      CXRTS3 rts
CA90              583      ;
CA90              584      ;
CA90 AD 1C C0     585      TESTCARD lda RDPAGE2
CA93 0A           586      asl
CA94              587      ;
CA94 A9 88        588      lda #$88                ; test character
CA96              589      ;
CA96 2C 18 C0     590      bit RDSTR80
CA99              591      ;
CA99 8D 01 C0     592      sta STR80ON
CA9C              593      ;
CA9C 08           594      php                ; save N and C flags
CA9D              595      ;
CA9D 8D 55 C0     596      sta PAGE2ON
CAA0              597      ;
CAA0 AC 00 04     598      ldy TEXTPG1
CAA3              599      ;
CAA3 8D 00 04     600      sta TEXTPG1
CAA6              601      ;
CAA6 AD 00 04     602      lda TEXTPG1
CAA9              603      ;

```



```

CAA9 8C 00 04    604          sty TEXTPG1
CAAC              605      ;
CAAC 28          606          plp              ; recall status
CAAD B0 03      607          bcs >1
CAAF              608      ;
CAAF 8D 54 C0   609          sta PAGE1ON
CAB2              610      ;
CAB2 30 03      611      ^1      bmi >2
CAB4              612      ;
CAB4 8D 00 C0   613          sta STR80OFF
CAB7              614      ;
CAB7 C9 88      615      ^2      cmp #$88              ; same character?
CAB9              616      ;
CAB9 60          617          rts
CABA              618      ;
CABA              619      ;
CABA              620      ; This routine is the same as BASCALC.
CABA              621      ;
CABA              622      ; 0 <= line number <= 23.  A-reg = 000ABCDE.  Generate
CABA              623      ; BASL = EABAB000, BASH = 000001CD.
CABA              624      ;
CABA 48          625      XBASCALC pha
CABB              626      ;
CABB 4A          627          lsr
CABC 29 03      628          and #3
CABE              629      ;
CABE 09 04      630          ora #4
CAC0 85 29      631          sta BASH
CAC2              632      ;
CAC2 68          633          pla
CAC3 29 18      634          and #$18
CAC5              635      ;
CAC5 90 02      636          bcc >1
CAC7              637      ;
CAC7 69 7F      638          adc #$80-1              ; carry adds 1
CAC9              639      ;
CAC9 85 28      640      ^1      sta BASL
CACB              641      ;
CACB 0A          642          asl
CACC 0A          643          asl
CACD              644      ;
CACD 05 28      645          ora BASL
CACF 85 28      646          sta BASL
CAD1              647      ;
CAD1 60          648          rts              ; carry must be clear
CAD2              649      ;
CAD2              650      ;
CAD2 2C 06 CB   651      CTLCHAR0 bit CXRTS4              ; set V-flag for M.CTL
CAD5              652      ;
CAD5 50 B8      653          bvc CXRTS3
CAD7              654          dfs !-1
CAD6              655      ;
CAD6              656      ;
CAD6 B8          657      CTLCHAR clv              ; clear V-flag, ignore M.CTL
CAD7              658      ;
CAD7 8D 7B 07   659          sta XTEMP1
CADA 48          660          pha
CADB              661      ;
CADB 98          662          tya
CADC 48          663          pha
CADD              664      ;

```

```

CADD AC 7B 07      665      ldy XTEMP1
CAE0              666      ;
CAE0 C0 05        667      cpy #5          ; is it NUL..EOT?
CAE2 90 13        668      bcc >1
CAE4              669      ;
CAE4 B9 B4 CB     670      lda CTLADRH-5,Y
CAE7 F0 0E        671      beq >1          ; CTL not implemented
CAE9              672      ;
CAE9 50 12        673      bvc >3          ; CTLCHAR, always executes
CAEB 30 10        674      bmi >3          ; CR, BEL, LF, BS always done
CAED              675      ;
CAED 8D 7B 07     676      sta XTEMP1
CAF0              677      ;
CAF0 AD FB 04     678      lda XMODE
CAF3 29 28        679      and #M.CTL+M.CTL2
CAF5 F0 03        680      beq >2
CAF7              681      ;
CAF7 38           682      ^1      sec
CAF8 B0 09        683      bcs >4          ; always taken
CAFA              684      ;
CAFA AD 7B 07     685      ^2      lda XTEMP1
CAFD              686      ;
CAFD 09 80        687      ^3      ora #MSBSET      ; set MSB
CAFF              688      ;
CAFF 20 07 CB     689      jsr CTLXFER
CB02              690      ;
CB02 18           691      clc
CB03              692      ;
CB03 68           693      ^4      pla
CB04 A8           694      tay
CB05              695      ;
CB05 68           696      pla
CB06              697      ;
CB06 60           698      CXRTS4   rts
CB07              699      ;
CB07              700      ;
CB07              701      ; Execute subroutine.
CB07              702      ;
CB07 48           703      CTLXFER pha
CB08              704      ;
CB08 B9 99 CB     705      lda CTLADRL-5,Y
CB0B 48           706      pha
CB0C              707      ;
CB0C 60           708      rts
CB0D              709      ;
CB0D              710      ;
CB0D              711      ; Turn cursor on for Pascal only.
CB0D              712      ;
CB0D AD FB 04     713      PCURON   lda XMODE
CB10 10 05        714      bpl CXRTS5
CB12              715      ;
CB12 29 EF        716      and #$EF
CB14              717      ;
CB14 8D FB 04     718      PSAVCUR  sta XMODE
CB17              719      ;
CB17 60           720      CXRTS5   rts
CB18              721      ;
CB18              722      ;
CB18 AD FB 04     723      PCUROFF  lda XMODE
CB1B 10 FA        724      bpl CXRTS5
CB1D              725      ;

```

```

CB1D 09 10      726      ora #$10
CB1F D0 F3      727      bne PSAVCUR
CB21            728      ;
CB21            729      ;
CB21            730      ; Execute bell.
CB21            731      ;
CB21 A9 40      732 XBELL   lda #$40
CB23 20 34 CB   733      jsr CXWAIT
CB26            734      ;
CB26 A0 C0      735      ldy #$C0
CB28            736      ;
CB28 A9 0C      737 ^1     lda #$0C
CB2A 20 34 CB   738      jsr CXWAIT
CB2D            739      ;
CB2D AD 30 C0   740      lda SPKR
CB30            741      ;
CB30 88         742      dey
CB31 D0 F5      743      bne <1
CB33            744      ;
CB33 60         745      rts
CB34            746      ;
CB34            747      ;
CB34            748      ; Same as MONITOR ROM.
CB34            749      ;
CB34 38         750 CXWAIT  sec
CB35            751      ;
CB35 48         752 ^1     pha
CB36            753      ;
CB36 E9 01      754 ^2     sbc #1
CB38 D0 FC      755      bne <2
CB3A            756      ;
CB3A 68         757      pla
CB3B            758      ;
CB3B E9 01      759      sbc #1
CB3D D0 F6      760      bne <1
CB3F            761      ;
CB3F 60         762      rts
CB40            763      ;
CB40            764      ;
CB40            765      ; Execute backspace.
CB40            766      ;
CB40 CE 7B 05   767 XBS    dec OURCH
CB43 10 0B      768      bpl >1
CB45            769      ;
CB45 A5 21      770      lda WNDWDTH
CB47 8D 7B 05   771      sta OURCH
CB4A            772      ;
CB4A CE 7B 05   773      dec OURCH
CB4D            774      ;
CB4D 20 79 CB   775      jsr XUS
CB50            776      ;
CB50 60         777 ^1     rts
CB51            778      ;
CB51            779      ;
CB51            780      ; Execute carriage return.
CB51            781      ;
CB51 A9 00      782 XCR    lda #ZERO
CB53 8D 7B 05   783      sta OURCH
CB56            784      ;
CB56 AD FB 04   785      lda XMODE
CB59 30 03      786      bmi >2

```

; Pascal, avoid auto LF

```

CB5B      787 ;
CB5B 20 D8 CB 788      jsr XLF
CB5E      789 ;
CB5E 60      790 ^2      rts
CB5F      791 ;
CB5F      792 ;
CB5F      793 ; Execute HOME.
CB5F      794 ;
CB5F A5 22    795 XEM      lda WNDTOP
CB61 85 25    796      sta CV
CB63      797 ;
CB63 A9 00    798      lda #ZERO
CB65 8D 7B 05 799      sta OURCH
CB68      800 ;
CB68 4C FE CD 801      jmp XVTAB2
CB6B      802 ;
CB6B      803 ;
CB6B      804 ; Execute forward space.
CB6B      805 ;
CB6B EE 7B 05 806 XFS      inc OURCH
CB6E      807 ;
CB6E AD 7B 05 808      lda OURCH
CB71 C5 21    809      cmp WNDWDTH
CB73 90 03    810      bcc >3
CB75      811 ;
CB75 20 51 CB 812      jsr XCR
CB78      813 ;
CB78 60      814 ^3      rts
CB79      815 ;
CB79      816 ;
CB79      817 ; Execute reverse linefeed.
CB79      818 ;
CB79 A5 22    819 XUS      lda WNDTOP
CB7B C5 25    820      cmp CV
CB7D B0 1E    821      bcs >7
CB7F      822 ;
CB7F C6 25    823      dec CV
CB81      824 ;
CB81 4C FE CD 825      jmp XVTAB2
CB84      826 ;
CB84      827 ;
CB84      828 ; Execute NORMAL video.
CB84      829 ;
CB84 AD FB 04 830 XSO      lda XMODE
CB87 10 02    831      bpl >4
CB89      832 ;
CB89 29 FB    833      and #NEGONE-M.VMODE ; set NORMAL
CB8B      834 ;
CB8B A0 FF    835 ^4      ldy #NEGONE
CB8D D0 09    836      bne >6 ; always taken
CB8F      837 ;
CB8F      838 ;
CB8F      839 ; Execute INVERSE video.
CB8F      840 ;
CB8F AD FB 04 841 XSI      lda XMODE
CB92 10 02    842      bpl >5
CB94      843 ;
CB94 09 04    844      ora #M.VMODE ; set INVERSE
CB96      845 ;
CB96 A0 7F    846 ^5      ldy #$7F
CB98      847 ;

```

```

CB98 8D FB 04      848 ^6      sta XMODE
CB9B              849 ;
CB9B 84 32        850      sty INVFLG
CB9D              851 ;
CB9D 60           852 ^7      rts
CB9E              853 ;
CB9E              854 ;
CB9E              855 CTLADRL:
CB9E 0C           856      byt PCURON-1      ; ENQ
CB9F 17           857      byt PCUROFF-1     ; ACK
CBA0 20           858      byt XBELL-1       ; BEL
CBA1 3F           859      byt XBS-1         ; BS
CBA2 00           860      byt ZERO          ; HT, not imlemented
CBA3 D7           861      byt XLF-1         ; LF
CBA4 73           862      byt XVT-1         ; VT
CBA5 8F           863      byt XFF-1         ; FF
CBA6 50           864      byt XCR-1         ; CR
CBA7 83           865      byt XSO-1         ; SO
CBA8 8E           866      byt XSI-1         ; SI
CBA9 00           867      byt ZERO          ; DLE, not implemented
CBAA E9           868      byt XDC1-1        ; DC1
CBAB FB           869      byt XDC2-1        ; DC2
CBAC 00           870      byt ZERO          ; DC3, not implemented
CBAD 00           871      byt ZERO          ; DC4, not implemented
CBAE 4C           872      byt XNAK-1        ; NAK
CBAF D3           873      byt SCROLLDN-1     ; SYN
CBB0 EA           874      byt SCROLLUP-1     ; ETB
CBB1 3C           875      byt MOUSEOFF-1
CBB2 5E           876      byt XEM-1         ; EM
CBB3 95           877      byt XSUB-1        ; SUB
CBB4 43           878      byt MOUSEON-1
CBB5 6A           879      byt XFS-1         ; FS
CBB6 99           880      byt XGS-1         ; GS
CBB7 00           881      byt ZERO          ; RS, not implemented
CBB8 78           882      byt XUS-1         ; US
CBB9              883 ;
CBB9              884 CTLADRH:
CBB9 4B           885      hby PCURON-$8001    ; ENQ
CBBA 4B           886      hby PCUROFF-$8001   ; ACK
CBBB CB           887      hby XBELL-1       ; BEL
CBBC CB           888      hby XBS-1         ; BS
CBBD 00           889      byt ZERO          ; HT, not imlemented
CBBE CB           890      hby XLF-1         ; LF
CBBF 4C           891      hby XVT-$8001     ; VT
CBC0 4C           892      hby XFF-$8001     ; FF
CBC1 CB           893      hby XCR-1         ; CR
CBC2 4B           894      hby XSO-$8001     ; SO
CBC3 4B           895      hby XSI-$8001     ; SI
CBC4 00           896      byt ZERO          ; DLE, not implemented
CBC5 4C           897      hby XDC1-$8001    ; DC1
CBC6 4C           898      hby XDC2-$8001    ; DC2
CBC7 00           899      byt ZERO          ; DC3, not implemented
CBC8 00           900      byt ZERO          ; DC4, not implemented
CBC9 4D           901      hby XNAK-$8001    ; NAK
CBCA 4B           902      hby SCROLLDN-$8001 ; SYN
CBCB 4B           903      hby SCROLLUP-$8001 ; ETB
CBCC 4D           904      hby MOUSEOFF-$8001
CBCD 4B           905      hby XEM-$8001     ; EM
CBCE 4C           906      hby XSUB-$8001    ; SUB
CBCF 4D           907      hby MOUSEON-$8001
CBD0 4B           908      hby XFS-$8001     ; FS

```

CBD1	4C	909	hby	XGS-\$8001	; GS
CBD2	00	910	byt	ZERO	; RS, not implemented
CBD3	4B	911	hby	XUS-\$8001	; US
CBD4		912			
CBD4		913			
CBD4		914	icl	"CC.L"	

LLOAD CC.L,A\$4000

```

CBD4      1          ttl "ROM Source Code, CC.L"
CBD4      2      ;
CBD4      3      ;
CBD4      4      ; CC.L
CBD4      5      ;
CBD4      6      ;
CBD4      7      ; SCROLLIT scrolls the screen up or down depending on the
CBD4      8      ; value of X-reg. It scrolls within windows having even
CBD4      9      ; or odd edges for both 40 and 80 columns down to 1
CBD4     10      ; characters wide.
CBD4     11      ;
CBD4 A0 00     12 SCROLLDN ldy #ZERO          ; scroll down
CBD6 F0 15     13          beq >2          ; always taken
CBD8     14      ;
CBD8     15      ;
CBD8     16      ; Execute linefeed.
CBD8     17      ;
CBD8 E6 25     18 XLF          inc CV
CBDA     19      ;
CBDA A5 25     20          lda CV
CBDC 8D FB 05  21          sta OURCV
CBDF     22      ;
CBDF C5 23     23          cmp WNDBTM
CBE1 B0 03     24          bcs >1
CBE3     25      ;
CBE3 4C 03 CE  26          jmp XVTABZ
CBE6     27      ;
CBE6 CE FB 05  28 ^1          dec OURCV
CBE9     29      ;
CBE9 C6 25     30          dec CV
CBEB     31      ;
CBEB     32      ;
CBEB A0 01     33 SCROLLUP ldy #1          ; scroll up
CBED     34      ;
CBED 8A       35 ^2          txa
CBEE 48       36          pha
CBEF     37      ;
CBEF 8C 7B 07  38          sty XTEMP1
CBF2     39      ;
CBF2 A5 21     40          lda WNDWDTH
CBF4 48       41          pha
CBF5     42      ;
CBF5 2C 1F C0  43          bit RDVID80
CBF8 10 1C     44          bpl >5
CBFA     45      ;
CBFA 8D 01 C0  46          sta STR80ON
CBFD     47      ;
CBFD 4A       48          lsr
CBFE     49      ;
CBFE AA       50          tax
CBFF     51      ;
CBFF A5 20     52          lda WNDLFT
CC01 4A       53          lsr
CC02     54      ;
CC02 B8       55          clv          ; left edge even
CC03     56      ;
CC03 90 03     57          bcc >3
CC05     58      ;
CC05 2C 06 CB  59          bit CXRTS4          ; left edge odd
CC08     60      ;

```

```

CC08 2A          61  ^3      rol
CC09             62  ;
CC09 45 21       63          eor WNDWDTH
CC0B 4A          64          lsr
CC0C             65  ;
CC0C 70 03       66          bvs >4
CC0E B0 01       67          bcs >4
CC10             68  ;
CC10 CA          69          dex
CC11             70  ;
CC11 86 21       71  ^4      stx WNDWDTH
CC13             72  ;
CC13 AD 1F C0    73          lda RDVID80
CC16             74  ;
CC16 08          75  ^5      php                ; save N, Z, V flags
CC17             76  ;
CC17 A6 22       77          ldx WNDTOP
CC19             78  ;
CC19 98          79          tya
CC1A D0 03       80          bne >6                ; direction
CC1C             81  ;
CC1C A6 23       82          ldx WNDBTM
CC1E             83  ;
CC1E CA          84          dex
CC1F             85  ;
CC1F 8A          86  ^6      txa
CC20             87  ;
CC20 20 03 CE    88          jsr XVTABZ
CC23             89  ;
CC23 A5 28       90  ^7      lda BASL
CC25 85 2A       91          sta BAS2L
CC27             92  ;
CC27 A5 29       93          lda BASH
CC29 85 2B       94          sta BAS2H
CC2B             95  ;
CC2B AD 7B 07    96          lda XTEMP1
CC2E F0 32       97          beq >5
CC30             98  ;
CC30 E8          99          inx
CC31            100  ;
CC31 E4 23      101          cpx WNDBTM
CC33 B0 32      102          bcs >6
CC35            103  ;
CC35 8A          104  ^8      txa
CC36            105  ;
CC36 20 03 CE   106          jsr XVTABZ
CC39            107  ;
CC39 A4 21      108          ldy WNDWDTH
CC3B            109  ;
CC3B 28          110          plp                ; recall status
CC3C 08          111          php
CC3D            112  ;
CC3D 10 1E      113          bpl >4                ; only do 40 columns
CC3F            114  ;
CC3F AD 55 C0   115          lda PAGE2ON
CC42            116  ;
CC42 98          117          tya
CC43 F0 07      118          beq >1
CC45            119  ;
CC45 B1 28      120  ^9      lda (BASL),Y        ; scroll even bytes
CC47 91 2A      121          sta (BAS2L),Y

```



```

CC49          122 ;
CC49 88       123      dey
CC4A D0 F9    124      bne <9
CC4C          125 ;
CC4C 70 04    126 ^1      bvs >2                ; if odd, skip
CC4E          127 ;
CC4E B1 28    128      lda (BASL),Y
CC50 91 2A    129      sta (BAS2L),Y
CC52          130 ;
CC52 AD 54 C0 131 ^2      lda PAGE1ON
CC55          132 ;
CC55 A4 21    133      ldy WNDWDTH
CC57          134 ;
CC57 B0 04    135      bcs >4
CC59          136 ;
CC59 B1 28    137 ^3      lda (BASL),Y                ; scroll odd bytes
CC5B 91 2A    138      sta (BAS2L),Y
CC5D          139 ;
CC5D 88       140 ^4      dey
CC5E 10 F9    141      bpl <3
CC60          142 ;
CC60 30 C1    143      bmi <7                ; always taken
CC62          144 ;
CC62 CA       145 ^5      dex
CC63          146 ;
CC63 E4 22    147      cpx WNDTOP
CC65 10 CE    148      bpl <8
CC67          149 ;
CC67 28       150 ^6      plp                ; recall status
CC68          151 ;
CC68 68       152      pla
CC69 85 21    153      sta WNDWDTH
CC6B          154 ;
CC6B 20 96 CC 155      jsr XSUB
CC6E 20 FE CD 156      jsr XVTAB2
CC71          157 ;
CC71 68       158      pla
CC72 AA       159      tax
CC73          160 ;
CC73 60       161      rts
CC74          162 ;
CC74          163 ;
CC74          164 ; Execute CLR to EOS.
CC74          165 ;
CC74 20 9A CC 166 XVT      jsr XGS
CC77          167 ;
CC77 A5 25    168      lda CV
CC79 48       169      pha
CC7A          170 ;
CC7A 10 06    171      bpl >2
CC7C          172 ;
CC7C 20 03 CE 173 ^1      jsr XVTABZ
CC7F 20 96 CC 174      jsr XSUB
CC82          175 ;
CC82 E6 25    176 ^2      inc CV
CC84          177 ;
CC84 A5 25    178      lda CV
CC86 C5 23    179      cmp WNDBTM
CC88 90 F2    180      bcc <1
CC8A          181 ;
CC8A 68       182      pla

```

```

CC8B 85 25      183      sta CV
CC8D           184      ;
CC8D 4C FE CD   185      jmp XVTAB2
CC90           186      ;
CC90           187      ;
CC90           188      ; Execute clear.
CC90           189      ;
CC90 20 5F CB   190      XFF      jsr XEM
CC93           191      ;
CC93 4C 74 CC   192      jmp XVT
CC96           193      ;
CC96           194      ;
CC96           195      ; Execute clear line.
CC96           196      ;
CC96 A0 00      197      XSUB      ldy #ZERO
CC98 F0 03      198      beq XGSEOLZ      ; always taken
CC9A           199      ;
CC9A           200      ;
CC9A           201      ; Execute clear to EOL.
CC9A           202      ;
CC9A AC 7B 05   203      XGS      ldy OURCH
CC9D           204      ;
CC9D           205      ;
CC9D A5 32      206      XGSEOLZ   lda INVFLG      ; mask blank
CC9F 29 80      207      and #MSBSET      ; set MSB
CCA1 09 20      208      ora #$20      ; make it a blank
CCA3           209      ;
CCA3 2C 1F C0   210      bit RDVID80
CCA6 30 15      211      bmi CLR80
CCA8           212      ;
CCA8           213      ;
CCA8           214      ; Clear to end of line for 40 colums.
CCA8           215      ;
CCA8 91 28      216      CLR40     sta (BASL),Y
CCAA           217      ;
CCAA C8         218      iny
CCAB           219      ;
CCAB C4 21      220      cpy WNDWDTH
CCAD 90 F9      221      bcc CLR40
CCAF           222      ;
CCAF 60         223      rts
CCB0           224      ;
CCB0           225      ;
CCB0 86 2A      226      CLRHALF   stx BAS2L
CCB2           227      ;
CCB2 A2 D8      228      ldx #!-40
CCB4 A0 14      229      ldy #20
CCB6           230      ;
CCB6 A5 32      231      lda INVFLG
CCB8 29 A0      232      and #SPACE
CCBA           233      ;
CCBA 4C D5 CC   234      jmp CLR2
CCBD           235      ;
CCBD           236      ;
CCBD           237      ; Clear to end of line for 80 columns.
CCBD           238      ;
CCBD 86 2A      239      CLR80     stx BAS2L
CCBF           240      ;
CCBF 48         241      pha
CCC0           242      ;
CCC0 98         243      tya

```

```

CCC1 48          244          pha
CCC2          245          ;
CCC2 38          246          sec
CCC3          247          ;
CCC3 E5 21      248          sbc WNDWDTH          ; count = WNDWDTH - Y-reg - 1
CCC5 AA        249          tax
CCC6          250          ;
CCC6 98        251          tya
CCC7 4A        252          lsr
CCC8 A8        253          tay
CCC9          254          ;
CCC9 68        255          pla
CCCA          256          ;
CCCA 45 20      257          eor WNDLFT          ; get starting page
CCCC          258          ;
CCCC 6A        259          ror
CCCD B0 03      260          bcs >4
CCCF          261          ;
CCCF 10 01      262          bpl >4
CCD1          263          ;
CCD1 C8        264          iny
CCD2          265          ;
CCD2 68        266          ^4          pla
CCD3          267          ;
CCD3 B0 0B      268          bcs >5
CCD5          269          ;
CCD5          270          ;
CCD5 2C 55 C0   271          CLR2          bit PAGE2ON
CCD8          272          ;
CCD8 91 28      273          sta (BASL),Y
CCDA          274          ;
CCDA 2C 54 C0   275          bit PAGE1ON
CCDD          276          ;
CCDD E8        277          inx
CCDE F0 06      278          beq >6
CCE0          279          ;
CCE0 91 28      280          ^5          sta (BASL),Y
CCE2          281          ;
CCE2 C8        282          iny
CCE3          283          ;
CCE3 E8        284          inx
CCE4 D0 EF      285          bne CLR2
CCE6          286          ;
CCE6 A6 2A      287          ^6          ldx BAS2L
CCE8          288          ;
CCE8 38        289          sec
CCE9          290          ;
CCE9 60        291          rts
CCEA          292          ;
CCEA          293          ;
CCEA          294          ; Execute 40 column mode.
CCEA          295          ;
CCEA AD FB 04   296          XDC1          lda XMODE
CCED 30 4D      297          bmi >4
CCEF          298          ;
CCEF          299          ;
CCEF 20 31 CD   300          XDC1A          jsr SETTOP
CCF2          301          ;
CCF2 2C 1F C0   302          bit RDVID80
CCF5 10 12      303          bpl >1
CCF7          304          ;

```

```

CCF7 20 91 CD 305      jsr SCR84
CCFA 90 0D      306      bcc >1
CCFC           307      ;
CCFC           308      ;
CCFC           309      ; Execute 80 column mode.
CCFC           310      ;
CCFC 20 90 CA 311 XDC2   jsr TESTCARD
CCFF D0 3B      312      bne >4
CD01           313      ;
CD01 2C 1F C0 314      bit RDVID80
CD04 30 03      315      bmi >1
CD06           316      ;
CD06 20 C4 CD 317      jsr SCR84      ; make it 80 column mode
CD09           318      ;
CD09 AD 7B 05 319 ^1     lda OURCH
CD0C           320      ;
CD0C 18         321      clc
CD0D           322      ;
CD0D 65 20      323      adc WNDLFT
CD0F           324      ;
CD0F 2C 1F C0 325      bit RDVID80
CD12 30 06      326      bmi >2
CD14           327      ;
CD14 C9 28      328      cmp #40      ; in 40 column mode
CD16 90 02      329      bcc >2
CD18           330      ;
CD18 A9 27      331      lda #39
CD1A           332      ;
CD1A 8D 7B 05 333 ^2     sta OURCH
CD1D 85 24      334      sta CH
CD1F           335      ;
CD1F A5 25      336      lda CV
CD21           337      ;
CD21 20 BA CA 338      jsr XBASCALC
CD24           339      ;
CD24 2C 1F C0 340      bit RDVID80
CD27 10 05      341      bpl DO40
CD29           342      ;
CD29 20 71 CD 343      jsr FULL80
CD2C F0 03      344      beq SETTOP      ; always taken
CD2E           345      ;
CD2E           346      ;
CD2E 20 6D CD 347 DO40   jsr FULL40
CD31           348      ;
CD31           349      ;
CD31 A9 00      350 SETTOP  lda #ZERO
CD33           351      ;
CD33 2C 1A C0 352      bit RDTEXT      ; mixed?
CD36 30 02      353      bmi >3
CD38           354      ;
CD38 A9 14      355      lda #20
CD3A           356      ;
CD3A 85 22      357 ^3     sta WNDTOP
CD3C           358      ;
CD3C 60         359 ^4     rts
CD3D           360      ;
CD3D           361      ;
CD3D           362      ; Execute mouse text off.
CD3D           363      ;
CD3D AD FB 04 364 MOUSEOFF lda XMODE
CD40 09 01      365      ora #M.MOUSE      ; set mouse bit

```

```

CD42 D0 05      366      bne >5                ; always taken
CD44            367      ;
CD44            368      ;
CD44 AD FB 04   369      MOUSEON lda XMODE
CD47 29 FE      370      and #NEGONE-M.MOUSE ; clear mouse bit
CD49            371      ;
CD49 8D FB 04   372      ^5      sta XMODE
CD4C            373      ;
CD4C 60         374      rts
CD4D            375      ;
CD4D            376      ;
CD4D            377      ; Execute Quit.
CD4D            378      ;
CD4D AD FB 04   379      XNAK     lda XMODE                ; only valid in BASIC
CD50 30 1A      380      bmi >6                ; ignore if Pascal
CD52            381      ;
CD52 20 2E CD   382      jsr DO40
CD55 20 80 CD   383      jsr QUIT
CD58 20 64 CD   384      jsr SETCOUT1
CD5B            385      ;
CD5B            386      ;
CD5B A9 FD      387      SETKEYIN lda /KEYIN
CD5D 85 39      388      sta KSWH
CD5F            389      ;
CD5F A9 1B      390      lda #KEYIN
CD61 85 38      391      sta KSWL
CD63            392      ;
CD63 60         393      rts
CD64            394      ;
CD64            395      ;
CD64 A9 FD      396      SETCOUT1 lda /COUT1
CD66 85 37      397      sta CSWH
CD68            398      ;
CD68 A9 F0      399      lda #COUT1
CD6A 85 36      400      sta CSWL
CD6C            401      ;
CD6C 60         402      ^6      rts
CD6D            403      ;
CD6D            404      ;
CD6D            405      ; Set full 40 column window.
CD6D            406      ;
CD6D A9 28      407      FULL40  lda #40
CD6F D0 02      408      bne >7                ; always taken
CD71            409      ;
CD71            410      ;
CD71            411      ; Set full 80 column window.
CD71            412      ;
CD71 A9 50      413      FULL80  lda #80
CD73            414      ;
CD73 85 21      415      ^7      sta WNDWDTH
CD75            416      ;
CD75 A9 18      417      lda #24
CD77 85 23      418      sta WNDBTM
CD79            419      ;
CD79 A9 00      420      lda #ZERO
CD7B 85 22      421      sta WNDTOP
CD7D 85 20      422      sta WNDLFT
CD7F            423      ;
CD7F 60         424      rts
CD80            425      ;
CD80            426      ;

```

```

CD80      427 ; QUIT used by PR#0 to turn off everything.
CD80      428 ;
CD80 2C 1F C0 429 QUIT      bit RDVID80
CD83 10 03    430          bpl >8
CD85      431 ;
CD85 20 EF CC 432          jsr XDC1A
CD88      433 ;
CD88 8D 0E C0 434 ^8      sta ALTCHOFF
CD8B      435 ;
CD8B A9 FF    436          lda #NEGONE          ; destroy mode
CD8D 8D FB 04 437          sta XMODE
CD90      438 ;
CD90 60      439          rts
CD91      440 ;
CD91      441 ;
CD91      442 ; SCRN84 and SCRN48 convert screens between 40 and 80
CD91      443 ; columns. WNDTOP must be set up to indicate the last
CD91      444 ; line to process.
CD91      445 ;
CD91 8A      446 SCRN84    txa
CD92 48      447          pha
CD93      448 ;
CD93 A2 17    449          ldx #23          ; start at bottom
CD95 8D 01 C0 450          sta STR80ON
CD98      451 ;
CD98 8A      452 ^1      txa
CD99      453 ;
CD99 20 BA CA 454          jsr XBASCALC
CD9C      455 ;
CD9C A0 27    456          ldy #39          ; start at far right
CD9E      457 ;
CD9E 84 2A    458 ^2      sty BAS2L
CDA0      459 ;
CDA0 98      460          tya
CDA1      461 ;
CDA1 4A      462          lsr
CDA2 B0 03    463          bcs >3
CDA4      464 ;
CDA4 2C 55 C0 465          bit PAGE2ON
CDA7      466 ;
CDA7 A8      467 ^3      tay          ; 80 column index
CDA8      468 ;
CDA8 B1 28    469          lda (BASL),Y
CDAA      470 ;
CDAA 2C 54 C0 471          bit PAGE1ON
CDAD      472 ;
CDAD A4 2A    473          ldy BAS2L          ; 40 column index
CDAF      474 ;
CDAF 91 28    475          sta (BASL),Y
CDB1      476 ;
CDB1 88      477          dey
CDB2 10 EA    478          bpl <2
CDB4      479 ;
CDB4 CA      480          dex
CDB5 30 04    481          bmi >4
CDB7      482 ;
CDB7 E4 22    483          cpx WNDTOP
CDB9 B0 DD    484          bcs <1
CDBB      485 ;
CDBB 8D 00 C0 486 ^4      sta STR80OFF          ; for 40 columns
CDBE 8D 0C C0 487          sta VID80OFF          ; for 40 columns

```

```

CDC1      488 ;
CDC1 4C F8 CD 489      jmp SCRNRRET
CDC4      490 ;
CDC4      491 ;
CDC4 8A      492 SCRNR48 txa
CDC5 48      493 pha
CDC6      494 ;
CDC6 A2 17   495      ldx #23          ; start at bottom
CDC8      496 ;
CDC8 8A      497 ^1      txa
CDC9      498 ;
CDC9 20 BA CA 499      jsr XBASCALC
CDCC      500 ;
CDCC A0 00   501      ldy #ZERO          ; start at far left
CDCE      502 ;
CDCE 8D 01 C0 503      sta STR80ON
CDD1      504 ;
CDD1 B1 28   505 ^2      lda (BASL),Y
CDD3      506 ;
CDD3 84 2A   507      sty BAS2L          ; save 40 column index
CDD5      508 ;
CDD5 48      509 pha
CDD6      510 ;
CDD6 98      511 tya
CDD7      512 ;
CDD7 4A      513 lsr
CDD8 B0 03   514 bcs >3
CDDA      515 ;
CDDA 8D 55 C0 516      sta PAGE2ON
CDDD      517 ;
CDDD A8      518 ^3      tay          ; get 80 column index
CDDE      519 ;
CDDE 68      520 pla
CDDF 91 28   521      sta (BASL),Y
CDE1      522 ;
CDE1 8D 54 C0 523      sta PAGE1ON
CDE4      524 ;
CDE4 A4 2A   525      ldy BAS2L
CDE6      526 ;
CDE6 C8      527 iny
CDE7      528 ;
CDE7 C0 28   529      cpy #40
CDE9 90 E6   530      bcc <2
CDEB      531 ;
CDEB 20 B0 CC 532      jsr CLRHALF
CDEE      533 ;
CDEE CA      534 dex
CDEF 30 04   535      bmi >4
CDF1      536 ;
CDF1 E4 22   537      cpx WNDTOP
CDF3 B0 D3   538      bcs <1
CDF5      539 ;
CDF5 8D 0D C0 540 ^4      sta VID80ON
CDF8      541 ;
CDF8      542 ;
CDF8 20 FE CD 543 SCRNRRET jsr XVTAB2
CDFB      544 ;
CDFB 68      545 pla
CDFC AA      546 tax
CDFD      547 ;
CDFD 60      548 rts

```

```

CDFE          549 ;
CDFE          550 ;
CDFE A5 25    551 XVTAB2   lda CV
CE00 8D FB 05 552          sta OURCV
CE03          553 ;
CE03          554 ;
CE03 20 BA CA 555 XVTABZ   jsr XBASCALC
CE06          556 ;
CE06 A5 20    557          lda WNDLFT
CE08          558 ;
CE08 2C 1F C0 559          bit RDVID80
CE0B 10 01    560          bpl >1
CE0D          561 ;
CE0D 4A       562          lsr
CE0E          563 ;
CE0E 18       564 ^1      clc
CE0F          565 ;
CE0F 65 28    566          adc BASL
CE11 85 28    567          sta BASL
CE13          568 ;
CE13 60       569          rts
CE14          570 ;
CE14          571 ;
CE14 A4 24    572 XRDKEYX   ldy CH
CE16          573 ;
CE16 B1 28    574          lda (BASL),Y
CE18          575 ;
CE18 2C 1F C0 576          bit RDVID80
CE1B 10 09    577          bpl INVERT
CE1D          578 ;
CE1D 60       579          rts
CE1E          580 ;
CE1E          581 ;
CE1E          582          dfs $CE1F-*,ZERO
CE1F          583 ;
CE1F          584 ;
CE1F          585 ; Must be at 0xCE1F.
CE1F          586 ;
CE1F AD FB 04 587 PASINV   lda XMODE
CE22 29 10    588          and #M.CURSOR
CE24 D0 11    589          bne >1
CE26          590 ;
CE26          591 ;
CE26 48       592 INVERT   pha
CE27          593 ;
CE27 98       594          tya
CE28 48       595          pha
CE29          596 ;
CE29 AC 7B 05 597          ldy OURCH
CE2C          598 ;
CE2C 20 44 CE 599          jsr PICK
CE2F          600 ;
CE2F 49 80    601          eor #MSBSET           ; flip INVERSE/NORMAL
CE31          602 ;
CE31 20 70 CE 603          jsr STORIT
CE34          604 ;
CE34 68       605          pla
CE35 A8       606          tay
CE36          607 ;
CE36 68       608          pla
CE37          609 ;

```



```

CE37 60          610  ^1      rts
CE38            611  ;
CE38            612  ;
CE38            613  ; Store a character onto the screen.
CE38            614  ;
CE38 48          615  STORCHAR pha
CE39            616  ;
CE39 24 32       617          bit INVFLG
CE3B 30 02       618          bmi >1
CE3D            619  ;
CE3D 29 7F       620          and #MSBCLR          ; clear MSB
CE3F            621  ;
CE3F 20 70 CE    622  ^1      jsr STORIT
CE42            623  ;
CE42 68          624          pla
CE43            625  ;
CE43 60          626  CXRTS6   rts          ; used to set V-flag
CE44            627  ;
CE44            628  ;
CE44            629  ; Get a character from the screen.
CE44            630  ;
CE44 B1 28       631  PICK     lda (BASL),Y
CE46            632  ;
CE46 2C 1F C0    633          bit RDVID80
CE49 10 19       634          bpl >2
CE4B            635  ;
CE4B 8D 01 C0    636          sta STR80ON
CE4E            637  ;
CE4E 84 2A       638          sty BAS2L
CE50            639  ;
CE50 98          640          tya
CE51            641  ;
CE51 45 20       642          eor WNDLFT          ; get starting page
CE53            643  ;
CE53 6A          644          ror
CE54 B0 04       645          bcs >1
CE56            646  ;
CE56 AD 55 C0    647          lda PAGE2ON
CE59            648  ;
CE59 C8          649          iny
CE5A            650  ;
CE5A 98          651  ^1      tya
CE5B 4A          652          lsr
CE5C A8          653          tay
CE5D            654  ;
CE5D B1 28       655          lda (BASL),Y
CE5F            656  ;
CE5F 2C 54 C0    657          bit PAGE1ON
CE62            658  ;
CE62 A4 2A       659          ldy BAS2L
CE64            660  ;
CE64            661  ;
CE64            662  ; Only allow mouse text if alternate character set enabled.
CE64            663  ;
CE64 2C 1E C0    664  ^2      bit RDALTCH
CE67 10 06       665          bpl >3
CE69            666  ;
CE69 C9 20       667          cmp #$20
CE6B B0 02       668          bcs >3
CE6D            669  ;
CE6D 09 40       670          ora #$40

```

```

CE6F      671 ;
CE6F 60    672 ^3      rts
CE70      673 ;
CE70      674 ;
CE70      675 ; Store character.
CE70      676 ;
CE70 48    677 STORIT   pha
CE71      678 ;
CE71 29 FF 679          and #NEGONE
CE73 30 16 680          bmi >1
CE75      681 ;
CE75 AD FB 04 682          lda XMODE
CE78 6A     683          ror
CE79      684 ;
CE79 68     685          pla
CE7A 48     686          pha
CE7B      687 ;
CE7B 90 0E   688          bcc >1
CE7D      689 ;
CE7D      690 ;
CE7D      691 ; Only process mouse text if alternate character set is
CE7D      692 ; enabled.
CE7D      693 ;
CE7D 2C 1E C0 694          bit RDALTCH
CE80 10 09   695          bpl >1
CE82      696 ;
CE82 49 40   697          eor #$40
CE84      698 ;
CE84 2C AC CE 699          bit CXRTS7          ; A & CXRTS7 -> Z flag
CE87 F0 02   700          beq >1
CE89      701 ;
CE89 49 40   702          eor #$40
CE8B      703 ;
CE8B 2C 1F C0 704 ^1      bit RDVID80
CE8E 10 1D   705          bpl >3
CE90      706 ;
CE90 8D 01 C0 707          sta STR80ON
CE93 48     708          pha
CE94      709 ;
CE94 84 2A   710          sty BAS2L          ; temp storage
CE96      711 ;
CE96 98     712          tya
CE97      713 ;
CE97 45 20   714          eor WNDLFT          ; get starting page
CE99      715 ;
CE99 4A     716          lsr
CE9A B0 04   717          bcs >2
CE9C      718 ;
CE9C AD 55 C0 719          lda PAGE2ON
CE9F      720 ;
CE9F C8     721          iny
CEA0      722 ;
CEA0 98     723 ^2      tya
CEA1 4A     724          lsr
CEA2 A8     725          tay
CEA3      726 ;
CEA3 68     727          pla
CEA4 91 28   728          sta (BASL),Y
CEA6      729 ;
CEA6 AD 54 C0 730          lda PAGE1ON
CEA9      731 ;

```

```

CEA9 A4 2A      732      ldy BAS2L
CEAB           733      ;
CEAB 68         734      pla
CEAC           735      ;
CEAC 60         736      CXRTS7 rts
CEAD           737      ;
CEAD           738      ;
CEAD           739      ; Quick 40 column store.
CEAD           740      ;
CEAD 91 28      741      ^3      sta (BASL),Y
CEAF           742      ;
CEAF 68         743      pla
CEB0           744      ;
CEB0 60         745      rts
CEB1           746      ;
CEB1           747      ;
CEB1           748      ; Turn on Escape cursor.
CEB1           749      ;
CEB1 48         750      ESCON   pha
CEB2           751      ;
CEB2 98         752      tya
CEB3 48         753      pha
CEB4           754      ;
CEB4 AC 7B 05   755      ldy OURCH
CEB7           756      ;
CEB7 20 44 CE   757      jsr PICK
CEBA           758      ;
CEBA 8D 7B 06   759      sta CHAR
CEBD           760      ;
CEBD 29 80      761      and #MSBSET      ; save NORMAL/INVERSE bit
CEBF 49 AB      762      eor #"+"      ; make it inverse
CEC1           763      ;
CEC1 4C CD CE   764      jmp ESCRET
CEC4           765      ;
CEC4           766      ;
CEC4           767      ; Turn off Escape cursor.
CEC4           768      ;
CEC4 48         769      ESCOFF  pha
CEC5           770      ;
CEC5 98         771      tya
CEC6 48         772      pha
CEC7           773      ;
CEC7 AC 7B 05   774      ldy OURCH
CECA           775      ;
CECA AD 7B 06   776      lda CHAR
CECD           777      ;
CECD           778      ;
CECD           779      ; Return for ESCON and ESCOFF.
CECD           780      ;
CECD 20 70 CE   781      ESCRET  jsr STORIT
CED0           782      ;
CED0 68         783      pla
CED1 A8         784      tay
CED2           785      ;
CED2 68         786      pla
CED3           787      ;
CED3 60         788      rts
CED4           789      ;
CED4           790      ;
CED4           791      ; Set up page zero for Pascal.
CED4           792      ;

```

```

CED4 20 71 CD      793 PSETUP      jsr FULL80
CED7              794 ;
CED7 A9 FF        795             lda #NEGONE
CED9 85 32        796             sta INVFLG
CEDB              797 ;
CEDB AD FB 04     798             lda XMODE
CEDE 29 04        799             and #M.VMODE
CEE0 F0 02        800             beq >1
CEE2              801 ;
CEE2 46 32        802             lsr INVFLG                ; make it INVERSE
CEE4              803 ;
CEE4 AD 7B 07     804 ^1          lda OLDBASL
CEE7 85 28        805             sta BASL
CEE9              806 ;
CEE9 AD FB 07     807             lda OLDBASH
CEEC 85 29        808             sta BASH
EEEE              809 ;
EEEE AD FB 05     810             lda OURCV
CEF1 85 25        811             sta CV
CEF3              812 ;
CEF3 60           813             rts
CEF4              814 ;
CEF4              815 ;
CEF4              816 ; COPYROM is called when the video firmware is initialized.
CEF4              817 ; Only if the 0xF8 ROM's signature byte does not match,
CEF4              818 ; the language card is enabled for reading. It copies the
CEF4              819 ; 0xF8 ROM to the language card and restores the state of
CEF4              820 ; the language card.
CEF4              821 ;
CEF4 2C 12 C0     822 COPYROM    bit RDLGRAM
CEF7 10 3F        823             bpl >4
CEF9              824 ;
CEF9 A9 06        825             lda #GOODF8
CEFB CD B3 FB     826             cmp ROMSIG
CEFE F0 38        827             beq >4
CF00              828 ;
CF00 A2 03        829             ldx #RAM2WE&$F                ; bank 2 RAM W/E
CF02              830 ;
CF02 2C 11 C0     831             bit RDBANK2
CF05 30 02        832             bmi >1
CF07              833 ;
CF07 A2 0B        834             ldx #RAM1WE&$F                ; bank 1 RAM W/E
CF09              835 ;
CF09 8D B3 FB     836 ^1          sta ROMSIG
CF0C              837 ;
CF0C 2C 80 C0     838             bit RAM2WP                ; now read RAM
CF0F              839 ;
CF0F AD B3 FB     840             lda ROMSIG
CF12 C9 06        841             cmp #GOODF8
CF14 F0 03        842             beq >2
CF16              843 ;
CF16              844 ;
CF16              845 ; This makes X-reg = 0x04 or 0x0C. Better to decrement
CF16              846 ; X-reg 3 times.
CF16              847 ;
CF16              848 ;             inx                ; make it write protect
CF16              849 ;
CF16 CA           850             dex
CF17 CA           851             dex
CF18 CA           852             dex
CF19              853 ;

```

```

CF19 2C 81 C0      854 ^2      bit ROM2WE      ; enable ROM
CF1C 2C 81 C0      855      bit ROM2WE      ; write enable RAM
CF1F              856      ;
CF1F A0 00         857      ldy #F8SPACE
CF21              858      ;
CF21 A9 F8         859      lda /F8SPACE
CF23 85 37         860      sta CSWH
CF25              861      ;
CF25 84 36         862      sty CSWL
CF27              863      ;
CF27 B1 36         864 ^3      lda (CSWL),Y
CF29 91 36         865      sta (CSWL),Y
CF2B              866      ;
CF2B C8           867      iny
CF2C D0 F9         868      bne <3
CF2E              869      ;
CF2E E6 37         870      inc CSWH
CF30 D0 F5         871      bne <3
CF32              872      ;
CF32 BD 80 C0      873      lda RAM2WP,X      ; write protect RAM
CF35 BD 80 C0      874      lda RAM2WP,X      ; unnecessary
CF38              875      ;
CF38 60           876 ^4      rts
CF39              877      ;
CF39              878      ;
CF39              879      ;      dfs 3,ZERO
CF39              880      ;      dfs 1,ZERO
CF3A              881      ;
CF3A              882      ;
CF3A              883      ; Mini-Assembler support routines.
CF3A              884      ; Calculate offset byte for relative addresses.
CF3A              885      ;
CF3A E9 81         886 REL      sbc #$81
CF3C              887      ;
CF3C 4A           888      lsr
CF3D D0 14         889      bne ERR3
CF3F              890      ;
CF3F A4 3F         891      ldy A2H
CF41              892      ;
CF41 A6 3E         893      ldx A2L
CF43 D0 01         894      bne REL2
CF45              895      ;
CF45 88           896      dey
CF46              897      ;
CF46 CA           898 REL2     dex
CF47 8A           899      txa
CF48              900      ;
CF48 18           901      clc
CF49              902      ;
CF49 E5 3A         903      sbc PCL
CF4B 85 3E         904      sta A2L
CF4D 10 01         905      bpl REL3
CF4F              906      ;
CF4F C8           907      iny
CF50              908      ;
CF50 98           909 REL3     tya
CF51              910      ;
CF51 E5 3B         911      sbc PCH
CF53              912      ;
CF53 D0 40         913 ERR3     bne ERR
CF55              914      ;

```

```

CF55          915 ;
CF55          916 ; Move instruction to memory.
CF55          917 ;
CF55 A4 2F    918 FINDOP   ldy LENGTH
CF57          919 ;
CF57 B9 3D 00 920 FINDOP2  lda A1H,Y
CF5A 91 3A    921          sta (PCL),Y
CF5C          922 ;
CF5C 88       923          dey
CF5D 10 F8    924          bpl FINDOP2
CF5F          925 ;
CF5F          926 ;
CF5F          927 ; Display instruction.
CF5F          928 ;
CF5F 20 48 F9 929          jsr PRBLNK
CF62          930 ;
CF62 20 1A FC 931          jsr UP
CF65 20 1A FC 932          jsr UP
CF68          933 ;
CF68 4C E3 FC 934          jmp FINDOP3
CF6B          935 ;
CF6B          936 ;
CF6B          937 ; Compare disassembly of all known opcodes with the one
CF6B          938 ; typed in until a match is found.
CF6B          939 ;
CF6B A5 3D    940 TRYNEXT  lda A1H
CF6D          941 ;
CF6D 20 8E F8 942          jsr INSDS2
CF70          943 ;
CF70 AA       944          tax
CF71          945 ;
CF71 BD EB F9 946          lda MNEMR,X
CF74 C5 42    947          cmp A4L
CF76 D0 13    948          bne NEXTOP
CF78          949 ;
CF78 BD A6 F9 950          lda MNEML,X
CF7B C5 43    951          cmp A4H
CF7D D0 0C    952          bne NEXTOP
CF7F          953 ;
CF7F A5 44    954          lda OPRND
CF81          955 ;
CF81 A4 2E    956          ldy FORMAT
CF83 C0 9D    957          cpy #$9D
CF85 F0 B3    958          beq REL
CF87          959 ;
CF87 C5 2E    960          cmp FORMAT
CF89 F0 CA    961          beq FINDOP
CF8B          962 ;
CF8B C6 3D    963 NEXTOP   dec A1H
CF8D D0 DC    964          bne TRYNEXT
CF8F          965 ;
CF8F E6 44    966          inc OPRND
CF91          967 ;
CF91 C6 35    968          dec YSAV1
CF93 F0 D6    969          beq TRYNEXT
CF95          970 ;
CF95          971 ;
CF95          972 ; Point to the error with a caret, beep, and fall into
CF95          973 ; the Mini-Assembler.
CF95          974 ;
CF95 A4 34    975 ERR      ldy YSAV

```

```

CF97          976 ;
CF97 98       977 ERR2      tya
CF98 AA       978          tax
CF99          979 ;
CF99 4C D2 FC 980          jmp ERR2A
CF9C          981 ;
CF9C          982 ;
CF9C          983 ; Read a line of input.  If prefaced with " ", decode
CF9C          984 ; mnemonic.  If "$" do monitor command.  Otherwise parse
CF9C          985 ; HEX address before decoding mnemonic.
CF9C          986 ;
CF9C 20 C7 FF 987 NXTLINE2 jsr ZMODE
CF9F          988 ;
CF9F AD 00 02 989          lda INPUT
CFA2 C9 A0    990          cmp #SPACE
CFA4 F0 12    991          beq GOTSPACE
CFA6          992 ;
CFA6 C9 8D    993          cmp #RETURN
CFA8 D0 01    994          bne NXTLIN1
CFAA          995 ;
CFAA 60       996          rts
CFAB          997 ;
CFAB 20 A7 FF 998 NXTLIN1  jsr GETNUM
CFAE          999 ;
CFAE C9 93    1000         cmp #$89+$B0^": "
CFB0          1001 ;
CFB0 D0 E5    1002 ERR4      bne ERR2
CFB2          1003 ;
CFB2 8A       1004          txa
CFB3 F0 E2    1005          beq ERR2
CFB5          1006 ;
CFB5 20 78 FE 1007          jsr A1PCLP
CFB8          1008 ;
CFB8 A9 03    1009 GOTSPACE lda #3                ; starting opcode
CFBA 85 3D    1010          sta A1H
CFBC          1011 ;
CFBC 20 00 C5 1012 NXTMN     jsr GETNSP
CFBF          1013 ;
CFBF 0A       1014          asl
CFC0          1015 ;
CFC0 E9 BE    1016          sbc #$BE
CFC2          1017 ;
CFC2 C9 C2    1018          cmp #$C2
CFC4 90 D1    1019          bcc ERR2
CFC6          1020 ;
CFC6          1021 ;
CFC6          1022 ; Form mnemonic for later comparison.
CFC6          1023 ;
CFC6 0A       1024          asl
CFC7 0A       1025          asl
CFC8          1026 ;
CFC8 A2 04    1027          ldx #4
CFCA          1028 ;
CFCA 0A       1029 NXTM2     asl
CFCB          1030 ;
CFCB 26 42    1031          rol A4L
CFCD 26 43    1032          rol A4H
CFCF          1033 ;
CFCF CA       1034          dex
CFD0 10 F8    1035          bpl NXTM2
CFD2          1036 ;

```

```

CFD2 C6 3D      1037      dec A1H
CFD4 F0 F4      1038      beq NXTM2
CFD6            1039      ;
CFD6 10 E4      1040      bpl NXTMN
CFD8            1041      ;
CFD8 A2 05      1042      ldx #5
CFDA 20 C8 C4   1043      jsr FORM2
CFDD            1044      ;
CFDD A5 44      1045      lda OPRND
CFDF            1046      ;
CFDF 0A         1047      asl
CFE0 0A         1048      asl
CFE1            1049      ;
CFE1 05 35      1050      ora YSAV1
CFE3            1051      ;
CFE3 C9 20      1052      cmp #$20
CFE5 B0 06      1053      bcs FORM8
CFE7            1054      ;
CFE7 A6 35      1055      ldx YSAV1
CFE9 F0 02      1056      beq FORM8
CFEB            1057      ;
CFEB 09 80      1058      ora #MSBSET
CFED            1059      ;
CFED 85 44      1060      FORM8 sta OPRND
CFEF 84 34      1061      sty YSAV
CFF1            1062      ;
CFF1 B9 00 02   1063      lda INPUT,Y
CFF4 C9 BB      1064      cmp #";"
CFF6 F0 04      1065      beq FORM9
CFF8            1066      ;
CFF8 C9 8D      1067      cmp #RETURN
CFFA D0 B4      1068      bne ERR4
CFFC            1069      ;
CFFC 4C 6B CF   1070      FORM9 jmp TRYNEXT
CFFF            1071      ;
CFFF            1072      ;
CFFF            1073      CLRROM dfs 1,ZERO
D000            1074      ;
D000            1075      ;

```

BSAVE C0ROM,D1,A\$1000,B,L\$1000

```

D000            1076      usr C0ROM,D1
D000            1077      ;
D000            1078      ;
D000            1079      icl "D0.L,D2"

```

LLOAD D0.L,D2,A\$4000


```

D000      1          ttl "ROM Source Code, D0.L"
D000      2      ;
D000      3      ;
D000      4      ; D0.L
D000      5      ;
D000      6      ;
D000      7          obj PAGE10
D000      8          usr
D000      9      ;
D000     10      ;
D000     11      ; BASIC statement entry addresses.
D000     12      ;
D000 6F D8     13  HD000      adr HD870-1          ; END
D002 65 D7     14          adr HD766-1          ; FOR
D004 F8 DC     15          adr HDCF9-1          ; NEXT
D006 94 D9     16          adr HD995-1          ; DATA
D008 B1 DB     17          adr HDBB2-1          ; INPUT
D00A 30 F3     18          adr HF331-1          ; DEL
D00C D8 DF     19          adr HDFD9-1          ; DIM
D00E E1 DB     20          adr HDBE2-1          ; READ
D010 8F F3     21          adr HF390-1          ; GR
D012 98 F3     22          adr HF399-1          ; TEXT
D014 E4 F1     23          adr HF1E5-1          ; PR#
D016 DD F1     24          adr HF1DE-1          ; IN#
D018 D4 F1     25          adr HF1D5-1          ; CALL
D01A 24 F2     26          adr HF225-1          ; PLOT
D01C 31 F2     27          adr HF232-1          ; HLIN
D01E 40 F2     28          adr HF241-1          ; VLIN
D020 D7 F3     29          adr HF3D8-1          ; HGR2
D022 E1 F3     30          adr HF3E2-1          ; HGR
D024 E8 F6     31          adr HF6E9-1          ; HCOLOR=
D026 FD F6     32          adr HF6FE-1          ; HPLOT
D028 68 F7     33          adr HF769-1          ; DRAW
D02A 6E F7     34          adr HF76F-1          ; XDRAW
D02C E6 F7     35          adr HF7E7-1          ; HTAB
D02E 57 FC     36          adr HOME-1           ; HOME
D030 20 F7     37          adr HF721-1          ; ROT=
D032 26 F7     38          adr HF727-1          ; SCALE=
D034         39      ;          adr HF775-1          ; SHLOAD
D034 57 FF     40          adr IORTS-1          ; remove SHLOAD
D036 6C F2     41          adr HF26D-1          ; TRACE
D038 6E F2     42          adr HF26F-1          ; NOTRACE
D03A 72 F2     43          adr HF273-1          ; NORMAL
D03C 76 F2     44          adr HF277-1          ; INVERSE
D03E 7F F2     45          adr HF280-1          ; FLASH
D040 4E F2     46          adr HF24F-1          ; COLOR=
D042 6A D9     47          adr HD96B-1          ; POP
D044 55 F2     48          adr HF256-1          ; VTAB
D046 85 F2     49          adr HF286-1          ; HIMEM:
D048 A5 F2     50          adr HF2A6-1          ; LOMEM:
D04A CA F2     51          adr HF2CB-1          ; ONERR
D04C 17 F3     52          adr HF318-1          ; RESUME
D04E         53      ;          adr HF3BC-1          ; RECALL
D04E 57 FF     54          adr IORTS-1          ; remove RECALL
D050         55      ;          adr HF39F-1          ; STORE
D050 57 FF     56          adr IORTS-1          ; remove STORE
D052 61 F2     57          adr HF262-1          ; SPEED=
D054 45 DA     58          adr HDA46-1          ; LET
D056 3D D9     59          adr HD93E-1          ; GOTO
D058 11 D9     60          adr HD912-1          ; RUN

```

```

D05A C8 D9      61      adr HD9C9-1      ; IF
D05C 48 D8      62      adr HD849-1      ; RESTORE
D05E F4 03      63      adr AMPERRTN-1    ; &
D060 20 D9      64      adr HD921-1      ; GOSUB
D062 6A D9      65      adr HD96B-1      ; RETURN
D064 DB D9      66      adr HD9DC-1      ; REM
D066 6D D8      67      adr HD86E-1      ; STOP
D068 EB D9      68      adr HD9EC-1      ; ON
D06A 83 E7      69      adr HE784-1      ; WAIT
D06C C8 D8      70      adr HD8C9-1      ; LOAD
D06E             71      ; adr HD8B0-1      ; SAVE
D06E 57 FF      72      adr IORTS-1      ; remove SAVE
D070 12 E3      73      adr HE313-1      ; DEF
D072 7A E7      74      adr HE77B-1      ; POKE
D074 D4 DA      75      adr HDAD5-1      ; PRINT
D076 95 D8      76      adr HD896-1      ; CONT
D078 A4 D6      77      adr HD6A5-1      ; LIST
D07A 69 D6      78      adr HD66A-1      ; CLEAR
D07C 9F DB      79      adr HDBA0-1      ; GET
D07E 48 D6      80      adr HD649-1      ; NEW
D080             81      ;
D080             82      ;
D080             83      ; Function statement entry addresses.
D080             84      ;
D080 90 EB      85      adr HEB90          ; SGN
D082 23 EC      86      adr HEC23          ; INT
D084 AF EB      87      adr HEBAF          ; ABS
D086 0A 00      88      adr ZPG0A          ; USR
D088 DE E2      89      adr HE2DE          ; FRE
D08A 12 D4      90      adr HD412          ; SCR(N)
D08C CD DF      91      adr HDFCD          ; PDL
D08E FF E2      92      adr HE2FF          ; POS
D090 8D EE      93      adr HEE8D          ; SQR
D092 AE EF      94      adr HEFAE          ; RND
D094 41 E9      95      adr HE941          ; LOG
D096 09 EF      96      adr HEF09          ; EXP
D098 EA EF      97      adr HEFEA          ; COS
D09A F1 EF      98      adr HEFF1          ; SIN
D09C 3A F0      99      adr HF03A          ; TAN
D09E 9E F0      100     adr HF09E          ; ATN
D0A0 64 E7      101     adr HE764          ; PEEK
D0A2 D6 E6      102     adr HE6D6          ; LEN
D0A4 C5 E3      103     adr HE3C5          ; STR$
D0A6 07 E7      104     adr HE707          ; VAL
D0A8 E5 E6      105     adr HE6E5          ; ASC
D0AA 46 E6      106     adr HE646          ; CHR$
D0AC 5A E6      107     adr HE65A          ; LEFT$
D0AE 86 E6      108     adr HE686          ; RIGHT$
D0B0 91 E6      109     adr HE691          ; MID$
D0B2             110     ;
D0B2             111     ;
D0B2             112     ; Operator tags and entry addresses.
D0B2             113     ;
D0B2 79         114     HD0B2 hex 79          ; +
D0B3 C0 E7      115     adr HE7C1-1        ;
D0B5 79         116     hex 79          ; -
D0B6 A9 E7      117     adr HE7AA-1        ;
D0B8 7B         118     hex 7B          ; *
D0B9 81 E9      119     adr HE982-1        ;
D0BB 7B         120     hex 7B          ; /
D0BC 68 EA      121     adr HEA69-1

```

D0BE	7D	122	hex 7D	; ^
D0BF	96 EE	123	adr HEE97-1	
D0C1	50	124	hex 50	; AND
D0C2	54 DF	125	adr HDF55-1	
D0C4	46	126	hex 46	; OR
D0C5	4E DF	127	adr HDF4F-1	
D0C7	7F	128	hex 7F	; >
D0C8	CF EE	129	adr HEED0-1	
D0CA	7F	130	hex 7F	; =
D0CB	97 DE	131	adr HDE98-1	
D0CD	64	132	hex 64	; <
D0CE	64 DF	133	adr HDF65-1	
D0D0		134		;
D0D0		135		;
D0D0		136		; BASIC statements.
D0D0		137		;
D0D0	45 4E C4	138	dci 'END'	
D0D3	46 4F D2	139	dci 'FOR'	
D0D6	4E 45 58	140	dci 'NEXT'	
D0D9	D4			
D0DA	44 41 54	141	dci 'DATA'	
D0DD	C1			
D0DE	49 4E 50	142	dci 'INPUT'	
D0E1	55 D4			
D0E3	44 45 CC	143	dci 'DEL'	
D0E6	44 49 CD	144	dci 'DIM'	
D0E9	52 45 41	145	dci 'READ'	
D0EC	C4			
D0ED	47 D2	146	dci 'GR'	
D0EF	54 45 58	147	dci 'TEXT'	
D0F2	D4			
D0F3	50 52 A3	148	dci 'PR#'	
D0F6	49 4E A3	149	dci 'IN#'	
D0F9	43 41 4C	150	dci 'CALL'	
D0FC	CC			
D0FD	50 4C 4F	151	dci 'PLOT'	
D100	D4			
D101	48 4C 49	152	dci 'HLIN'	
D104	CE			
D105	56 4C 49	153	dci 'VLIN'	
D108	CE			
D109	48 47 52	154	dci 'HGR2'	
D10C	B2			
D10D	48 47 D2	155	dci 'HGR'	
D110	48 43 4F	156	dci 'HCOLOR='	
D113	4C 4F 52			
D116	BD			
D117	48 50 4C	157	dci 'HPLOT'	
D11A	4F D4			
D11C	44 52 41	158	dci 'DRAW'	
D11F	D7			
D120	58 44 52	159	dci 'XDRAW'	
D123	41 D7			
D125	48 54 41	160	dci 'HTAB'	
D128	C2			
D129	48 4F 4D	161	dci 'HOME'	
D12C	C5			
D12D	52 4F 54	162	dci 'ROT='	
D130	BD			
D131	53 43 41	163	dci 'SCALE='	
D134	4C 45 BD			

D137	53	48	4C	164	dci	´SHLOAD´
D13A	4F	41	C4			
D13D	54	52	41	165	dci	´TRACE´
D140	43	C5				
D142	4E	4F	54	166	dci	´NOTRACE´
D145	52	41	43			
D148	C5					
D149	4E	4F	52	167	dci	´NORMAL´
D14C	4D	41	CC			
D14F	49	4E	56	168	dci	´INVERSE´
D152	45	52	53			
D155	C5					
D156	46	4C	41	169	dci	´FLASH´
D159	53	C8				
D15B	43	4F	4C	170	dci	´COLOR=´
D15E	4F	52	BD			
D161	50	4F	D0	171	dci	´POP´
D164	56	54	41	172	dci	´VTAB´
D167	C2					
D168	48	49	4D	173	dci	´HIMEM:´
D16B	45	4D	BA			
D16E	4C	4F	4D	174	dci	´LOMEM:´
D171	45	4D	BA			
D174	4F	4E	45	175	dci	´ONERR´
D177	52	D2				
D179	52	45	53	176	dci	´RESUME´
D17C	55	4D	C5			
D17F	52	45	43	177	dci	´RECALL´
D182	41	4C	CC			
D185	53	54	4F	178	dci	´STORE´
D188	52	C5				
D18A	53	50	45	179	dci	´SPEED=´
D18D	45	44	BD			
D190	4C	45	D4	180	dci	´LET´
D193	47	4F	54	181	dci	´GOTO´
D196	CF					
D197	52	55	CE	182	dci	´RUN´
D19A	49	C6		183	dci	´IF´
D19C	52	45	53	184	dci	´RESTORE´
D19F	54	4F	52			
D1A2	C5					
D1A3	A6			185	asc	"&"
D1A4	47	4F	53	186	dci	´GOSUB´
D1A7	55	C2				
D1A9	52	45	54	187	dci	´RETURN´
D1AC	55	52	CE			
D1AF	52	45	CD	188	dci	´REM´
D1B2	53	54	4F	189	dci	´STOP´
D1B5	D0					
D1B6	4F	CE		190	dci	´ON´
D1B8	57	41	49	191	dci	´WAIT´
D1BB	D4					
D1BC	4C	4F	41	192	dci	´LOAD´
D1BF	C4					
D1C0	53	41	56	193	dci	´SAVE´
D1C3	C5					
D1C4	44	45	C6	194	dci	´DEF´
D1C7	50	4F	4B	195	dci	´POKE´
D1CA	C5					
D1CB	50	52	49	196	dci	´PRINT´
D1CE	4E	D4				

```

D1D0 43 4F 4E 197      dci 'CONT'
D1D3 D4
D1D4 4C 49 53 198      dci 'LIST'
D1D7 D4
D1D8 43 4C 45 199      dci 'CLEAR'
D1DB 41 D2
D1DD 47 45 D4 200      dci 'GET'
D1E0 4E 45 D7 201      dci 'NEW'
D1E3      202 ;
D1E3 54 41 42 203      dci 'TAB('
D1E6 A8
D1E7 54 CF 204      dci 'TO'
D1E9 46 CE 205      dci 'FN'
D1EB 53 50 43 206      dci 'SPC('
D1EE A8
D1EF 54 48 45 207      dci 'THEN'
D1F2 CE
D1F3 41 D4 208      dci 'AT'
D1F5 4E 4F D4 209      dci 'NOT'
D1F8 53 54 45 210      dci 'STEP'
D1FB D0
D1FC AB AD AA 211      asc "+-*/^"
D1FF AF DE
D201 41 4E C4 212      dci 'AND'
D204 4F D2 213      dci 'OR'
D206 BE BD BC 214      asc ">=<"
D209      215 ;
D209 53 47 CE 216      dci 'SGN'
D20C 49 4E D4 217      dci 'INT'
D20F 41 42 D3 218      dci 'ABS'
D212 55 53 D2 219      dci 'USR'
D215 46 52 C5 220      dci 'FRE'
D218 53 43 52 221      dci 'SCRN('
D21B 4E A8
D21D 50 44 CC 222      dci 'PDL'
D220 50 4F D3 223      dci 'POS'
D223 53 51 D2 224      dci 'SQR'
D226 52 4E C4 225      dci 'RND'
D229 4C 4F C7 226      dci 'LOG'
D22C 45 58 D0 227      dci 'EXP'
D22F 43 4F D3 228      dci 'COS'
D232 53 49 CE 229      dci 'SIN'
D235 54 41 CE 230      dci 'TAN'
D238 41 54 CE 231      dci 'ATN'
D23B 50 45 45 232      dci 'PEEK'
D23E CB
D23F 4C 45 CE 233      dci 'LEN'
D242 53 54 52 234      dci 'STR$'
D245 A4
D246 56 41 CC 235      dci 'VAL'
D249 41 53 C3 236      dci 'ASC'
D24C 43 48 52 237      dci 'CHR$'
D24F A4
D250 4C 45 46 238      dci 'LEFT$'
D253 54 A4
D255 52 49 47 239      dci 'RIGHT$'
D258 48 54 A4
D25B 4D 49 44 240      dci 'MID$'
D25E A4
D25F      241 ;
D25F 00 242      hex 00

```

D260		243	;	
D260		244	;	
D260	4E 45 58	245	HD260	dci 'NEXT WITHOUT FOR'
D263	54 20 57			
D266	49 54 48			
D269	4F 55 54			
D26C	20 46 4F			
D26F	D2			
D270	53 59 4E	246		dci 'SYNTAX'
D273	54 41 D8			
D276	52 45 54	247		dci 'RETURN WITHOUT GOSUB'
D279	55 52 4E			
D27C	20 57 49			
D27F	54 48 4F			
D282	55 54 20			
D285	47 4F 53			
D288	55 C2			
D28A	4F 55 54	248		dci 'OUT OF DATA'
D28D	20 4F 46			
D290	20 44 41			
D293	54 C1			
D295	49 4C 4C	249		dci 'ILLEGAL QUANTITY'
D298	45 47 41			
D29B	4C 20 51			
D29E	55 41 4E			
D2A1	54 49 54			
D2A4	D9			
D2A5	4F 56 45	250		dci 'OVERFLOW'
D2A8	52 46 4C			
D2AB	4F D7			
D2AD	4F 55 54	251		dci 'OUT OF MEMORY'
D2B0	20 4F 46			
D2B3	20 4D 45			
D2B6	4D 4F 52			
D2B9	D9			
D2BA	55 4E 44	252		dci 'UNDEF'D STATEMENT'
D2BD	45 46 27			
D2C0	44 20 53			
D2C3	54 41 54			
D2C6	45 4D 45			
D2C9	4E D4			
D2CB	42 41 44	253		dci 'BAD SUBSCRIPT'
D2CE	20 53 55			
D2D1	42 53 43			
D2D4	52 49 50			
D2D7	D4			
D2D8	52 45 44	254		dci 'REDIM'D ARRAY'
D2DB	49 4D 27			
D2DE	44 20 41			
D2E1	52 52 41			
D2E4	D9			
D2E5	44 49 56	255		dci 'DIVISION BY ZERO'
D2E8	49 53 49			
D2EB	4F 4E 20			
D2EE	42 59 20			
D2F1	5A 45 52			
D2F4	CF			
D2F5	49 4C 4C	256		dci 'ILLEGAL DIRECT'
D2F8	45 47 41			
D2FB	4C 20 44			
D2FE	49 52 45			

```

D301 43 D4
D303 54 59 50    257      dci `TYPE MISMATCH`
D306 45 20 4D
D309 49 53 4D
D30C 41 54 43
D30F C8
D310 53 54 52    258      dci `STRING TOO LONG`
D313 49 4E 47
D316 20 54 4F
D319 4F 20 4C
D31C 4F 4E C7
D31F 46 4F 52    259      dci `FORMULA TOO COMPLEX`
D322 4D 55 4C
D325 41 20 54
D328 4F 4F 20
D32B 43 4F 4D
D32E 50 4C 45
D331 D8
D332 43 41 4E    260      dci `CAN`'T CONTINUE`
D335 27 54 20
D338 43 4F 4E
D33B 54 49 4E
D33E 55 C5
D340 55 4E 44    261      dci `UNDEF`'D FUNCTION`
D343 45 46 27
D346 44 20 46
D349 55 4E 43
D34C 54 49 4F
D34F CE
D350                                262      ;
D350 20 45 52    263      HD350  asc ` ERROR`
D353 52 4F 52
D356 07 00      264      hex 0700
D358                                265      ;
D358 20 49 4E    266      HD358  asc ` IN `
D35B 20
D35C 00          267      hex 00
D35D                                268      ;
D35D 0D          269      HD35D  hex 0D
D35E 42 52 45    270      asc `BREAK`
D361 41 4B
D363 07 00      271      hex 0700
D365                                272      ;
D365 BA          273      HD365  tsx
D366                                274      ;
D366 E8          275      inx
D367 E8          276      inx
D368 E8          277      inx
D369 E8          278      inx
D36A                                279      ;
D36A BD 01 01    280      HD36A  lda STACK+$01,X
D36D C9 81      281      cmp #$81
D36F D0 21      282      bne HD392
D371                                283      ;
D371 A5 86      284      lda FORPNT+1
D373 D0 0A      285      bne HD37F
D375                                286      ;
D375 BD 02 01    287      lda STACK+$02,X
D378 85 85      288      sta FORPNT
D37A                                289      ;
D37A BD 03 01    290      lda STACK+$03,X

```

```

D37D 85 86      291      sta FORPNT+1
D37F           292      ;
D37F DD 03 01   293      HD37F    cmp STACK+$03,X
D382 D0 07      294      bne HD38B
D384           295      ;
D384 A5 85      296      lda FORPNT
D386 DD 02 01   297      cmp STACK+$02,X
D389 F0 07      298      beq HD392
D38B           299      ;
D38B 8A         300      HD38B    txa
D38C           301      ;
D38C 18         302      clc
D38D           303      ;
D38D 69 12      304      adc #$12
D38F AA         305      tax
D390 D0 D8      306      bne HD36A
D392           307      ;
D392 60         308      HD392    rts
D393           309      ;
D393           310      ;
D393           311      ; Block transfer utility.
D393           312      ;
D393 20 E3 D3   313      BLTU      jsr HD3E3
D396           314      ;
D396 85 6D      315      sta STREND
D398 84 6E      316      sty STREND+1
D39A           317      ;
D39A 38         318      HD39A    sec
D39B           319      ;
D39B A5 96      320      lda HIGHTR
D39D E5 9B      321      sbc LOWTR
D39F 85 5E      322      sta INDEX
D3A1 A8         323      tay
D3A2           324      ;
D3A2 A5 97      325      lda HIGHTR+1
D3A4 E5 9C      326      sbc LOWTR+1
D3A6 AA         327      tax
D3A7           328      ;
D3A7 E8         329      inx
D3A8           330      ;
D3A8 98         331      tya
D3A9 F0 23      332      beq HD3CE
D3AB           333      ;
D3AB A5 96      334      lda HIGHTR
D3AD           335      ;
D3AD 38         336      sec
D3AE           337      ;
D3AE E5 5E      338      sbc INDEX
D3B0 85 96      339      sta HIGHTR
D3B2 B0 03      340      bcs HD3B7
D3B4           341      ;
D3B4 C6 97      342      dec HIGHTR+1
D3B6           343      ;
D3B6 38         344      sec
D3B7           345      ;
D3B7 A5 94      346      HD3B7    lda HIGHDS
D3B9 E5 5E      347      sbc INDEX
D3BB 85 94      348      sta HIGHDS
D3BD B0 08      349      bcs HD3C7
D3BF           350      ;
D3BF C6 95      351      dec HIGHDS+1

```



```

D3C1 90 04      352      bcc HD3C7
D3C3            353      ;
D3C3 B1 96      354 HD3C3  lda (HIGHTR),Y
D3C5 91 94      355      sta (HIGHDS),Y
D3C7            356      ;
D3C7 88         357 HD3C7  dey
D3C8 D0 F9      358      bne HD3C3
D3CA            359      ;
D3CA B1 96      360      lda (HIGHTR),Y
D3CC 91 94      361      sta (HIGHDS),Y
D3CE            362      ;
D3CE C6 97      363 HD3CE  dec HIGHTR+1
D3D0 C6 95      364      dec HIGHDS+1
D3D2            365      ;
D3D2 CA         366      dex
D3D3 D0 F2      367      bne HD3C7
D3D5            368      ;
D3D5 60         369      rts
D3D6            370      ;
D3D6 0A         371 HD3D6  asl
D3D7            372      ;
D3D7 69 36      373      adc #$36
D3D9 B0 35      374      bcs HD410
D3DB            375      ;
D3DB 85 5E      376      sta INDEX
D3DD            377      ;
D3DD BA         378      tsx
D3DE            379      ;
D3DE E4 5E      380      cpx INDEX
D3E0 90 2E      381      bcc HD410
D3E2            382      ;
D3E2 60         383      rts
D3E3            384      ;
D3E3 C4 70      385 HD3E3  cpy FRETOP+1
D3E5            386      ;
D3E5 90 28      387      bcc HD40F
D3E7 D0 04      388      bne HD3ED
D3E9            389      ;
D3E9 C5 6F      390      cmp FRETOP
D3EB 90 22      391      bcc HD40F
D3ED            392      ;
D3ED 48         393 HD3ED  pha
D3EE            394      ;
D3EE A2 09      395      ldx #9
D3F0            396      ;
D3F0 98         397      tya
D3F1            398      ;
D3F1 48         399 HD3F1  pha
D3F2            400      ;
D3F2 B5 93      401      lda TEMP1,X
D3F4            402      ;
D3F4 CA         403      dex
D3F5 10 FA      404      bpl HD3F1
D3F7            405      ;
D3F7 20 84 E4    406      jsr HE484
D3FA            407      ;
D3FA A2 F7      408      ldx #$F7
D3FC            409      ;
D3FC 68         410 HD3FC  pla
D3FD 95 9D      411      sta DSCTMP,X
D3FF            412      ;

```

```
D3FF E8          413      inx
D400 30 FA       414      bmi HD3FC
D402             415      ;
D402             416      ;
D402             417      icl "D4.L"

LLOAD D4.L,A$4000
```

```

D402      1      ttl "ROM Source Code, D4.L"
D402      2      ;
D402      3      ;
D402      4      ; D4.L
D402      5      ;
D402      6      ;
D402 68      7      pla
D403 A8      8      tay
D404      9      ;
D404 68     10      pla
D405     11      ;
D405 C4 70   12      cpy FRETOP+1
D407     13      ;
D407 90 06   14      bcc HD40F
D409 D0 05   15      bne HD410
D40B     16      ;
D40B C5 6F   17      cmp FRETOP
D40D B0 01   18      bcs HD410
D40F     19      ;
D40F 60     20      HD40F rts
D410     21      ;
D410 A2 4D   22      HD410 ldx #$4D
D412     23      ;
D412 24 00   24      HD412 bit LOC0
D414     25      dfs !-1
D413     26      ;
D413 D8     27      HD413 cld
D414     28      ;
D414 10 03   29      bpl HD419
D416     30      ;
D416 4C E9 F2 31      jmp HF2E9
D419     32      ;
D419 20 FB DA 33      HD419 jsr HDAFB
D41C 20 5A DB 34      jsr HDB5A
D41F     35      ;
D41F BD 60 D2 36      HD41F lda HD260,X
D422 48     37      pha
D423     38      ;
D423 20 5C DB 39      jsr HDB5C
D426     40      ;
D426 E8     41      inx
D427     42      ;
D427 68     43      pla
D428 10 F5   44      bpl HD41F
D42A     45      ;
D42A 20 83 D6 46      jsr HD683
D42D     47      ;
D42D A9 50   48      lda #HD350
D42F A0 D3   49      ldy /HD350
D431     50      ;
D431 20 3A DB 51      HD431 jsr HDB3A
D434     52      ;
D434 A4 76   53      ldy CURLIN+1
D436     54      ;
D436 C8     55      iny
D437 F0 03   56      beq HD43C
D439     57      ;
D439 20 19 ED 58      jsr HED19
D43C     59      ;
D43C 20 FB DA 60      HD43C jsr HDAFB

```

```

D43F          61 ;
D43F A2 DD    62      ldx #"]"
D441          63 ;
D441 20 2E D5 64      jsr HD52E
D444          65 ;
D444 86 B8    66      stx TXTPTR
D446 84 B9    67      sty TXTPTR+1
D448          68 ;
D448 46 D8    69      lsr ERRFLG
D44A          70 ;
D44A 20 B1 00 71      jsr CHRGET
D44D          72 ;
D44D AA       73      tax
D44E F0 EC    74      beq HD43C
D450          75 ;
D450 A2 FF    76      ldx #NEGONE
D452 86 76    77      stx CURLIN+1
D454          78 ;
D454 90 06    79      bcc HD45C
D456          80 ;
D456 20 59 D5 81      jsr HD559
D459          82 ;
D459 4C 05 D8 83      jmp HD805
D45C          84 ;
D45C A6 AF    85      HD45C ldx PRGEND
D45E 86 69    86      stx VARTAB
D460          87 ;
D460 A6 B0    88      ldx PRGEND+1
D462 86 6A    89      stx VARTAB+1
D464          90 ;
D464 20 0C DA 91      jsr HDA0C
D467 20 59 D5 92      jsr HD559
D46A          93 ;
D46A 84 0F    94      sty ZPG0F
D46C          95 ;
D46C 20 1A D6 96      jsr HD61A
D46F 90 44    97      bcc HD4B5
D471          98 ;
D471 A0 01    99      ldy #1
D473         100 ;
D473 B1 9B   101      lda (LOWTR),Y
D475 85 5F   102      sta INDEX+1
D477         103 ;
D477 A5 69   104      lda VARTAB
D479 85 5E   105      sta INDEX
D47B         106 ;
D47B A5 9C   107      lda LOWTR+1
D47D 85 61   108      sta P2+1
D47F         109 ;
D47F A5 9B   110      lda LOWTR
D481         111 ;
D481 88      112      dey
D482         113 ;
D482 F1 9B   114      sbc (LOWTR),Y
D484         115 ;
D484 18      116      clc
D485         117 ;
D485 65 69   118      adc VARTAB
D487 85 69   119      sta VARTAB
D489 85 60   120      sta P2
D48B         121 ;

```

D48B	A5	6A	122		lda VARTAB+1
D48D	69	FF	123		adc #NEGONE
D48F	85	6A	124		sta VARTAB+1
D491			125	;	
D491	E5	9C	126		sbc LOWTR+1
D493	AA		127		tax
D494			128	;	
D494	38		129		sec
D495			130	;	
D495	A5	9B	131		lda LOWTR
D497	E5	69	132		sbc VARTAB
D499	A8		133		tay
D49A	B0	03	134		bcs HD49F
D49C			135	;	
D49C	E8		136		inx
D49D			137	;	
D49D	C6	61	138		dec P2+1
D49F			139	;	
D49F	18		140	HD49F	clc
D4A0			141	;	
D4A0	65	5E	142		adc INDEX
D4A2	90	03	143		bcc HD4A7
D4A4			144	;	
D4A4	C6	5F	145		dec INDEX+1
D4A6			146	;	
D4A6	18		147		clc
D4A7			148	;	
D4A7	B1	5E	149	HD4A7	lda (INDEX),Y
D4A9	91	60	150		sta (P2),Y
D4AB			151	;	
D4AB	C8		152		iny
D4AC	D0	F9	153		bne HD4A7
D4AE			154	;	
D4AE	E6	5F	155		inc INDEX+1
D4B0	E6	61	156		inc P2+1
D4B2			157	;	
D4B2	CA		158		dex
D4B3	D0	F2	159		bne HD4A7
D4B5			160	;	
D4B5	AD	00 02	161	HD4B5	lda INPUT
D4B8	F0	38	162		beq HD4F2
D4BA			163	;	
D4BA	A5	73	164		lda MEMSIZE
D4BC	A4	74	165		ldy MEMSIZE+1
D4BE			166	;	
D4BE	85	6F	167		sta FRETOP
D4C0	84	70	168		sty FRETOP+1
D4C2			169	;	
D4C2	A5	69	170		lda VARTAB
D4C4	85	96	171		sta HIGHTR
D4C6			172	;	
D4C6	65	0F	173		adc ZPG0F
D4C8	85	94	174		sta HIGHDS
D4CA			175	;	
D4CA	A4	6A	176		ldy VARTAB+1
D4CC	84	97	177		sty HIGHTR+1
D4CE			178	;	
D4CE	90	01	179		bcc HD4D1
D4D0			180	;	
D4D0	C8		181		iny
D4D1			182	;	

```

D4D1 84 95      183 HD4D1    sty HIGHDS+1
D4D3           184 ;
D4D3 20 93 D3   185        jsr BLTU
D4D6           186 ;
D4D6 A5 50      187        lda ACL
D4D8 A4 51      188        ldy ACH
D4DA           189 ;
D4DA 8D FE 01   190        sta STACK+$FE
D4DD 8C FF 01   191        sty STACK+$FF
D4E0           192 ;
D4E0 A5 6D      193        lda STREND
D4E2 A4 6E      194        ldy STREND+1
D4E4           195 ;
D4E4 85 69      196        sta VARTAB
D4E6 84 6A      197        sty VARTAB+1
D4E8           198 ;
D4E8 A4 0F      199        ldy ZPG0F
D4EA           200 ;
D4EA B9 FB 01   201 HD4EA    lda STACK+$FB,Y
D4ED           202 ;
D4ED 88         203        dey
D4EE           204 ;
D4EE 91 9B      205        sta (LOWTR),Y
D4F0           206 ;
D4F0 D0 F8      207        bne HD4EA
D4F2           208 ;
D4F2 20 65 D6   209 HD4F2    jsr HD665
D4F5           210 ;
D4F5 A5 67      211        lda PRGTAB
D4F7 A4 68      212        ldy PRGTAB+1
D4F9           213 ;
D4F9 85 5E      214        sta INDEX
D4FB 84 5F      215        sty INDEX+1
D4FD           216 ;
D4FD 18         217        clc
D4FE           218 ;
D4FE A0 01      219 HD4FE    ldy #1
D500           220 ;
D500 B1 5E      221        lda (INDEX),Y
D502 D0 0B      222        bne HD50F
D504           223 ;
D504 A5 69      224        lda VARTAB
D506 85 AF      225        sta PRGEND
D508           226 ;
D508 A5 6A      227        lda VARTAB+1
D50A 85 B0      228        sta PRGEND+1
D50C           229 ;
D50C 4C 3C D4   230        jmp HD43C
D50F           231 ;
D50F A0 04      232 HD50F    ldy #4
D511           233 ;
D511 C8         234 HD511    iny
D512           235 ;
D512 B1 5E      236        lda (INDEX),Y
D514 D0 FB      237        bne HD511
D516           238 ;
D516 C8         239        iny
D517           240 ;
D517 98         241        tya
D518 65 5E      242        adc INDEX
D51A AA         243        tax

```

```

D51B          244 ;
D51B A0 00    245      ldy #ZERO
D51D          246 ;
D51D 91 5E    247      sta (INDEX),Y
D51F          248 ;
D51F A5 5F    249      lda INDEX+1
D521 69 00    250      adc #ZERO
D523          251 ;
D523 C8       252      iny
D524          253 ;
D524 91 5E    254      sta (INDEX),Y
D526          255 ;
D526 86 5E    256      stx INDEX
D528 85 5F    257      sta INDEX+1
D52A          258 ;
D52A 90 D2    259      bcc HD4FE
D52C          260 ;
D52C A2 80    261 HD52C   ldx #$80
D52E          262 ;
D52E 86 33    263 HD52E   stx PROMPT
D530          264 ;
D530 20 6A FD 265      jsr GETLN
D533          266 ;
D533 E0 EF    267      cpx #$EF
D535 90 02    268      bcc HD539
D537          269 ;
D537 A2 EF    270      ldx #$EF
D539          271 ;
D539 A9 00    272 HD539   lda #ZERO
D53B 9D 00 02 273      sta INPUT,X
D53E          274 ;
D53E 8A       275      txa
D53F F0 0B    276      beq HD54C
D541          277 ;
D541 BD FF 01 278 HD541   lda STACK+$FF,X
D544 29 7F    279      and #$7F
D546 9D FF 01 280      sta STACK+$FF,X
D549          281 ;
D549 CA       282      dex
D54A D0 F5    283      bne HD541
D54C          284 ;
D54C A9 00    285 HD54C   lda #ZERO
D54E          286 ;
D54E A2 FF    287      ldx #NEGONE
D550          288 ;
D550 A0 01    289      ldy #1
D552          290 ;
D552 60       291      rts
D553          292 ;
D553 20 13 FD 293 HD553   jsr RDKEY1
D556          294 ;
D556 29 7F    295      and #$7F
D558          296 ;
D558 60       297      rts
D559          298 ;
D559 A6 B8    299 HD559   ldx TXTPTR
D55B          300 ;
D55B CA       301      dex
D55C          302 ;
D55C A0 04    303      ldy #4
D55E 84 13    304      sty ZPG13

```

```

D560          305 ;
D560 24 D6    306      bit RUNFLAG
D562 10 08    307      bpl HD56C
D564          308 ;
D564 68      309      pla
D565 68      310      pla
D566          311 ;
D566 20 65 D6 312      jsr HD665
D569          313 ;
D569 4C D2 D7 314      jmp HD7D2
D56C          315 ;
D56C E8      316 HD56C   inx
D56D          317 ;
D56D 20 8C F7 318 HD56D   jsr HF78C
D570          319 ;
D570 24 13    320      bit ZPG13
D572 70 04    321      bvs HD578
D574          322 ;
D574 C9 20    323      cmp #$20
D576 F0 F4    324      beq HD56C
D578          325 ;
D578 85 0E    326 HD578   sta ZPG0E
D57A          327 ;
D57A C9 22    328      cmp #$22
D57C F0 74    329      beq HD5F2
D57E          330 ;
D57E 70 4D    331      bvs HD5CD
D580          332 ;
D580 C9 3F    333      cmp #$3F
D582 D0 04    334      bne HD588
D584          335 ;
D584 A9 BA    336      lda #$BA
D586 D0 45    337      bne HD5CD
D588          338 ;
D588 C9 30    339 HD588   cmp #$30
D58A 90 04    340      bcc HD590
D58C          341 ;
D58C C9 3C    342      cmp #$3C
D58E 90 3D    343      bcc HD5CD
D590          344 ;
D590 84 AD    345 HD590   sty STRNG2
D592          346 ;
D592 A9 D0    347      lda #$D0
D594 85 9D    348      sta DSCTMP
D596          349 ;
D596 A9 CF    350      lda #$CF
D598 85 9E    351      sta DSCTMP+1
D59A          352 ;
D59A A0 00    353      ldy #ZERO
D59C 84 0F    354      sty ZPG0F
D59E          355 ;
D59E 88      356      dey
D59F          357 ;
D59F 86 B8    358      stx TXTPTR
D5A1          359 ;
D5A1 CA      360      dex
D5A2          361 ;
D5A2 C8      362 HD5A2   iny
D5A3 D0 02    363      bne HD5A7
D5A5          364 ;
D5A5 E6 9E    365      inc DSCTMP+1

```



```

D5A7          366 ;
D5A7 E8      367 HD5A7   inx
D5A8          368 ;
D5A8 20 8C F7 369 HD5A8   jsr HF78C
D5AB          370 ;
D5AB C9 20    371         cmp #$20
D5AD F0 F8    372         beq HD5A7
D5AF          373 ;
D5AF 38       374         sec
D5B0          375 ;
D5B0 F1 9D    376         sbc (DSCTMP),Y
D5B2 F0 EE    377         beq HD5A2
D5B4          378 ;
D5B4 C9 80    379         cmp #$80
D5B6 D0 41    380         bne HD5F9
D5B8          381 ;
D5B8 05 0F    382         ora ZPG0F
D5BA C9 C5    383         cmp #$C5
D5BC D0 0D    384         bne HD5CB
D5BE          385 ;
D5BE 20 87 F7 386         jsr HF787
D5C1          387 ;
D5C1 C9 4E    388         cmp #$4E
D5C3 F0 34    389         beq HD5F9
D5C5          390 ;
D5C5 C9 4F    391         cmp #$4F
D5C7 F0 30    392         beq HD5F9
D5C9          393 ;
D5C9 A9 C5    394         lda #$C5
D5CB          395 ;
D5CB A4 AD    396 HD5CB   ldy STRNG2
D5CD          397 ;
D5CD E8       398 HD5CD   inx
D5CE C8       399         iny
D5CF          400 ;
D5CF 99 FB 01 401         sta STACK+$FB,Y
D5D2          402 ;
D5D2 B9 FB 01 403         lda STACK+$FB,Y
D5D5 F0 39    404         beq HD610
D5D7          405 ;
D5D7 38       406         sec
D5D8          407 ;
D5D8 E9 3A    408         sbc #$3A
D5DA F0 04    409         beq HD5E0
D5DC          410 ;
D5DC C9 49    411         cmp #$49
D5DE D0 02    412         bne HD5E2
D5E0          413 ;
D5E0 85 13    414 HD5E0   sta ZPG13
D5E2          415 ;
D5E2 38       416 HD5E2   sec
D5E3          417 ;
D5E3 E9 78    418         sbc #$78
D5E5 D0 86    419         bne HD56D
D5E7          420 ;
D5E7 85 0E    421         sta ZPG0E
D5E9          422 ;
D5E9 20 8C F7 423 HD5E9   jsr HF78C
D5EC F0 DF    424         beq HD5CD
D5EE          425 ;
D5EE C5 0E    426         cmp ZPG0E

```

```

D5F0 F0 DB      427      beq HD5CD
D5F2           428      ;
D5F2 C8         429 HD5F2 iny
D5F3           430      ;
D5F3 99 FB 01   431      sta STACK+$FB,Y
D5F6           432      ;
D5F6 E8         433      inx
D5F7 D0 F0      434      bne HD5E9
D5F9           435      ;
D5F9 A6 B8      436 HD5F9 ldx TXTPTR
D5FB           437      ;
D5FB E6 0F      438      inc ZPG0F
D5FD           439      ;
D5FD B1 9D      440 HD5FD lda (DSCTMP),Y
D5FF           441      ;
D5FF C8         442      iny
D600 D0 02      443      bne HD604
D602           444      ;
D602 E6 9E      445      inc DSCTMP+1
D604           446      ;
D604 0A         447 HD604 asl
D605 90 F6      448      bcc HD5FD
D607           449      ;
D607 B1 9D      450      lda (DSCTMP),Y
D609 D0 9D      451      bne HD5A8
D60B           452      ;
D60B 20 9A F7   453      jsr HF79A
D60E 10 BB      454      bpl HD5CB
D610           455      ;
D610 99 FD 01   456 HD610 sta STACK+$FD,Y
D613           457      ;
D613 C6 B9      458      dec TXTPTR+1
D615           459      ;
D615 A9 FF      460      lda #NEGONE
D617 85 B8      461      sta TXTPTR
D619           462      ;
D619 60         463      rts
D61A           464      ;
D61A A5 67      465 HD61A lda PRGTAB
D61C A6 68      466      ldx PRGTAB+1
D61E           467      ;
D61E A0 01      468 HD61E ldy #1
D620           469      ;
D620 85 9B      470      sta LOWTR
D622 86 9C      471      stx LOWTR+1
D624           472      ;
D624 B1 9B      473      lda (LOWTR),Y
D626 F0 1F      474      beq HD647
D628           475      ;
D628 C8         476      iny
D629 C8         477      iny
D62A           478      ;
D62A A5 51      479      lda ACH
D62C D1 9B      480      cmp (LOWTR),Y
D62E           481      ;
D62E 90 18      482      bcc HD648
D630 F0 03      483      beq HD635
D632           484      ;
D632 88         485      dey
D633 D0 09      486      bne HD63E
D635           487      ;

```

```

D635 A5 50      488 HD635    lda ACL
D637           489 ;
D637 88        490          dey
D638           491 ;
D638 D1 9B     492          cmp (LOWTR),Y
D63A           493 ;
D63A 90 0C     494          bcc HD648
D63C F0 0A     495          beq HD648
D63E           496 ;
D63E 88        497 HD63E    dey
D63F           498 ;
D63F B1 9B     499          lda (LOWTR),Y
D641 AA        500          tax
D642           501 ;
D642 88        502          dey
D643           503 ;
D643 B1 9B     504          lda (LOWTR),Y
D645           505 ;
D645 B0 D7     506          bcs HD61E
D647           507 ;
D647 18        508 HD647    clc
D648           509 ;
D648 60        510 HD648    rts
D649           511 ;
D649 D0 FD     512 HD649    bne HD648
D64B           513 ;
D64B A9 00     514 HD64B    lda #ZERO
D64D 85 D6     515          sta RUNFLAG
D64F A8        516          tay
D650 91 67     517          sta (PRGTAB),Y
D652           518 ;
D652 C8        519          iny
D653           520 ;
D653 91 67     521          sta (PRGTAB),Y
D655           522 ;
D655 A5 67     523          lda PRGTAB
D657 69 02     524          adc #2
D659 85 69     525          sta VARTAB
D65B 85 AF     526          sta PRGEND
D65D           527 ;
D65D A5 68     528          lda PRGTAB+1
D65F 69 00     529          adc #ZERO
D661 85 6A     530          sta VARTAB+1
D663 85 B0     531          sta PRGEND+1
D665           532 ;
D665 20 97 D6  533 HD665    jsr HD697
D668           534 ;
D668 A9 00     535          lda #ZERO
D66A           536 ;
D66A D0 2A     537 HD66A    bne HD696
D66C           538 ;
D66C A5 73     539 HD66C    lda MEMSIZE
D66E A4 74     540          ldy MEMSIZE+1
D670           541 ;
D670 85 6F     542          sta FRETOP
D672 84 70     543          sty FRETOP+1
D674           544 ;
D674 A5 69     545          lda VARTAB
D676 A4 6A     546          ldy VARTAB+1
D678           547 ;
D678 85 6B     548          sta ARYTAB

```

```

D67A 84 6C      549      sty ARYTAB+1
D67C           550      ;
D67C 85 6D      551      sta STREND
D67E 84 6E      552      sty STREND+1
D680           553      ;
D680 20 49 D8    554      jsr HD849
D683           555      ;
D683 A2 55      556 HD683 ldx #STRATCH
D685 86 52      557      stx TEMPPT
D687           558      ;
D687 68         559      pla
D688 A8         560      tay
D689           561      ;
D689 68         562      pla
D68A           563      ;
D68A A2 F8      564      ldx #$F8
D68C 9A         565      txs
D68D           566      ;
D68D 48         567      pha
D68E           568      ;
D68E 98         569      tya
D68F 48         570      pha
D690           571      ;
D690 A9 00      572      lda #ZERO
D692 85 7A      573      sta TEXTPTR+1
D694 85 14      574      sta ZPG14
D696           575      ;
D696 60         576 HD696 rts
D697           577      ;
D697 18         578 HD697 clc
D698           579      ;
D698 A5 67      580      lda PRGTAB
D69A 69 FF      581      adc #NEGONE
D69C 85 B8      582      sta TXTPTR
D69E           583      ;
D69E A5 68      584      lda PRGTAB+1
D6A0 69 FF      585      adc #NEGONE
D6A2 85 B9      586      sta TXTPTR+1
D6A4           587      ;
D6A4 60         588      rts
D6A5           589      ;
D6A5 90 0A      590 HD6A5 bcc HD6B1
D6A7 F0 08      591      beq HD6B1
D6A9           592      ;
D6A9 C9 C9      593      cmp #$C9
D6AB F0 04      594      beq HD6B1
D6AD           595      ;
D6AD C9 2C      596      cmp #$2C
D6AF D0 E5      597      bne HD696
D6B1           598      ;
D6B1 20 0C DA    599 HD6B1 jsr HDA0C
D6B4 20 1A D6    600      jsr HD61A
D6B7           601      ;
D6B7 20 B7 00    602      jsr CHRGOT
D6BA F0 10      603      beq HD6CC
D6BC           604      ;
D6BC C9 C9      605      cmp #$C9
D6BE F0 04      606      beq HD6C4
D6C0           607      ;
D6C0 C9 2C      608      cmp #$2C
D6C2 D0 84      609      bne HD648

```

```

D6C4          610 ;
D6C4 20 B1 00 611 HD6C4 jsr CHRGET
D6C7          612 ;
D6C7 20 0C DA 613 jsr HDA0C
D6CA D0 CA    614 bne HD696
D6CC          615 ;
D6CC 68       616 HD6CC pla
D6CD 68       617 pla
D6CE          618 ;
D6CE A5 50    619 lda ACL
D6D0 05 51    620 ora ACH
D6D2 D0 06    621 bne HD6DA
D6D4          622 ;
D6D4 A9 FF    623 lda #NEGONE
D6D6 85 50    624 sta ACL
D6D8 85 51    625 sta ACH
D6DA          626 ;
D6DA A0 01    627 HD6DA ldy #1
D6DC          628 ;
D6DC B1 9B    629 lda (LOWTR),Y
D6DE F0 44    630 beq HD724
D6E0          631 ;
D6E0 20 58 D8 632 jsr HD858
D6E3 20 FB DA 633 jsr HDAFB
D6E6          634 ;
D6E6 C8       635 iny
D6E7          636 ;
D6E7 B1 9B    637 lda (LOWTR),Y
D6E9 AA       638 tax
D6EA          639 ;
D6EA C8       640 iny
D6EB          641 ;
D6EB B1 9B    642 lda (LOWTR),Y
D6ED C5 51    643 cmp ACH
D6EF D0 04    644 bne HD6F5
D6F1          645 ;
D6F1 E4 50    646 cpx ACL
D6F3 F0 02    647 beq HD6F7
D6F5          648 ;
D6F5 B0 2D    649 HD6F5 bcs HD724
D6F7          650 ;
D6F7 84 85    651 HD6F7 sty FORPNT
D6F9          652 ;
D6F9 20 AA F7 653 jsr HF7AA
D6FC          654 ;
D6FC A9 20    655 lda #$20
D6FE          656 ;
D6FE A4 85    657 HD6FE ldy FORPNT
D700          658 ;
D700 29 7F    659 and #$7F
D702          660 ;
D702 20 5C DB 661 HD702 jsr HDB5C
D705          662 ;
D705 20 B4 F7 663 jsr HF7B4
D708 EA       664 nop
D709 90 07    665 bcc HD712
D70B          666 ;
D70B 20 FB DA 667 jsr HDAFB
D70E          668 ;
D70E A9 05    669 lda #5
D710 85 24    670 sta CH

```

```

D712          671 ;
D712 C8       672 HD712 iny
D713          673 ;
D713 B1 9B    674 lda (LOWTR),Y
D715 D0 1D    675 bne HD734
D717          676 ;
D717 A8       677 tay
D718          678 ;
D718 B1 9B    679 lda (LOWTR),Y
D71A AA       680 tax
D71B          681 ;
D71B C8       682 iny
D71C          683 ;
D71C B1 9B    684 lda (LOWTR),Y
D71E          685 ;
D71E 86 9B    686 stx LOWTR
D720 85 9C    687 sta LOWTR+1
D722          688 ;
D722 D0 B6    689 bne HD6DA
D724          690 ;
D724 A9 0D    691 HD724 lda #$0D
D726          692 ;
D726 20 5C DB 693 jsr HDB5C
D729          694 ;
D729 4C D2 D7 695 jmp HD7D2
D72C          696 ;
D72C C8       697 HD72C iny
D72D D0 02    698 bne HD731
D72F          699 ;
D72F E6 9E    700 inc DSCTMP+1
D731          701 ;
D731 B1 9D    702 HD731 lda (DSCTMP),Y
D733          703 ;
D733 60       704 rts
D734          705 ;
D734 10 CC    706 HD734 bpl HD702
D736          707 ;
D736 38       708 sec
D737          709 ;
D737 E9 7F    710 sbc #$7F
D739 AA       711 tax
D73A          712 ;
D73A 84 85    713 sty FORPNT
D73C          714 ;
D73C A0 D0    715 ldy #$D0
D73E 84 9D    716 sty DSCTMP
D740          717 ;
D740 A0 CF    718 ldy #$CF
D742 84 9E    719 sty DSCTMP+1
D744          720 ;
D744 A0 FF    721 ldy #NEGONE
D746          722 ;
D746 CA       723 HD746 dex
D747 F0 07    724 beq HD750
D749          725 ;
D749 20 2C D7 726 HD749 jsr HD72C
D74C          727 ;
D74C 10 FB    728 bpl HD749
D74E 30 F6    729 bmi HD746
D750          730 ;
D750 A9 20    731 HD750 lda #$20

```

D752				732	;	
D752	20	5C	DB	733		jsr HDB5C
D755				734	;	
D755	20	2C	D7	735	HD755	jsr HD72C
D758	30	05		736		bmi HD75F
D75A				737	;	
D75A	20	5C	DB	738		jsr HDB5C
D75D	D0	F6		739		bne HD755
D75F				740	;	
D75F	20	5C	DB	741	HD75F	jsr HDB5C
D762				742	;	
D762	A9	20		743		lda #\$20
D764	D0	98		744		bne HD6FE
D766				745	;	
D766	A9	80		746	HD766	lda #\$80
D768	85	14		747		sta ZPG14
D76A				748	;	
D76A	20	46	DA	749		jsr HDA46
D76D				750	;	
D76D	20	65	D3	751		jsr HD365
D770	D0	05		752		bne HD777
D772				753	;	
D772	8A			754		txa
D773	69	0F		755		adc #\$0F
D775	AA			756		tax
D776				757	;	
D776	9A			758		txs
D777				759	;	
D777	68			760	HD777	pla
D778	68			761		pla
D779				762	;	
D779	A9	09		763		lda #9
D77B				764	;	
D77B	20	D6	D3	765		jsr HD3D6
D77E	20	A3	D9	766		jsr HD9A3
D781				767	;	
D781	18			768		clc
D782				769	;	
D782	98			770		tya
D783	65	B8		771		adc TXTPTR
D785	48			772		pha
D786				773	;	
D786	A5	B9		774		lda TXTPTR+1
D788	69	00		775		adc #ZERO
D78A	48			776		pha
D78B				777	;	
D78B	A5	76		778		lda CURLIN+1
D78D	48			779		pha
D78E				780	;	
D78E	A5	75		781		lda CURLIN
D790	48			782		pha
D791				783	;	
D791	A9	C1		784		lda #\$C1
D793				785	;	
D793	20	C0	DE	786		jsr HDEC0
D796	20	6A	DD	787		jsr HDD6A
D799	20	67	DD	788		jsr HDD67
D79C				789	;	
D79C	A5	A2		790		lda FACSIGN
D79E	09	7F		791		ora #\$7F
D7A0	25	9E		792		and DSCTMP+1

```

D7A2 85 9E      793      sta DSCTMP+1
D7A4           794      ;
D7A4 A9 AF      795      lda #HD7AF
D7A6 A0 D7      796      ldy /HD7AF
D7A8           797      ;
D7A8 85 5E      798      sta INDEX
D7AA 84 5F      799      sty INDEX+1
D7AC           800      ;
D7AC 4C 20 DE    801      jmp HDE20
D7AF           802      ;
D7AF A9 13      803      HD7AF lda #HE913
D7B1 A0 E9      804      ldy /HE913
D7B3           805      ;
D7B3 20 F9 EA    806      jsr HEAF9
D7B6 20 B7 00    807      jsr CHRGOT
D7B9           808      ;
D7B9 C9 C7      809      cmp #$C7
D7BB D0 06      810      bne HD7C3
D7BD           811      ;
D7BD 20 B1 00    812      jsr CHRGET
D7C0 20 67 DD    813      jsr HDD67
D7C3           814      ;
D7C3 20 82 EB    815      HD7C3 jsr HEB82
D7C6 20 15 DE    816      jsr HDE15
D7C9           817      ;
D7C9 A5 86      818      lda FORPNT+1
D7CB 48          819      pha
D7CC           820      ;
D7CC A5 85      821      lda FORPNT
D7CE 48          822      pha
D7CF           823      ;
D7CF A9 81      824      lda #$81
D7D1 48          825      pha
D7D2           826      ;
D7D2 BA         827      HD7D2 tsx
D7D3 86 F8      828      stx REMSTK
D7D5           829      ;
D7D5 20 58 D8    830      jsr HD858
D7D8           831      ;
D7D8 A5 B8      832      lda TXTPTR
D7DA A4 B9      833      ldy TXTPTR+1
D7DC           834      ;
D7DC A6 76      835      ldx CURLIN+1
D7DE           836      ;
D7DE E8         837      inx
D7DF F0 04      838      beq HD7E5
D7E1           839      ;
D7E1 85 79      840      sta TEXTPTR
D7E3 84 7A      841      sty TEXTPTR+1
D7E5           842      ;
D7E5 A0 00      843      HD7E5 ldy #ZERO
D7E7           844      ;
D7E7 B1 B8      845      lda (TXTPTR),Y
D7E9 D0 57      846      bne HD842
D7EB           847      ;
D7EB A0 02      848      ldy #2
D7ED           849      ;
D7ED B1 B8      850      lda (TXTPTR),Y
D7EF           851      ;
D7EF 18         852      clc
D7F0           853      ;

```


D7F0	F0	34	854	beq	HD826
D7F2			855	;	
D7F2	C8		856	iny	
D7F3			857	;	
D7F3	B1	B8	858	lda	(TXTPTR),Y
D7F5	85	75	859	sta	CURLIN
D7F7			860	;	
D7F7	C8		861	iny	
D7F8			862	;	
D7F8	B1	B8	863	lda	(TXTPTR),Y
D7FA	85	76	864	sta	CURLIN+1
D7FC			865	;	
D7FC	98		866	tya	
D7FD	65	B8	867	adc	TXTPTR
D7FF	85	B8	868	sta	TXTPTR
D801	90	02	869	bcc	HD805
D803			870	;	
D803	E6	B9	871	inc	TXTPTR+1
D805			872	;	
D805			873	;	
D805			874	icl	"D8.L"

LLOAD D8.L,A\$4000

```

D805          1          ttl "ROM Source Code, D8.L"
D805          2          ;
D805          3          ;
D805          4          ; D8.L
D805          5          ;
D805          6          ;
D805 24 F2      7  HD805    bit  ZPGF2
D807 10 14      8          bpl  HD81D
D809          9          ;
D809 A6 76     10         ldx  CURLIN+1
D80B         11         ;
D80B E8        12         inx
D80C F0 0F     13         beq  HD81D
D80E         14         ;
D80E A9 23     15         lda  #$23
D810         16         ;
D810 20 5C DB  17         jsr  HDB5C
D813         18         ;
D813 A6 75     19         ldx  CURLIN
D815 A5 76     20         lda  CURLIN+1
D817         21         ;
D817 20 24 ED  22         jsr  HED24
D81A 20 57 DB  23         jsr  HDB57
D81D         24         ;
D81D 20 B1 00  25  HD81D    jsr  CHRGET
D820 20 28 D8  26         jsr  HD828
D823         27         ;
D823 4C D2 D7  28         jmp  HD7D2
D826         29         ;
D826 F0 62     30  HD826    beq  HD88A
D828         31         ;
D828 F0 2D     32  HD828    beq  HD857
D82A         33         ;
D82A E9 80     34  HD82A    sbc  #$80
D82C 90 11     35         bcc  HD83F
D82E         36         ;
D82E C9 40     37         cmp  #$40
D830 B0 14     38         bcs  HD846
D832         39         ;
D832 0A        40         asl
D833 A8        41         tay
D834         42         ;
D834 B9 01 D0  43         lda  HD000+1,Y
D837 48        44         pha
D838         45         ;
D838 B9 00 D0  46         lda  HD000,Y
D83B 48        47         pha
D83C         48         ;
D83C 4C B1 00  49         jmp  CHRGET
D83F         50         ;
D83F 4C 46 DA  51  HD83F    jmp  HDA46
D842         52         ;
D842 C9 3A     53  HD842    cmp  #$3A
D844 F0 BF     54         beq  HD805
D846         55         ;
D846 4C C9 DE  56  HD846    jmp  HDEC9
D849         57         ;
D849 38        58  HD849    sec
D84A         59         ;
D84A A5 67     60         lda  PRGTAB

```

```

D84C E9 01      61      sbc #1
D84E           62      ;
D84E A4 68      63      ldy PRGTAB+1
D850           64      ;
D850 B0 01      65      bcs HD853
D852           66      ;
D852 88         67      dey
D853           68      ;
D853 85 7D      69      HD853 sta DATPTR
D855 84 7E      70      sty DATPTR+1
D857           71      ;
D857 60         72      HD857 rts
D858           73      ;
D858 AD 00 C0   74      HD858 lda KEY
D85B C9 83      75      cmp #$83          ; CTRL-C
D85D F0 01      76      beq HD860
D85F           77      ;
D85F 60         78      rts
D860           79      ;
D860 20 53 D5   80      HD860 jsr HD553
D863           81      ;
D863 A2 FF      82      HD863 ldx #NEGONE
D865           83      ;
D865 24 D8      84      bit ERRFLG
D867 10 03      85      bpl HD86C
D869           86      ;
D869 4C E9 F2   87      jmp HF2E9
D86C           88      ;
D86C C9 03      89      HD86C cmp #3
D86E           90      ;
D86E B0 01      91      HD86E bcs HD871
D870           92      ;
D870 18         93      HD870 clc
D871           94      ;
D871 D0 3C      95      HD871 bne HD8AF
D873           96      ;
D873 A5 B8      97      lda TXTPTR
D875 A4 B9      98      ldy TXTPTR+1
D877           99      ;
D877 A6 76     100      ldx CURLIN+1
D879          101      ;
D879 E8         102      inx
D87A F0 0C     103      beq HD888
D87C          104      ;
D87C 85 79     105      sta TEXTPTR
D87E 84 7A     106      sty TEXTPTR+1
D880          107      ;
D880 A5 75     108      lda CURLIN
D882 A4 76     109      ldy CURLIN+1
D884          110      ;
D884 85 77     111      sta OLDLIN
D886 84 78     112      sty OLDLIN+1
D888          113      ;
D888 68         114      HD888 pla
D889 68         115      pla
D88A          116      ;
D88A A9 5D     117      HD88A lda #HD35D
D88C A0 D3     118      ldy /HD35D
D88E          119      ;
D88E 90 03     120      bcc HD893
D890          121      ;

```

```

D890 4C 31 D4      122      jmp HD431
D893              123      ;
D893 4C 3C D4      124      HD893    jmp HD43C
D896              125      ;
D896 D0 17         126      HD896    bne HD8AF
D898              127      ;
D898 A2 D2         128      ldx #$D2
D89A              129      ;
D89A A4 7A         130      ldy TEXTPTR+1
D89C D0 03         131      bne HD8A1
D89E              132      ;
D89E 4C 12 D4      133      jmp HD412
D8A1              134      ;
D8A1 A5 79         135      HD8A1    lda TEXTPTR
D8A3              136      ;
D8A3 85 B8         137      sta TXTPTR
D8A5 84 B9         138      sty TXTPTR+1
D8A7              139      ;
D8A7 A5 77         140      lda OLDLIN
D8A9 A4 78         141      ldy OLDLIN+1
D8AB              142      ;
D8AB 85 75         143      sta CURLIN
D8AD 84 76         144      sty CURLIN+1
D8AF              145      ;
D8AF 60            146      HD8AF    rts
D8B0              147      ;
D8B0              148      ;
D8B0              149      ; HD8B0
D8B0              150      ;
D8B0              151      dfs $D8B7-*,ZERO
D8B7              152      ;
D8B7              153      ;
D8B7              154      ; Read audio waveform for two transitions. Return bit
D8B7              155      ; value in the C-flag from the compare instruction.
D8B7              156      ;
D8B7 20 BA D8      157      RD2BIT    jsr RDBIT
D8BA              158      ;
D8BA 88            159      RDBIT    dey
D8BB              160      ;
D8BB AD 60 C0      161      lda TAPEIN      ; read waveform voltage level
D8BE 45 2F         162      eor LASTIN    ; compare to last read
D8C0 10 F8         163      bpl RDBIT    ; branch if no change
D8C2              164      ;
D8C2 45 2F         165      eor LASTIN    ; get original TAPEIN value
D8C4 85 2F         166      sta LASTIN    ; save the new value
D8C6              167      ;
D8C6 C0 80         168      cpy #$80      ; get bit value into C-flag
D8C8              169      ;
D8C8 60            170      rts
D8C9              171      ;
D8C9              172      ;
D8C9              173      ; Applesoft LOAD command.
D8C9              174      ;
D8C9 20 F0 D8      175      HD8C9    jsr HD8F0      ; initialize A1 and A2
D8CC 20 9F F3      176      jsr CXREAD    ; read LINNUM, RUNFLAG
D8CF              177      ;
D8CF 18            178      clc
D8D0              179      ;
D8D0 A5 67         180      lda PRGTAB
D8D2 65 50         181      adc LINNUM
D8D4 85 69         182      sta VARTAB

```

```

D8D6          183 ;
D8D6 A5 68    184      lda PRGTAB+1
D8D8 65 51    185      adc LINNUM+1
D8DA 85 6A    186      sta VARTAB+1
D8DC          187 ;
D8DC A5 52    188      lda LINNUM+2
D8DE 85 D6    189      sta RUNFLAG
D8E0          190 ;
D8E0 20 01 D9 191      jsr HD901          ; initialize A1 and A2
D8E3 20 9F F3 192      jsr CXREAD        ; read Applesoft program
D8E6          193 ;
D8E6 24 D6    194      bit RUNFLAG
D8E8 10 03    195      bpl HD8ED
D8EA          196 ;
D8EA 4C 65 D6 197      jmp HD665          ; run the Applesoft program
D8ED          198 ;
D8ED 4C F2 D4 199      HD8ED jmp HD4F2        ; enter Applesoft interpreter
D8F0          200 ;
D8F0          201 ;
D8F0          202 ; Initialize start address in A1 with LINNUM. Initialize
D8F0          203 ; end address in A2 with LINNUM+2. Therefore, read three
D8F0          204 ; bytes and the checksum.
D8F0          205 ;
D8F0 A9 50    206      HD8F0 lda #LINNUM
D8F2 A0 00    207      ldy /LINNUM
D8F4          208 ;
D8F4 85 3C    209      sta A1L
D8F6 84 3D    210      sty A1H
D8F8          211 ;
D8F8 A9 52    212      lda #LINNUM+2
D8FA          213 ;
D8FA 85 3E    214      sta A2L
D8FC 84 3F    215      sty A2H
D8FE          216 ;
D8FE 84 D6    217      sty RUNFLAG
D900          218 ;
D900 60       219      rts
D901          220 ;
D901          221 ;
D901          222 ; Initialize start address in A1 with PRGTAB. Initialize
D901          223 ; end address in A2 with VARTAB. Therefore, read LINNUM
D901          224 ; bytes and the checksum.
D901          225 ;
D901 A5 67    226      HD901 lda PRGTAB
D903 A4 68    227      ldy PRGTAB+1
D905          228 ;
D905 85 3C    229      sta A1L
D907 84 3D    230      sty A1H
D909          231 ;
D909 A5 69    232      lda VARTAB
D90B A4 6A    233      ldy VARTAB+1
D90D          234 ;
D90D 85 3E    235      sta A2L
D90F 84 3F    236      sty A2H
D911          237 ;
D911 60       238      rts
D912          239 ;
D912          240 ;
D912 08       241      HD912 php
D913          242 ;
D913 C6 76    243      dec CURLIN+1

```

```

D915          244 ;
D915 28       245      plp
D916 D0 03    246      bne HD91B
D918          247 ;
D918 4C 65 D6 248      jmp HD665
D91B          249 ;
D91B 20 6C D6 250 HD91B jsr HD66C
D91E          251 ;
D91E 4C 35 D9 252      jmp HD935
D921          253 ;
D921 A9 03    254 HD921 lda #3
D923          255 ;
D923 20 D6 D3 256      jsr HD3D6
D926          257 ;
D926 A5 B9    258      lda TXTPTR+1
D928 48       259      pha
D929          260 ;
D929 A5 B8    261      lda TXTPTR
D92B 48       262      pha
D92C          263 ;
D92C A5 76    264      lda CURLIN+1
D92E 48       265      pha
D92F          266 ;
D92F A5 75    267      lda CURLIN
D931 48       268      pha
D932          269 ;
D932 A9 B0    270      lda #$B0
D934 48       271      pha
D935          272 ;
D935 20 B7 00 273 HD935 jsr CHRGOT
D938 20 3E D9 274      jsr HD93E
D93B          275 ;
D93B 4C D2 D7 276      jmp HD7D2
D93E          277 ;
D93E 20 0C DA 278 HD93E jsr HDA0C
D941 20 A6 D9 279      jsr HD9A6
D944          280 ;
D944 A5 76    281      lda CURLIN+1
D946 C5 51    282      cmp ACH
D948 B0 0B    283      bcs HD955
D94A          284 ;
D94A 98       285      tya
D94B          286 ;
D94B 38       287      sec
D94C          288 ;
D94C 65 B8    289      adc TXTPTR
D94E          290 ;
D94E A6 B9    291      ldx TXTPTR+1
D950          292 ;
D950 90 07    293      bcc HD959
D952          294 ;
D952 E8       295      inx
D953          296 ;
D953 B0 04    297      bcs HD959
D955          298 ;
D955 A5 67    299 HD955 lda PRGTAB
D957 A6 68    300      ldx PRGTAB+1
D959          301 ;
D959 20 1E D6 302 HD959 jsr HD61E
D95C 90 1E    303      bcc HD97C
D95E          304 ;

```

```

D95E A5 9B      305      lda LOWTR
D960 E9 01      306      sbc #1
D962 85 B8      307      sta TXTPTR
D964           308      ;
D964 A5 9C      309      lda LOWTR+1
D966 E9 00      310      sbc #ZERO
D968 85 B9      311      sta TXTPTR+1
D96A           312      ;
D96A 60         313      HD96A rts
D96B           314      ;
D96B D0 FD      315      HD96B bne HD96A
D96D           316      ;
D96D A9 FF      317      lda #NEGONE
D96F 85 85      318      sta FORPNT
D971           319      ;
D971 20 65 D3   320      jsr HD365
D974           321      ;
D974 9A         322      txs
D975           323      ;
D975 C9 B0      324      cmp #$B0
D977 F0 0B      325      beq HD984
D979           326      ;
D979 A2 16      327      ldx #$16
D97B           328      ;
D97B 2C 00 00   329      bit *-*
D97E           330      dfs !-2
D97C           331      ;
D97C A2 5A      332      HD97C ldx #$5A
D97E           333      ;
D97E 4C 12 D4   334      jmp HD412
D981           335      ;
D981 4C C9 DE   336      HD981 jmp HDEC9
D984           337      ;
D984 68         338      HD984 pla
D985 68         339      pla
D986           340      ;
D986 C0 42      341      cpy #$42
D988 F0 3B      342      beq HD9C5
D98A           343      ;
D98A 85 75      344      sta CURLIN
D98C           345      ;
D98C 68         346      pla
D98D 85 76      347      sta CURLIN+1
D98F           348      ;
D98F 68         349      pla
D990 85 B8      350      sta TXTPTR
D992           351      ;
D992 68         352      pla
D993 85 B9      353      sta TXTPTR+1
D995           354      ;
D995 20 A3 D9   355      HD995 jsr HD9A3
D998           356      ;
D998 98         357      HD998 tya
D999           358      ;
D999 18         359      clc
D99A           360      ;
D99A 65 B8      361      adc TXTPTR
D99C 85 B8      362      sta TXTPTR
D99E 90 02      363      bcc HD9A2
D9A0           364      ;
D9A0 E6 B9      365      inc TXTPTR+1

```

```

D9A2          366 ;
D9A2 60       367 HD9A2 rts
D9A3          368 ;
D9A3 A2 3A    369 HD9A3 ldx #$3A
D9A5          370 ;
D9A5 2C 00 00 371         bit *-*
D9A8          372         dfs !-2
D9A6          373 ;
D9A6 A2 00    374 HD9A6 ldx #ZERO
D9A8 86 0D    375         stx ZPG0D
D9AA          376 ;
D9AA A0 00    377         ldy #ZERO
D9AC 84 0E    378         sty ZPG0E
D9AE          379 ;
D9AE A5 0E    380 HD9AE lda ZPG0E
D9B0 A6 0D    381         ldx ZPG0D
D9B2          382 ;
D9B2 85 0D    383         sta ZPG0D
D9B4 86 0E    384         stx ZPG0E
D9B6          385 ;
D9B6 B1 B8    386 HD9B6 lda (TXTPTR),Y
D9B8 F0 E8    387         beq HD9A2
D9BA          388 ;
D9BA C5 0E    389         cmp ZPG0E
D9BC F0 E4    390         beq HD9A2
D9BE          391 ;
D9BE C8       392         iny
D9BF          393 ;
D9BF C9 22    394         cmp #$22
D9C1          395 ;
D9C1 D0 F3    396         bne HD9B6
D9C3 F0 E9    397         beq HD9AE
D9C5          398 ;
D9C5 68       399 HD9C5 pla
D9C6 68       400         pla
D9C7 68       401         pla
D9C8          402 ;
D9C8 60       403         rts
D9C9          404 ;
D9C9 20 7B DD 405 HD9C9 jsr HDD7B
D9CC 20 B7 00 406         jsr CHRGOT
D9CF          407 ;
D9CF C9 AB    408         cmp #$AB
D9D1 F0 05    409         beq HD9D8
D9D3          410 ;
D9D3 A9 C4    411         lda #$C4
D9D5 20 C0 DE 412         jsr HDEC0
D9D8          413 ;
D9D8 A5 9D    414 HD9D8 lda DSCTMP
D9DA D0 05    415         bne HD9E1
D9DC          416 ;
D9DC 20 A6 D9 417 HD9DC jsr HD9A6
D9DF F0 B7    418         beq HD998
D9E1          419 ;
D9E1 20 B7 00 420 HD9E1 jsr CHRGOT
D9E4 B0 03    421         bcs HD9E9
D9E6          422 ;
D9E6 4C 3E D9 423         jmp HD93E
D9E9          424 ;
D9E9 4C 28 D8 425 HD9E9 jmp HD828
D9EC          426 ;

```



```

D9EC 20 F8 E6      427 HD9EC      jsr HE6F8
D9EF              428 ;
D9EF 48            429          pha
D9F0              430 ;
D9F0 C9 B0        431          cmp #$B0
D9F2 F0 04        432          beq HD9F8
D9F4              433 ;
D9F4 C9 AB        434 HD9F4      cmp #$AB
D9F6 D0 89        435          bne HD981
D9F8              436 ;
D9F8 C6 A1        437 HD9F8      dec FACMO+1
D9FA D0 04        438          bne HDA00
D9FC              439 ;
D9FC 68           440          pla
D9FD              441 ;
D9FD 4C 2A D8     442          jmp HD82A
DA00              443 ;
DA00 20 B1 00     444 HDA00      jsr CHRGET
DA03 20 0C DA     445          jsr HDA0C
DA06              446 ;
DA06 C9 2C        447          cmp #$2C
DA08 F0 EE        448          beq HD9F8
DA0A              449 ;
DA0A 68           450          pla
DA0B              451 ;
DA0B 60           452 HDA0B      rts
DA0C              453 ;
DA0C A2 00        454 HDA0C      ldx #ZERO
DA0E 86 50        455          stx ACL
DA10 86 51        456          stx ACH
DA12              457 ;
DA12 B0 F7        458 HDA12      bcs HDA0B
DA14              459 ;
DA14 E9 2F        460          sbc #$2F
DA16 85 0D        461          sta ZPG0D
DA18              462 ;
DA18 A5 51        463          lda ACH
DA1A 85 5E        464          sta INDEX
DA1C              465 ;
DA1C C9 19        466          cmp #$19
DA1E B0 D4        467          bcs HD9F4
DA20              468 ;
DA20 A5 50        469          lda ACL
DA22              470 ;
DA22 0A           471          asl
DA23 26 5E        472          rol INDEX
DA25              473 ;
DA25 0A           474          asl
DA26 26 5E        475          rol INDEX
DA28              476 ;
DA28 65 50        477          adc ACL
DA2A 85 50        478          sta ACL
DA2C              479 ;
DA2C A5 5E        480          lda INDEX
DA2E 65 51        481          adc ACH
DA30 85 51        482          sta ACH
DA32              483 ;
DA32 06 50        484          asl ACL
DA34 26 51        485          rol ACH
DA36              486 ;
DA36 A5 50        487          lda ACL

```

```

DA38 65 0D          488          adc ZPG0D
DA3A 85 50          489          sta ACL
DA3C 90 02          490          bcc HDA40
DA3E                491          ;
DA3E E6 51          492          inc ACH
DA40                493          ;
DA40 20 B1 00       494 HDA40      jsr CHRGET
DA43                495          ;
DA43 4C 12 DA       496          jmp HDA12
DA46                497          ;
DA46 20 E3 DF       498 HDA46      jsr HDFE3
DA49                499          ;
DA49 85 85          500          sta FORPNT
DA4B 84 86          501          sty FORPNT+1
DA4D                502          ;
DA4D A9 D0          503          lda #$D0
DA4F                504          ;
DA4F 20 C0 DE       505          jsr HDEC0
DA52                506          ;
DA52 A5 12          507          lda ZPG12
DA54 48             508          pha
DA55                509          ;
DA55 A5 11          510          lda ZPG11
DA57 48             511          pha
DA58                512          ;
DA58 20 7B DD       513          jsr HDD7B
DA5B                514          ;
DA5B 68             515          pla
DA5C 2A             516          rol
DA5D                517          ;
DA5D 20 6D DD       518          jsr HDD6D
DA60 D0 18          519          bne HDA7A
DA62                520          ;
DA62 68             521          pla
DA63                522          ;
DA63 10 12          523 HDA63      bpl HDA77
DA65                524          ;
DA65 20 72 EB       525          jsr HEB72
DA68 20 0C E1       526          jsr HE10C
DA6B                527          ;
DA6B A0 00          528          ldy #ZERO
DA6D                529          ;
DA6D A5 A0          530          lda FACMO
DA6F 91 85          531          sta (FORPNT),Y
DA71                532          ;
DA71 C8             533          iny
DA72                534          ;
DA72 A5 A1          535          lda FACMO+1
DA74 91 85          536          sta (FORPNT),Y
DA76                537          ;
DA76 60             538          rts
DA77                539          ;
DA77 4C 27 EB       540 HDA77      jmp HEB27
DA7A                541          ;
DA7A 68             542 HDA7A      pla
DA7B                543          ;
DA7B A0 02          544 HDA7B      ldy #2
DA7D                545          ;
DA7D B1 A0          546          lda (FACMO),Y
DA7F C5 70          547          cmp FRETOP+1
DA81                548          ;

```

```

DA81 90 17      549      bcc HDA9A
DA83 D0 07      550      bne HDA8C
DA85            551      ;
DA85 88         552      dey
DA86            553      ;
DA86 B1 A0      554      lda (FACMO),Y
DA88 C5 6F      555      cmp FRETOP
DA8A 90 0E      556      bcc HDA9A
DA8C            557      ;
DA8C A4 A1      558      HDA8C ldy FACMO+1
DA8E C4 6A      559      cpy VARTAB+1
DA90            560      ;
DA90 90 08      561      bcc HDA9A
DA92 D0 0D      562      bne HDAA1
DA94            563      ;
DA94 A5 A0      564      lda FACMO
DA96 C5 69      565      cmp VARTAB
DA98 B0 07      566      bcs HDAA1
DA9A            567      ;
DA9A A5 A0      568      HDA9A lda FACMO
DA9C A4 A1      569      ldy FACMO+1
DA9E            570      ;
DA9E 4C B7 DA   571      jmp HDAB7
DAA1            572      ;
DAA1 A0 00      573      HDAA1 ldy #ZERO
DAA3            574      ;
DAA3 B1 A0      575      lda (FACMO),Y
DAA5            576      ;
DAA5 20 D5 E3   577      jsr HE3D5
DAA8            578      ;
DAA8 A5 8C      579      lda GENTPTR
DAAA A4 8D      580      ldy GENTPTR+1
DAAC            581      ;
DAAC 85 AB      582      sta STRNG1
DAAE 84 AC      583      sty STRNG1+1
DAB0            584      ;
DAB0 20 D4 E5   585      jsr HE5D4
DAB3            586      ;
DAB3 A9 9D      587      lda #$9D
DAB5 A0 00      588      ldy #ZERO
DAB7            589      ;
DAB7 85 8C      590      HDAB7 sta GENTPTR
DAB9 84 8D      591      sty GENTPTR+1
DABB            592      ;
DABB 20 35 E6   593      jsr HE635
DABE            594      ;
DABE A0 00      595      ldy #ZERO
DAC0            596      ;
DAC0 B1 8C      597      lda (GENTPTR),Y
DAC2 91 85      598      sta (FORPNT),Y
DAC4            599      ;
DAC4 C8         600      iny
DAC5            601      ;
DAC5 B1 8C      602      lda (GENTPTR),Y
DAC7 91 85      603      sta (FORPNT),Y
DAC9            604      ;
DAC9 C8         605      iny
DACA            606      ;
DACA B1 8C      607      lda (GENTPTR),Y
DACC 91 85      608      sta (FORPNT),Y
DACE            609      ;

```

```

DACE 60          610          rts
DACF             611          ;
DACF 20 3D DB    612 HDACF    jsr HDB3D
DAD2 20 B7 00    613          jsr CHRGOT
DAD5             614          ;
DAD5 F0 24       615 HDAD5    beq HDAFB
DAD7             616          ;
DAD7 F0 29       617 HDAD7    beq HDB02
DAD9             618          ;
DAD9 C9 C0       619          cmp #$C0
DADB F0 3C       620          beq HDB19
DADD             621          ;
DADD C9 C3       622          cmp #$C3
DADF             623          ;
DADF 18          624          clc
DAE0             625          ;
DAE0 F0 37       626          beq HDB19
DAE2             627          ;
DAE2 C9 2C       628          cmp #$2C
DAE4             629          ;
DAE4 18          630          clc
DAE5             631          ;
DAE5 F0 1C       632          beq HDB03
DAE7             633          ;
DAE7 C9 3B       634          cmp #$3B
DAE9 F0 44       635          beq HDB2F
DAEB             636          ;
DAEB 20 7B DD    637          jsr HDD7B
DAEE             638          ;
DAEE 24 11       639          bit ZPG11
DAF0 30 DD       640          bmi HDACF
DAF2             641          ;
DAF2 20 34 ED    642          jsr HED34
DAF5 20 E7 E3    643          jsr HE3E7
DAF8             644          ;
DAF8 4C CF DA    645          jmp HDACF
DAFB             646          ;
DAFB A9 0D       647 HDAFB    lda #$0D
DAFD             648          ;
DAFD 20 5C DB    649          jsr HDB5C
DB00             650          ;
DB00 49 FF       651 HDB00    eor #NEGONE
DB02             652          ;
DB02 60          653 HDB02    rts
DB03             654          ;
DB03 20 B4 F7    655 HDB03    jsr HF7B4
DB06 30 09       656          bmi HDB11
DB08             657          ;
DB08 C9 18       658          cmp #$18
DB0A 90 05       659          bcc HDB11
DB0C             660          ;
DB0C 20 FB DA    661          jsr HDAFB
DB0F D0 1E       662          bne HDB2F
DB11             663          ;
DB11 69 10       664 HDB11    adc #$10
DB13 29 F0       665          and #$F0
DB15 AA          666          tax
DB16             667          ;
DB16 38          668          sec
DB17 B0 0C       669          bcs HDB25
DB19             670          ;

```

; always taken

```

DB19 08          671 HDB19    php
DB1A             672 ;
DB1A 20 F5 E6    673          jsr HE6F5
DB1D             674 ;
DB1D C9 29       675          cmp #$29
DB1F D0 62       676          bne HDB83
DB21             677 ;
DB21 28          678          plp
DB22 90 07       679          bcc HDB2B
DB24             680 ;
DB24 CA          681          dex
DB25             682 ;
DB25 20 C3 F7    683 HDB25    jsr HF7C3
DB28 90 05       684          bcc HDB2F
DB2A             685 ;
DB2A AA          686          tax
DB2B             687 ;
DB2B E8          688 HDB2B    inx
DB2C             689 ;
DB2C CA          690 HDB2C    dex
DB2D D0 06       691          bne HDB35
DB2F             692 ;
DB2F 20 B1 00    693 HDB2F    jsr CHRGET
DB32             694 ;
DB32 4C D7 DA    695          jmp HDAD7
DB35             696 ;
DB35 20 57 DB    697 HDB35    jsr HDB57
DB38 D0 F2       698          bne HDB2C
DB3A             699 ;
DB3A 20 E7 E3    700 HDB3A    jsr HE3E7
DB3D             701 ;
DB3D 20 00 E6    702 HDB3D    jsr HE600
DB40             703 ;
DB40 AA          704          tax
DB41             705 ;
DB41 A0 00       706          ldy #ZERO
DB43             707 ;
DB43 E8          708          inx
DB44             709 ;
DB44 CA          710 HDB44    dex
DB45 F0 BB       711          beq HDB02
DB47             712 ;
DB47 B1 5E       713          lda (INDEX),Y
DB49             714 ;
DB49 20 5C DB    715          jsr HDB5C
DB4C             716 ;
DB4C C8          717          iny
DB4D             718 ;
DB4D C9 0D       719          cmp #$0D
DB4F D0 F3       720          bne HDB44
DB51             721 ;
DB51 20 00 DB    722          jsr HDB00
DB54             723 ;
DB54 4C 44 DB    724          jmp HDB44
DB57             725 ;
DB57 A9 20       726 HDB57    lda #$20
DB59             727 ;
DB59 2C 00 00    728          bit *-*
DB5C             729          dfs !-2
DB5A             730 ;
DB5A A9 3F       731 HDB5A    lda #$3F

```

```

DB5C          732 ;
DB5C 09 80    733 HDB5C ora #$80
DB5E C9 A0    734      cmp #SPACE
DB60 90 02    735      bcc HDB64
DB62          736 ;
DB62 05 F3    737      ora ORMASK
DB64          738 ;
DB64 20 ED FD 739 HDB64 jsr COUT
DB67          740 ;
DB67 29 7F    741      and #$7F
DB69 48       742      pha
DB6A          743 ;
DB6A A5 F1    744      lda SPDBYT
DB6C          745 ;
DB6C 20 A8 FC 746      jsr WAIT
DB6F          747 ;
DB6F 68       748      pla
DB70          749 ;
DB70 60       750      rts
DB71          751 ;
DB71 A5 15    752 HDB71 lda ZPG15
DB73          753 ;
DB73 F0 12    754      beq HDB87
DB75 30 04    755      bmi HDB7B
DB77          756 ;
DB77 A0 FF    757      ldy #NEGONE
DB79 D0 04    758      bne HDB7F
DB7B          759 ;
DB7B A5 7B    760 HDB7B lda DATLIN
DB7D A4 7C    761      ldy DATLIN+1
DB7F          762 ;
DB7F 85 75    763 HDB7F sta CURLIN
DB81 84 76    764      sty CURLIN+1
DB83          765 ;
DB83 4C C9 DE 766 HDB83 jmp HDEC9
DB86          767 ;
DB86 68       768 HDB86 pla
DB87          769 ;
DB87 24 D8    770 HDB87 bit ERRFLG
DB89 10 05    771      bpl HDB90
DB8B          772 ;
DB8B A2 FE    773      ldx #$FE
DB8D          774 ;
DB8D 4C E9 F2 775      jmp HF2E9
DB90          776 ;
DB90 A9 EF    777 HDB90 lda #HDCEF
DB92 A0 DC    778      ldy /HDCEF
DB94          779 ;
DB94 20 3A DB 780      jsr HDB3A
DB97          781 ;
DB97 A5 79    782      lda TEXTPTR
DB99 A4 7A    783      ldy TEXTPTR+1
DB9B          784 ;
DB9B 85 B8    785      sta TXTPTR
DB9D 84 B9    786      sty TXTPTR+1
DB9F          787 ;
DB9F 60       788      rts
DBA0          789 ;
DBA0 20 06 E3 790 HDBA0 jsr HE306
DBA3          791 ;
DBA3 A2 01    792      ldx #1

```

```
DBA5 A0 02      793      ldy #2
DBA7           794      ;
DBA7 A9 00      795      lda #ZERO
DBA9 8D 01 02   796      sta INPUT+1
DBAC           797      ;
DBAC A9 40      798      lda #$40
DBAE           799      ;
DBAE 20 EB DB   800      jsr HDBEB
DBB1           801      ;
DBB1 60         802      rts
DBB2           803      ;
DBB2 C9 22      804      HDBB2 cmp #$22
DBB4 D0 0E      805      bne HDBC4
DBB6           806      ;
DBB6 20 81 DE   807      jsr HDE81
DBB9           808      ;
DBB9 A9 3B      809      lda #$3B
DBBB           810      ;
DBBB 20 C0 DE   811      jsr HDEC0
DBBE 20 3D DB   812      jsr HDB3D
DBC1           813      ;
DBC1 4C C7 DB   814      jmp HDBC7
DBC4           815      ;
DBC4           816      ;
DBC4           817      icl "DC.L"
```

```
LLOAD DC.L,A$4000
```

```

DBC4      1      ttl "ROM Source Code, DC.L"
DBC4      2      ;
DBC4      3      ;
DBC4      4      ; DC.L
DBC4      5      ;
DBC4      6      ;
DBC4 20 5A DB   7  HDBC4      jsr HDB5A
DBC7      8      ;
DBC7 20 06 E3   9  HDBC7      jsr HE306
DBCA     10      ;
DBCA A9 2C     11      lda #$2C
DBCC 8D FF 01  12      sta STACK+$FF
DBCF     13      ;
DBCF 20 2C D5  14      jsr HD52C
DBD2     15      ;
DBD2 AD 00 02  16      lda INPUT
DBD5 C9 03     17      cmp #3
DBD7 D0 10     18      bne HDBE9
DBD9     19      ;
DBD9 4C 63 D8  20      jmp HD863
DBDC     21      ;
DBDC 20 5A DB  22  HDBDC      jsr HDB5A
DBDF     23      ;
DBDF 4C 2C D5  24      jmp HD52C
DBE2     25      ;
DBE2 A6 7D     26  HDBE2      ldx DATPTR
DBE4 A4 7E     27      ldy DATPTR+1
DBE6     28      ;
DBE6 A9 98     29      lda #$98
DBE8     30      ;
DBE8 2C 00 00  31      bit *-*
DBEB     32      dfs !-2
DBE9     33      ;
DBE9 A9 00     34  HDBE9      lda #ZERO
DBEB     35      ;
DBEB 85 15     36  HDBEB      sta ZPG15
DBED     37      ;
DBED 86 7F     38      stx SRCPTR
DBEF 84 80     39      sty SRCPTR+1
DBF1     40      ;
DBF1 20 E3 DF  41  HDBF1      jsr HDFE3
DBF4     42      ;
DBF4 85 85     43      sta FORPNT
DBF6 84 86     44      sty FORPNT+1
DBF8     45      ;
DBF8 A5 B8     46      lda TXTPTR
DBFA A4 B9     47      ldy TXTPTR+1
DBFC     48      ;
DBFC 85 87     49      sta GENTEMP
DBFE 84 88     50      sty GENTEMP+1
DC00     51      ;
DC00 A6 7F     52      ldx SRCPTR
DC02 A4 80     53      ldy SRCPTR+1
DC04     54      ;
DC04 86 B8     55      stx TXTPTR
DC06 84 B9     56      sty TXTPTR+1
DC08     57      ;
DC08 20 B7 00  58      jsr CHRGOT
DC0B D0 1E     59      bne HDC2B
DC0D     60      ;

```



```

DC0D 24 15      61      bit ZPG15
DC0F 50 0E      62      bvc HDC1F
DC11           63      ;
DC11 20 13 FD   64      jsr RDKEY1
DC14           65      ;
DC14 29 7F      66      and #$7F
DC16 8D 00 02   67      sta INPUT
DC19           68      ;
DC19 A2 FF      69      ldx #NEGONE
DC1B           70      ;
DC1B A0 01      71      ldy #1
DC1D D0 08      72      bne HDC27
DC1F           73      ;
DC1F 30 7F      74      HDC1F bmi HDCA0
DC21           75      ;
DC21 20 5A DB   76      jsr HDB5A
DC24 20 DC DB   77      jsr HDBDC
DC27           78      ;
DC27 86 B8      79      HDC27 stx TXTPTR
DC29 84 B9      80      sty TXTPTR+1
DC2B           81      ;
DC2B 20 B1 00   82      HDC2B jsr CHRGET
DC2E           83      ;
DC2E 24 11      84      bit ZPG11
DC30 10 31      85      bpl HDC63
DC32           86      ;
DC32 24 15      87      bit ZPG15
DC34 50 09      88      bvc HDC3F
DC36           89      ;
DC36 E8         90      inx
DC37 86 B8      91      stx TXTPTR
DC39           92      ;
DC39 A9 00      93      lda #ZERO
DC3B 85 0D      94      sta ZPG0D
DC3D F0 0C      95      beq HDC4B
DC3F           96      ;
DC3F 85 0D      97      HDC3F sta ZPG0D
DC41 C9 22      98      cmp #$22
DC43 F0 07      99      beq HDC4C
DC45           100     ;
DC45 A9 3A      101     lda #$3A
DC47 85 0D      102     sta ZPG0D
DC49           103     ;
DC49 A9 2C      104     lda #$2C
DC4B           105     ;
DC4B 18         106     HDC4B clc
DC4C           107     ;
DC4C 85 0E      108     HDC4C sta ZPG0E
DC4E           109     ;
DC4E A5 B8      110     lda TXTPTR
DC50 A4 B9      111     ldy TXTPTR+1
DC52           112     ;
DC52 69 00      113     adc #ZERO
DC54 90 01      114     bcc HDC57
DC56           115     ;
DC56 C8         116     iny
DC57           117     ;
DC57 20 ED E3   118     HDC57 jsr HE3ED
DC5A 20 3D E7   119     jsr HE73D
DC5D 20 7B DA   120     jsr HDA7B
DC60           121     ;

```

```

DC60 4C 72 DC      122      jmp HDC72
DC63              123      ;
DC63 48              124      HDC63 pha
DC64              125      ;
DC64 AD 00 02      126      lda INPUT
DC67 F0 30          127      beq HDC99
DC69              128      ;
DC69 68              129      HDC69 pla
DC6A              130      ;
DC6A 20 4A EC      131      jsr HEC4A
DC6D              132      ;
DC6D A5 12          133      lda ZPG12
DC6F              134      ;
DC6F 20 63 DA      135      jsr HDA63
DC72              136      ;
DC72 20 B7 00      137      HDC72 jsr CHRGOT
DC75 F0 07          138      beq HDC7E
DC77              139      ;
DC77 C9 2C          140      cmp #$2C
DC79 F0 03          141      beq HDC7E
DC7B              142      ;
DC7B 4C 71 DB      143      jmp HDB71
DC7E              144      ;
DC7E A5 B8          145      HDC7E lda TXTPTR
DC80 A4 B9          146      ldy TXTPTR+1
DC82              147      ;
DC82 85 7F          148      sta SRCPTR
DC84 84 80          149      sty SRCPTR+1
DC86              150      ;
DC86 A5 87          151      lda GENTEMP
DC88 A4 88          152      ldy GENTEMP+1
DC8A              153      ;
DC8A 85 B8          154      sta TXTPTR
DC8C 84 B9          155      sty TXTPTR+1
DC8E              156      ;
DC8E 20 B7 00      157      jsr CHRGOT
DC91 F0 33          158      beq HDCC6
DC93              159      ;
DC93 20 BE DE      160      jsr HDEBE
DC96              161      ;
DC96 4C F1 DB      162      jmp HDBF1
DC99              163      ;
DC99 A5 15          164      HDC99 lda ZPG15
DC9B D0 CC          165      bne HDC69
DC9D              166      ;
DC9D 4C 86 DB      167      jmp HDB86
DCA0              168      ;
DCA0 20 A3 D9      169      HDCA0 jsr HD9A3
DCA3              170      ;
DCA3 C8              171      iny
DCA4              172      ;
DCA4 AA              173      tax
DCA5 D0 12          174      bne HDCB9
DCA7              175      ;
DCA7 A2 2A          176      ldx #$2A
DCA9              177      ;
DCA9 C8              178      iny
DCAA              179      ;
DCAA B1 B8          180      lda (TXTPTR),Y
DCAC F0 5F          181      beq HDD0D
DCAE              182      ;

```

```

DCAE C8          183      iny
DCAF          184      ;
DCAF B1 B8      185      lda (TXTPTR),Y
DCB1 85 7B      186      sta DATLIN
DCB3          187      ;
DCB3 C8         188      iny
DCB4          189      ;
DCB4 B1 B8      190      lda (TXTPTR),Y
DCB6          191      ;
DCB6 C8         192      iny
DCB7 85 7C      193      sta DATLIN+1
DCB9          194      ;
DCB9 B1 B8      195      HDCB9  lda (TXTPTR),Y
DCBB AA        196      tax
DCBC          197      ;
DCBC 20 98 D9   198      jsr HD998
DCBF          199      ;
DCBF E0 83      200      cpx #$83
DCC1 D0 DD      201      bne HDCA0
DCC3          202      ;
DCC3 4C 2B DC   203      jmp HDC2B
DCC6          204      ;
DCC6 A5 7F      205      HDCC6  lda SRCPTR
DCC8 A4 80      206      ldy SRCPTR+1
DCCA          207      ;
DCCA A6 15      208      ldx ZPG15
DCCC 10 03      209      bpl HDCD1
DCCE          210      ;
DCCE 4C 53 D8   211      jmp HD853
DCD1          212      ;
DCD1 A0 00      213      HDCD1  ldy #ZERO
DCD3          214      ;
DCD3 B1 7F      215      lda (SRCPTR),Y
DCD5 F0 07      216      beq HDCDE
DCD7          217      ;
DCD7 A9 DF      218      lda #HDCDF
DCD9 A0 DC      219      ldy /HDCDF
DCDB          220      ;
DCDB 4C 3A DB   221      jmp HDB3A
DCDE          222      ;
DCDE 60         223      HDCDE  rts
DCDF          224      ;
DCDF 3F 45 58   225      HDCDF  asc `?EXTRA IGNORED`
DCE2 54 52 41
DCE5 20 49 47
DCE8 4E 4F 52
DCEB 45 44
DCED 0D 00      226      hex 0D00
DCEF          227      ;
DCEF 3F 52 45   228      HDCEF  asc `?REENTER`
DCF2 45 4E 54
DCF5 45 52
DCF7 0D 00      229      hex 0D00
DCF9          230      ;
DCF9 D0 04      231      HDCF9  bne HDCFF
DCFB          232      ;
DCFB A0 00      233      ldy #ZERO
DCFD F0 03      234      beq HDD02
DCFF          235      ;
DCFF 20 E3 DF   236      HDCFF  jsr HDFE3
DD02          237      ;

```

```

DD02 85 85      238 HDD02    sta FORPNT
DD04 84 86      239         sty FORPNT+1
DD06           240 ;
DD06 20 65 D3   241         jsr HD365
DD09 F0 04      242         beq HDD0F
DD0B           243 ;
DD0B A2 00      244         ldx #ZERO
DD0D           245 ;
DD0D F0 69      246 HDD0D    beq HDD78
DD0F           247 ;
DD0F 9A         248 HDD0F    txs
DD10           249 ;
DD10 E8         250         inx
DD11 E8         251         inx
DD12 E8         252         inx
DD13 E8         253         inx
DD14           254 ;
DD14 8A         255         txa
DD15           256 ;
DD15 E8         257         inx
DD16 E8         258         inx
DD17 E8         259         inx
DD18 E8         260         inx
DD19 E8         261         inx
DD1A E8         262         inx
DD1B           263 ;
DD1B 86 60      264         stx P2
DD1D           265 ;
DD1D A0 01      266         ldy #1
DD1F           267 ;
DD1F 20 F9 EA   268         jsr HEAF9
DD22           269 ;
DD22 BA         270         tsx
DD23           271 ;
DD23 BD 09 01   272         lda STACK+9,X
DD26 85 A2      273         sta FACSIGN
DD28           274 ;
DD28 A5 85      275         lda FORPNT
DD2A A4 86      276         ldy FORPNT+1
DD2C           277 ;
DD2C 20 BE E7   278         jsr HE7BE
DD2F 20 27 EB   279         jsr HEB27
DD32           280 ;
DD32 A0 01      281         ldy #1
DD34           282 ;
DD34 20 B4 EB   283         jsr HEBB4
DD37           284 ;
DD37 BA         285         tsx
DD38           286 ;
DD38 38         287         sec
DD39           288 ;
DD39 FD 09 01   289         sbc STACK+9,X
DD3C F0 17      290         beq HDD55
DD3E           291 ;
DD3E BD 0F 01   292         lda STACK+15,X
DD41 85 75      293         sta CURLIN
DD43           294 ;
DD43 BD 10 01   295         lda STACK+16,X
DD46 85 76      296         sta CURLIN+1
DD48           297 ;
DD48 BD 12 01   298         lda STACK+18,X

```

```

DD4B 85 B8      299      sta TXTPTR
DD4D            300      ;
DD4D BD 11 01   301      lda STACK+17,X
DD50 85 B9      302      sta TXTPTR+1
DD52            303      ;
DD52 4C D2 D7   304      HDD52  jmp HD7D2
DD55            305      ;
DD55 8A         306      HDD55  txa
DD56 69 11      307      adc #$11
DD58 AA         308      tax
DD59            309      ;
DD59 9A         310      txs
DD5A            311      ;
DD5A 20 B7 00   312      jsr CHRGOT
DD5D            313      ;
DD5D C9 2C      314      cmp #$2C
DD5F D0 F1      315      bne HDD52
DD61            316      ;
DD61 20 B1 00   317      jsr CHRGET
DD64 20 FF DC   318      jsr HDCFF
DD67            319      ;
DD67 20 7B DD   320      HDD67  jsr HDD7B
DD6A            321      ;
DD6A 18         322      HDD6A  clc
DD6B            323      ;
DD6B 24 00      324      bit LOC0
DD6D            325      dfs !-1
DD6C            326      ;
DD6C 38         327      HDD6C  sec
DD6D            328      ;
DD6D 24 11      329      HDD6D  bit ZPG11
DD6F 30 03      330      bmi HDD74
DD71            331      ;
DD71 B0 03      332      bcs HDD76
DD73            333      ;
DD73 60         334      HDD73  rts
DD74            335      ;
DD74 B0 FD      336      HDD74  bcs HDD73
DD76            337      ;
DD76 A2 A3      338      HDD76  ldx #$A3
DD78            339      ;
DD78 4C 12 D4   340      HDD78  jmp HD412
DD7B            341      ;
DD7B A6 B8      342      HDD7B  ldx TXTPTR
DD7D D0 02      343      bne HDD81
DD7F            344      ;
DD7F C6 B9      345      dec TXTPTR+1
DD81            346      ;
DD81 C6 B8      347      HDD81  dec TXTPTR
DD83            348      ;
DD83 A2 00      349      ldx #ZERO
DD85            350      ;
DD85 24 00      351      bit LOC0
DD87            352      dfs !-1
DD86            353      ;
DD86 48         354      HDD86  pha
DD87            355      ;
DD87 8A         356      txa
DD88 48         357      pha
DD89            358      ;
DD89 A9 01      359      lda #1

```

```

DD8B      360 ;
DD8B 20 D6 D3 361      jsr HD3D6
DD8E 20 60 DE 362      jsr HDE60
DD91      363 ;
DD91 A9 00      364      lda #ZERO
DD93 85 89      365      sta GENTEMP+2
DD95      366 ;
DD95 20 B7 00 367 HDD95  jsr CHRGOT
DD98      368 ;
DD98 38      369 HDD98  sec
DD99      370 ;
DD99 E9 CF      371      sbc #$CF
DD9B 90 17      372      bcc Hddb4
DD9D      373 ;
DD9D C9 03      374      cmp #3
DD9F B0 13      375      bcs Hddb4
DDA1      376 ;
DDA1 C9 01      377      cmp #1
DDA3      378 ;
DDA3 2A      379      rol
DDA4 49 01      380      eor #1
DDA6      381 ;
DDA6 45 89      382      eor GENTEMP+2
DDA8 C5 89      383      cmp GENTEMP+2
DDAA 90 61      384      bcc HDE0D
DDAC      385 ;
DDAC 85 89      386      sta GENTEMP+2
DDAE      387 ;
DDAE 20 B1 00 388      jsr CHRGET
DDB1      389 ;
DDB1 4C 98 DD 390      jmp HDD98
DDB4      391 ;
DDB4 A6 89      392 Hddb4  ldx GENTEMP+2
DDB6 D0 2C      393      bne HDDE4
DDB8      394 ;
DDB8 B0 7B      395      bcs HDE35
DDBA      396 ;
DDBA 69 07      397      adc #7
DDBC 90 77      398      bcc HDE35
DDBE      399 ;
DDBE 65 11      400      adc ZPG11
DDC0 D0 03      401      bne HDDC5
DDC2      402 ;
DDC2 4C 97 E5 403      jmp HE597
DDC5      404 ;
DDC5 69 FF      405 HDDC5  adc #NEGONE
DDC7 85 5E      406      sta INDEX
DDC9      407 ;
DDC9 0A      408      asl
DDCA      409 ;
DDCA 65 5E      410      adc INDEX
DDCC A8      411      tay
DDCD      412 ;
DDCD 68      413 HDDCD  pla
DDCE D9 B2 D0 414      cmp HD0B2,Y
DDD1 B0 67      415      bcs HDE3A
DDD3      416 ;
DDD3 20 6A DD 417      jsr HDD6A
DDD6      418 ;
DDD6 48      419 HDDD6  pha
DDD7      420 ;

```

```

DDD7 20 FD DD      421  HDDD7      jsr HDDFD
DDDA               422  ;
DDDA 68            423              pla
Dddb               424  ;
Dddb A4 87         425              ldy GENTEMP
DDDD 10 17         426              bpl HDDF6
DDDF              427  ;
DDDF AA           428              tax
DDE0              429  ;
DDE0 F0 56         430              beq HDE38
DDE2 D0 5F         431              bne HDE43
DDE4              432  ;
DDE4 46 11         433  HDDE4      lsr ZPG11
DDE6              434  ;
DDE6 8A           435              txa
DDE7 2A           436              rol
DDE8              437  ;
DDE8 A6 B8         438              ldx TXTPTR
DDEA D0 02         439              bne HDDEE
DDEC              440  ;
DDEC C6 B9         441              dec TXTPTR+1
DDEE              442  ;
DDEE C6 B8         443  HDDEE      dec TXTPTR
DDF0              444  ;
DDF0 A0 1B         445              ldy #$1B
DDF2              446  ;
DDF2 85 89         447              sta GENTEMP+2
DDF4              448  ;
DDF4 D0 D7         449              bne HDDCD
DDF6              450  ;
DDF6 D9 B2 D0      451  HDDF6      cmp HD0B2,Y
DDF9              452  ;
DDF9 B0 48         453              bcs HDE43
DDFB 90 D9         454              bcc HDDD6
DDFD              455  ;
DDFD B9 B4 D0      456  HDDFD      lda HD0B2+2,Y
DE00 48            457              pha
DE01              458  ;
DE01 B9 B3 D0      459              lda HD0B2+1,Y
DE04 48            460              pha
DE05              461  ;
DE05 20 10 DE      462              jsr HDE10
DE08              463  ;
DE08 A5 89         464              lda GENTEMP+2
DE0A              465  ;
DE0A 4C 86 DD      466              jmp HDD86
DE0D              467  ;
DE0D 4C C9 DE      468  HDE0D      jmp HDEC9
DE10              469  ;
DE10 A5 A2         470  HDE10      lda FACSIGN
DE12              471  ;
DE12 BE B2 D0      472              ldx HD0B2,Y
DE15              473  ;
DE15 A8            474  HDE15      tay
DE16              475  ;
DE16 68            476              pla
DE17 85 5E         477              sta INDEX
DE19              478  ;
DE19 E6 5E         479              inc INDEX
DE1B              480  ;
DE1B 68            481              pla

```

```

DE1C 85 5F      482      sta INDEX+1
DE1E           483      ;
DE1E 98         484      tya
DE1F 48         485      pha
DE20           486      ;
DE20 20 72 EB   487 HDE20  jsr HEB72
DE23           488      ;
DE23 A5 A1      489      lda FACMO+1
DE25 48         490      pha
DE26           491      ;
DE26 A5 A0      492      lda FACMO
DE28 48         493      pha
DE29           494      ;
DE29 A5 9F      495      lda DSCTMP+2
DE2B 48         496      pha
DE2C           497      ;
DE2C A5 9E      498      lda DSCTMP+1
DE2E 48         499      pha
DE2F           500      ;
DE2F A5 9D      501      lda DSCTMP
DE31 48         502      pha
DE32           503      ;
DE32 6C 5E 00   504      jmp (INDEX)
DE35           505      ;
DE35 A0 FF      506 HDE35  ldy #NEGONE
DE37           507      ;
DE37 68         508      pla
DE38           509      ;
DE38 F0 23      510 HDE38  beq HDE5D
DE3A           511      ;
DE3A C9 64      512 HDE3A  cmp #$64
DE3C F0 03      513      beq HDE41
DE3E           514      ;
DE3E 20 6A DD   515      jsr HDD6A
DE41           516      ;
DE41 84 87      517 HDE41  sty GENTEMP
DE43           518      ;
DE43 68         519 HDE43  pla
DE44 4A         520      lsr
DE45 85 16      521      sta ZPG16
DE47           522      ;
DE47 68         523      pla
DE48 85 A5      524      sta ARGEXP
DE4A           525      ;
DE4A 68         526      pla
DE4B 85 A6      527      sta ARGMANT
DE4D           528      ;
DE4D 68         529      pla
DE4E 85 A7      530      sta ARGMANT+1
DE50           531      ;
DE50 68         532      pla
DE51 85 A8      533      sta ARGMANT+2
DE53           534      ;
DE53 68         535      pla
DE54 85 A9      536      sta ARGMANT+3
DE56           537      ;
DE56 68         538      pla
DE57 85 AA      539      sta ARGSGN
DE59           540      ;
DE59 45 A2      541      eor FACSIGN
DE5B 85 AB      542      sta STRNG1

```



```

DE5D          543 ;
DE5D A5 9D    544 HDE5D    lda DSCTMP
DE5F          545 ;
DE5F 60       546          rts
DE60          547 ;
DE60 A9 00    548 HDE60    lda #ZERO
DE62 85 11    549          sta ZPG11
DE64          550 ;
DE64 20 B1 00 551 HDE64    jsr CHRGET
DE67 B0 03    552          bcs HDE6C
DE69          553 ;
DE69 4C 4A EC 554 HDE69    jmp HEC4A
DE6C          555 ;
DE6C 20 7D E0 556 HDE6C    jsr HE07D
DE6F B0 64    557          bcs HDED5
DE71          558 ;
DE71 C9 2E    559          cmp #$2E
DE73 F0 F4    560          beq HDE69
DE75          561 ;
DE75 C9 C9    562          cmp #$C9
DE77 F0 55    563          beq HDECE
DE79          564 ;
DE79 C9 C8    565          cmp #$C8
DE7B F0 E7    566          beq HDE64
DE7D          567 ;
DE7D C9 22    568          cmp #$22
DE7F D0 0F    569          bne HDE90
DE81          570 ;
DE81 A5 B8    571 HDE81    lda TXTPTR
DE83 A4 B9    572          ldy TXTPTR+1
DE85          573 ;
DE85 69 00    574          adc #ZERO
DE87 90 01    575          bcc HDE8A
DE89          576 ;
DE89 C8       577          iny
DE8A          578 ;
DE8A 20 E7 E3 579 HDE8A    jsr HE3E7
DE8D          580 ;
DE8D 4C 3D E7 581          jmp HE73D
DE90          582 ;
DE90 C9 C6    583 HDE90    cmp #$C6
DE92 D0 10    584          bne HDEA4
DE94          585 ;
DE94 A0 18    586          ldy #$18
DE96 D0 38    587          bne HDED0
DE98          588 ;
DE98 A5 9D    589 HDE98    lda DSCTMP
DE9A D0 03    590          bne HDE9F
DE9C          591 ;
DE9C A0 01    592          ldy #1
DE9E          593 ;
DE9E 2C 00 00 594          bit *-*
DEA1          595          dfs !-2
DE9F          596 ;
DE9F A0 00    597 HDE9F    ldy #ZERO
DEA1          598 ;
DEA1 4C 01 E3 599          jmp HE301
DEA4          600 ;
DEA4 C9 C2    601 HDEA4    cmp #$C2
DEA6 D0 03    602          bne HDEAB
DEA8          603 ;

```

```

DEA8 4C 54 E3      604      jmp HE354
DEAB              605      ;
DEAB C9 D2        606 HDEAB  cmp #$D2
DEAD 90 03        607      bcc HDEB2
DEAF              608      ;
DEAF 4C 0C DF      609      jmp HDF0C
DEB2              610      ;
DEB2 20 BB DE      611 HDEB2  jsr HDEBB
DEB5 20 7B DD      612      jsr HDD7B
DEB8              613      ;
DEB8 A9 29         614 HDEB8  lda #$29
DEBA              615      ;
DEBA 2C 00 00      616      bit *-*
DEBD              617      dfs !-2
DEBB              618      ;
DEBB A9 28         619 HDEBB  lda #$28
DEBD              620      ;
DEBD 2C 00 00      621      bit *-*
DEC0              622      dfs !-2
DEBE              623      ;
DEBE A9 2C         624 HDEBE  lda #$2C
DEC0              625      ;
DEC0 A0 00         626 HDEC0  ldy #ZERO
DEC2              627      ;
DEC2 D1 B8         628      cmp (TXTPTR),Y
DEC4 D0 03         629      bne HDEC9
DEC6              630      ;
DEC6 4C B1 00      631      jmp CHRGET
DEC9              632      ;
DEC9 A2 10         633 HDEC9  ldx #$10
DECB              634      ;
DECB 4C 12 D4      635      jmp HD412
DECE              636      ;
DECE A0 15         637 HDECE  ldy #$15
DED0              638      ;
DED0 68            639 HDED0  pla
DED1 68            640      pla
DED2              641      ;
DED2 4C D7 DD      642      jmp HDDD7
DED5              643      ;
DED5 20 E3 DF      644 HDED5  jsr HDFE3
DED8              645      ;
DED8 85 A0         646      sta FACMO
DEDA 84 A1         647      sty FACMO+1
DEDC              648      ;
DEDC A6 11         649      ldx ZPG11
DEDE F0 05         650      beq HDEE5
DEE0              651      ;
DEE0 A2 00         652      ldx #ZERO
DEE2 86 AC         653      stx STRNG1+1
DEE4              654      ;
DEE4 60            655      rts
DEE5              656      ;
DEE5 A6 12         657 HDEE5  ldx ZPG12
DEE7 10 0D         658      bpl HDEF6
DEE9              659      ;
DEE9 A0 00         660      ldy #ZERO
DEEB              661      ;
DEEB B1 A0         662      lda (FACMO),Y
DEED AA           663      tax
DEEE              664      ;

```

```

DEEE C8          665      iny
DEEF            666      ;
DEEF B1 A0      667      lda (FACMO),Y
DEF1 A8          668      tay
DEF2            669      ;
DEF2 8A          670      txa
DEF3            671      ;
DEF3 4C F2 E2    672      jmp HE2F2
DEF6            673      ;
DEF6 4C F9 EA    674 HDEF6  jmp HEAF9
DEF9            675      ;
DEF9 20 B1 00    676 HDEF9  jsr CHRGET
DEFC 20 EC F1    677      jsr HF1EC
DEFF            678      ;
DEFF 8A          679      txa
DF00            680      ;
DF00 A4 F0      681      ldy FIRST
DF02            682      ;
DF02 20 71 F8    683      jsr SCRN
DF05            684      ;
DF05 A8          685      tay
DF06            686      ;
DF06 20 01 E3    687      jsr HE301
DF09            688      ;
DF09 4C B8 DE    689      jmp HDEB8
DF0C            690      ;
DF0C C9 D7      691 HDF0C  cmp #$D7
DF0E F0 E9      692      beq HDEF9
DF10            693      ;
DF10 0A          694      asl
DF11 48          695      pha
DF12            696      ;
DF12 AA          697      tax
DF13            698      ;
DF13 20 B1 00    699      jsr CHRGET
DF16            700      ;
DF16 E0 CF      701      cpx #$CF
DF18 90 20      702      bcc HDF3A
DF1A            703      ;
DF1A 20 BB DE    704      jsr HDEBB
DF1D 20 7B DD    705      jsr HDD7B
DF20 20 BE DE    706      jsr HDEBE
DF23 20 6C DD    707      jsr HDD6C
DF26            708      ;
DF26 68          709      pla
DF27 AA          710      tax
DF28            711      ;
DF28 A5 A1      712      lda FACMO+1
DF2A 48          713      pha
DF2B            714      ;
DF2B A5 A0      715      lda FACMO
DF2D 48          716      pha
DF2E            717      ;
DF2E 8A          718      txa
DF2F 48          719      pha
DF30            720      ;
DF30 20 F8 E6    721      jsr HE6F8
DF33            722      ;
DF33 68          723      pla
DF34 A8          724      tay
DF35            725      ;

```

```

DF35 8A          726          txa
DF36 48          727          pha
DF37           728          ;
DF37 4C 3F DF    729          jmp HDF3F
DF3A           730          ;
DF3A 20 B2 DE    731 HDF3A    jsr HDEB2
DF3D           732          ;
DF3D 68          733          pla
DF3E A8          734          tay
DF3F           735          ;
DF3F B9 DC CF    736 HDF3F    lda HD000-$24,Y
DF42 85 91       737          sta ZPG91
DF44           738          ;
DF44 B9 DD CF    739          lda HD000-$23,Y
DF47 85 92       740          sta ZPG92
DF49           741          ;
DF49 20 90 00    742          jsr ZPG90
DF4C           743          ;
DF4C 4C 6A DD    744          jmp HDD6A
DF4F           745          ;
DF4F A5 A5       746 HDF4F    lda ARGEXP
DF51 05 9D       747          ora DSCTMP
DF53 D0 0B       748          bne HDF60
DF55           749          ;
DF55 A5 A5       750 HDF55    lda ARGEXP
DF57 F0 04       751          beq HDF5D
DF59           752          ;
DF59 A5 9D       753          lda DSCTMP
DF5B D0 03       754          bne HDF60
DF5D           755          ;
DF5D A0 00       756 HDF5D    ldy #ZERO
DF5F           757          ;
DF5F 2C 00 00    758          bit *-*
DF62           759          dfs !-2
DF60           760          ;
DF60 A0 01       761 HDF60    ldy #1
DF62           762          ;
DF62 4C 01 E3    763          jmp HE301
DF65           764          ;
DF65 20 6D DD    765 HDF65    jsr HDD6D
DF68 B0 13       766          bcs HDF7D
DF6A           767          ;
DF6A A5 AA       768          lda ARGSGN
DF6C 09 7F       769          ora #$7F
DF6E 25 A6       770          and ARGMANT
DF70 85 A6       771          sta ARGMANT
DF72           772          ;
DF72 A9 A5       773          lda #$A5
DF74 A0 00       774          ldy #ZERO
DF76           775          ;
DF76 20 B2 EB    776          jsr HEBB2
DF79           777          ;
DF79 AA          778          tax
DF7A           779          ;
DF7A 4C B0 DF    780          jmp HDFB0
DF7D           781          ;
DF7D A9 00       782 HDF7D    lda #ZERO
DF7F 85 11       783          sta ZPG11
DF81           784          ;
DF81 C6 89       785          dec GENTEMP+2
DF83           786          ;

```

```

DF83 20 00 E6      787      jsr HE600
DF86              788      ;
DF86 85 9D        789      sta DSCTMP
DF88 86 9E        790      stx DSCTMP+1
DF8A 84 9F        791      sty DSCTMP+2
DF8C              792      ;
DF8C A5 A8        793      lda ARGMANT+2
DF8E A4 A9        794      ldy ARGMANT+3
DF90              795      ;
DF90 20 04 E6      796      jsr HE604
DF93              797      ;
DF93 86 A8        798      stx ARGMANT+2
DF95 84 A9        799      sty ARGMANT+3
DF97              800      ;
DF97 AA          801      tax
DF98              802      ;
DF98 38          803      sec
DF99              804      ;
DF99 E5 9D        805      sbc DSCTMP
DF9B F0 08        806      beq HDFA5
DF9D              807      ;
DF9D A9 01        808      lda #1
DF9F              809      ;
DF9F 90 04        810      bcc HDFA5
DFA1              811      ;
DFA1 A6 9D        812      ldx DSCTMP
DFA3              813      ;
DFA3 A9 FF        814      lda #NEGONE
DFA5              815      ;
DFA5 85 A2        816      HDFA5 sta FACSIGN
DFA7              817      ;
DFA7 A0 FF        818      ldy #NEGONE
DFA9              819      ;
DFA9 E8          820      inx
DFAA              821      ;
DFAA C8          822      HDFAA iny
DFAB              823      ;
DFAB CA          824      dex
DFAC D0 07        825      bne HDFB5
DFAE              826      ;
DFAE A6 A2        827      ldx FACSIGN
DFB0              828      ;
DFB0 30 0F        829      HDFB0 bmi HDFC1
DFB2              830      ;
DFB2 18          831      clc
DFB3 90 0C        832      bcc HDFC1
DFB5              833      ;
DFB5 B1 A8        834      HDFB5 lda (ARGMANT+2),Y
DFB7 D1 9E        835      cmp (DSCTMP+1),Y
DFB9 F0 EF        836      beq HDFAA
DFBB              837      ;
DFBB A2 FF        838      ldx #NEGONE
DFBD              839      ;
DFBD B0 02        840      bcs HDFC1
DFBF              841      ;
DFBF A2 01        842      ldx #1
DFC1              843      ;
DFC1 E8          844      HDFC1 inx
DFC2              845      ;
DFC2 8A          846      txa
DFC3 2A          847      rol

```

```

DFC4 25 16      848      and ZPG16
DFC6 F0 02      849      beq HDFCA
DFC8            850      ;
DFC8 A9 01      851      lda #1
DFCA            852      ;
DFCA 4C 93 EB    853 HDFCA    jmp HEB93
DFCD            854      ;
DFCD 20 FB E6    855 HDFCD    jsr HE6FB
DFD0 20 1E FB    856      jsr PREAD
DFD3            857      ;
DFD3 4C 01 E3    858      jmp HE301
DFD6            859      ;
DFD6 20 BE DE    860 HDFD6    jsr HDEBE
DFD9            861      ;
DFD9 AA          862 HDFD9    tax
DFDA            863      ;
DFDA 20 E8 DF    864      jsr HDFE8
DFDD            865      ;
DFDD 20 B7 00    866      jsr CHRGOT
DFE0 D0 F4       867      bne HDFD6
DFE2            868      ;
DFE2 60          869      rts
DFE3            870      ;
DFE3 A2 00       871 HDFE3    ldx #ZERO
DFE5            872      ;
DFE5 20 B7 00    873      jsr CHRGOT
DFE8            874      ;
DFE8 86 10       875 HDFE8    stx ZPG10
DFEA            876      ;
DFEA 85 81       877 HDFEA    sta LASTVBL
DFEC            878      ;
DFEC 20 B7 00    879      jsr CHRGOT
DFEF            880      ;
DFEF 20 7D E0    881      jsr HE07D
DFF2 B0 03       882      bcs HDFS7
DFF4            883      ;
DFF4 4C C9 DE    884 HDFS4    jmp HDEC9
DFF7            885      ;
DFF7 A2 00       886 HDFS7    ldx #ZERO
DFF9 86 11       887      stx ZPG11
DFFB 86 12       888      stx ZPG12
DFFD            889      ;
DFFD 4C 07 E0    890      jmp HE007
E000            891      ;
E000            892      ;

```

```
BSAVE D0ROM,D1,A$1000,B,L$1000
```

```

E000            893      usr D0ROM,D1
E000            894      ;
E000            895      ;
E000            896      icl "E0.L,D2"

```

```
LLOAD E0.L,D2,A$4000
```

```

E000      1      ttl "ROM Source Code, E0.L"
E000      2      ;
E000      3      ;
E000      4      ; E0.L
E000      5      ;
E000      6      ;
E000      7      obj PAGE10
E000      8      usr
E000      9      ;
E000     10      ;
E000  4C 28 F1   11  BASIC      jmp HF128
E003     12      ;
E003  4C 3C D4   13  BASIC2    jmp HD43C
E006     14      ;
E006  C4 00      15      cpy LOC0
E008     16      dfs !-1
E007     17      ;
E007  20 B1 00   18  HE007     jsr CHRGET
E00A     19      dfs !-2
E008     20      ;
E008  B1 00      21      lda (LOC0),Y
E00A  90 05      22      bcc HE011
E00C     23      ;
E00C  20 7D E0   24      jsr HE07D
E00F  90 0B      25      bcc HE01C
E011     26      ;
E011  AA        27  HE011     tax
E012     28      ;
E012  20 B1 00   29  HE012     jsr CHRGET
E015  90 FB      30      bcc HE012
E017     31      ;
E017  20 7D E0   32      jsr HE07D
E01A  B0 F6      33      bcs HE012
E01C     34      ;
E01C  C9 24      35  HE01C     cmp #$24
E01E  D0 06      36      bne HE026
E020     37      ;
E020  A9 FF      38      lda #NEGONE
E022  85 11      39      sta ZPG11
E024  D0 10      40      bne HE036
E026     41      ;
E026  C9 25      42  HE026     cmp #$25
E028  D0 13      43      bne HE03D
E02A     44      ;
E02A  A5 14      45      lda ZPG14
E02C  30 C6      46      bmi HDFS4
E02E     47      ;
E02E  A9 80      48      lda #$80
E030  85 12      49      sta ZPG12
E032  05 81      50      ora LASTVBL
E034  85 81      51      sta LASTVBL
E036     52      ;
E036  8A        53  HE036     txa
E037  09 80      54      ora #$80
E039  AA        55      tax
E03A     56      ;
E03A  20 B1 00   57      jsr CHRGET
E03D     58      ;
E03D  86 82      59  HE03D     stx LASTVBL+1
E03F     60      ;

```

```

E03F 38          61          sec
E040             62          ;
E040 05 14       63          ora ZPG14
E042 E9 28       64          sbc #$28
E044 D0 03       65          bne HE049
E046             66          ;
E046 4C 1E E1    67 HE046     jmp HE11E
E049             68          ;
E049 24 14       69 HE049     bit ZPG14
E04B             70          ;
E04B 30 02       71          bmi HE04F
E04D 70 F7       72          bvs HE046
E04F             73          ;
E04F A9 00       74 HE04F     lda #ZERO
E051 85 14       75          sta ZPG14
E053             76          ;
E053 A5 69       77          lda VARTAB
E055 A6 6A       78          ldx VARTAB+1
E057             79          ;
E057 A0 00       80          ldy #ZERO
E059             81          ;
E059 86 9C       82 HE059     stx LOWTR+1
E05B             83          ;
E05B 85 9B       84 HE05B     sta LOWTR
E05D             85          ;
E05D E4 6C       86          cpx ARYTAB+1
E05F D0 04       87          bne HE065
E061             88          ;
E061 C5 6B       89          cmp ARYTAB
E063 F0 22       90          beq HE087
E065             91          ;
E065 A5 81       92 HE065     lda LASTVBL
E067 D1 9B       93          cmp (LOWTR),Y
E069 D0 08       94          bne HE073
E06B             95          ;
E06B A5 82       96          lda LASTVBL+1
E06D             97          ;
E06D C8          98          iny
E06E             99          ;
E06E D1 9B      100          cmp (LOWTR),Y
E070 F0 6C      101          beq HE0DE
E072            102          ;
E072 88         103          dey
E073            104          ;
E073 18         105 HE073     clc
E074            106          ;
E074 A5 9B      107          lda LOWTR
E076 69 07      108          adc #7
E078 90 E1      109          bcc HE05B
E07A            110          ;
E07A E8         111          inx
E07B D0 DC      112          bne HE059
E07D            113          ;
E07D C9 41      114 HE07D     cmp #$41
E07F 90 05      115          bcc HE086
E081            116          ;
E081 E9 5B      117          sbc #$5B
E083            118          ;
E083 38         119          sec
E084            120          ;
E084 E9 A5      121          sbc #$A5

```



```

E086          122 ;
E086 60        123 HE086 rts
E087          124 ;
E087 68        125 HE087 pla
E088 48        126 pha
E089          127 ;
E089 C9 D7     128 cmp #$D7
E08B D0 0F     129 bne HE09C
E08D          130 ;
E08D BA       131 tsx
E08E          132 ;
E08E BD 02 01  133 lda STACK+$02,X
E091 C9 DE     134 cmp #$DE
E093 D0 07     135 bne HE09C
E095          136 ;
E095 A9 9A     137 lda #HE09A
E097 A0 E0     138 ldy /HE09A
E099          139 ;
E099 60        140 rts
E09A          141 ;
E09A 00 00     142 HE09A hex 0000
E09C          143 ;
E09C A5 6B     144 HE09C lda ARYTAB
E09E A4 6C     145 ldy ARYTAB+1
E0A0          146 ;
E0A0 85 9B     147 sta LOWTR
E0A2          148 ;
E0A2 84 9C     149 HE0A2 sty LOWTR+1
E0A4          150 ;
E0A4 A5 6D     151 lda STREND
E0A6 A4 6E     152 ldy STREND+1
E0A8          153 ;
E0A8 85 96     154 sta HIGHTR
E0AA 84 97     155 sty HIGHTR+1
E0AC          156 ;
E0AC 18        157 clc
E0AD          158 ;
E0AD 69 07     159 adc #7
E0AF 90 01     160 bcc HE0B2
E0B1          161 ;
E0B1 C8        162 iny
E0B2          163 ;
E0B2 85 94     164 HE0B2 sta HIGHDS
E0B4 84 95     165 sty HIGHDS+1
E0B6          166 ;
E0B6 20 93 D3  167 jsr BLTU
E0B9          168 ;
E0B9 A5 94     169 lda HIGHDS
E0BB A4 95     170 ldy HIGHDS+1
E0BD          171 ;
E0BD C8        172 iny
E0BE          173 ;
E0BE 85 6B     174 sta ARYTAB
E0C0 84 6C     175 sty ARYTAB+1
E0C2          176 ;
E0C2 A0 00     177 ldy #ZERO
E0C4          178 ;
E0C4 A5 81     179 lda LASTVBL
E0C6 91 9B     180 sta (LOWTR),Y
E0C8          181 ;
E0C8 C8        182 iny

```

```

E0C9          183 ;
E0C9 A5 82    184      lda LASTVBL+1
E0CB 91 9B    185      sta (LOWTR),Y
E0CD          186 ;
E0CD A9 00    187      lda #ZERO
E0CF          188 ;
E0CF C8       189      iny
E0D0 91 9B    190      sta (LOWTR),Y
E0D2          191 ;
E0D2 C8       192      iny
E0D3 91 9B    193      sta (LOWTR),Y
E0D5          194 ;
E0D5 C8       195      iny
E0D6 91 9B    196      sta (LOWTR),Y
E0D8          197 ;
E0D8 C8       198      iny
E0D9 91 9B    199      sta (LOWTR),Y
E0DB          200 ;
E0DB C8       201      iny
E0DC 91 9B    202      sta (LOWTR),Y
E0DE          203 ;
E0DE A5 9B    204 HE0DE   lda LOWTR
E0E0 18       205      clc
E0E1 69 02    206      adc #2
E0E3          207 ;
E0E3 A4 9C    208      ldy LOWTR+1
E0E5          209 ;
E0E5 90 01    210      bcc HE0E8
E0E7          211 ;
E0E7 C8       212      iny
E0E8          213 ;
E0E8 85 83    214 HE0E8   sta VARPNT
E0EA 84 84    215      sty VARPNT+1
E0EC          216 ;
E0EC 60       217      rts
E0ED          218 ;
E0ED A5 0F    219 HE0ED   lda ZPG0F
E0EF          220 ;
E0EF 0A       221 HE0EF   asl
E0F0 69 05    222      adc #5
E0F2 65 9B    223      adc LOWTR
E0F4          224 ;
E0F4 A4 9C    225      ldy LOWTR+1
E0F6          226 ;
E0F6 90 01    227      bcc HE0F9
E0F8          228 ;
E0F8 C8       229      iny
E0F9          230 ;
E0F9 85 94    231 HE0F9   sta HIGHDS
E0FB 84 95    232      sty HIGHDS+1
E0FD          233 ;
E0FD 60       234      rts
E0FE          235 ;
E0FE 90 80 00 236 HE0FE   hex 90800000
E101 00       237 ;
E102          238 HE102   jsr CHRGET
E105 20 67 DD 239 EVALEXPR jsr HDD67
E108          240 ;
E108 A5 A2    241 HE108   lda FACSIGN
E10A 30 0D    242      bmi HE119

```

```

E10C          243 ;
E10C A5 9D    244 HE10C   lda DSCTMP
E10E C9 90    245         cmp #$90
E110 90 09    246         bcc HE11B
E112          247 ;
E112 A9 FE    248         lda #HE0FE
E114 A0 E0    249         ldy /HE0FE
E116          250 ;
E116 20 B2 EB 251         jsr HEBB2
E119          252 ;
E119 D0 7E    253 HE119   bne HE199
E11B          254 ;
E11B 4C F2 EB 255 HE11B   jmp HEBF2
E11E          256 ;
E11E A5 14    257 HE11E   lda ZPG14
E120 D0 47    258         bne HE169
E122          259 ;
E122 A5 10    260         lda ZPG10
E124 05 12    261         ora ZPG12
E126 48       262         pha
E127          263 ;
E127 A5 11    264         lda ZPG11
E129 48       265         pha
E12A          266 ;
E12A A0 00    267         ldy #ZERO
E12C          268 ;
E12C 98       269 HE12C   tya
E12D 48       270         pha
E12E          271 ;
E12E A5 82    272         lda LASTVBL+1
E130 48       273         pha
E131          274 ;
E131 A5 81    275         lda LASTVBL
E133 48       276         pha
E134          277 ;
E134 20 02 E1 278         jsr HE102
E137          279 ;
E137 68       280         pla
E138 85 81    281         sta LASTVBL
E13A          282 ;
E13A 68       283         pla
E13B 85 82    284         sta LASTVBL+1
E13D          285 ;
E13D 68       286         pla
E13E A8       287         tay
E13F          288 ;
E13F BA       289         tsx
E140          290 ;
E140 BD 02 01 291         lda STACK+$02,X
E143 48       292         pha
E144          293 ;
E144 BD 01 01 294         lda STACK+$01,X
E147 48       295         pha
E148          296 ;
E148 A5 A0    297         lda FACMO
E14A 9D 02 01 298         sta STACK+$02,X
E14D          299 ;
E14D A5 A1    300         lda FACMO+1
E14F 9D 01 01 301         sta STACK+$01,X
E152          302 ;
E152 C8       303         iny

```

```

E153          304 ;
E153 20 B7 00 305      jsr CHRGOT
E156          306 ;
E156 C9 2C    307      cmp #$2C
E158 F0 D2    308      beq HE12C
E15A          309 ;
E15A 84 0F    310      sty ZPG0F
E15C          311 ;
E15C 20 B8 DE 312      jsr HDEB8
E15F          313 ;
E15F 68       314      pla
E160 85 11    315      sta ZPG11
E162          316 ;
E162 68       317      pla
E163 85 12    318      sta ZPG12
E165          319 ;
E165 29 7F    320      and #$7F
E167 85 10    321      sta ZPG10
E169          322 ;
E169 A6 6B    323 HE169   ldx ARYTAB
E16B A5 6C    324      lda ARYTAB+1
E16D          325 ;
E16D 86 9B    326 HE16D   stx LOWTR
E16F 85 9C    327      sta LOWTR+1
E171          328 ;
E171 C5 6E    329      cmp STREND+1
E173 D0 04    330      bne HE179
E175          331 ;
E175 E4 6D    332      cpx STREND
E177 F0 3F    333      beq HE1B8
E179          334 ;
E179 A0 00    335 HE179   ldy #ZERO
E17B          336 ;
E17B B1 9B    337      lda (LOWTR),Y
E17D          338 ;
E17D C8       339      iny
E17E          340 ;
E17E C5 81    341      cmp LASTVBL
E180 D0 06    342      bne HE188
E182          343 ;
E182 A5 82    344      lda LASTVBL+1
E184 D1 9B    345      cmp (LOWTR),Y
E186 F0 16    346      beq HE19E
E188          347 ;
E188 C8       348 HE188   iny
E189          349 ;
E189 B1 9B    350      lda (LOWTR),Y
E18B 18       351      clc
E18C 65 9B    352      adc LOWTR
E18E AA       353      tax
E18F          354 ;
E18F C8       355      iny
E190          356 ;
E190 B1 9B    357      lda (LOWTR),Y
E192 65 9C    358      adc LOWTR+1
E194 90 D7    359      bcc HE16D
E196          360 ;
E196 A2 6B    361 HE196   ldx #$6B
E198          362 ;
E198 2C 00 00 363      bit *-*
E19B          364      dfs !-2

```

```

E199          365 ;
E199 A2 35    366 HE199    ldx #$35
E19B          367 ;
E19B 4C 12 D4 368 HE19B    jmp HD412
E19E          369 ;
E19E A2 78    370 HE19E    ldx #$78
E1A0          371 ;
E1A0 A5 10    372          lda ZPG10
E1A2 D0 F7    373          bne HE19B
E1A4          374 ;
E1A4 A5 14    375          lda ZPG14
E1A6 F0 02    376          beq HE1AA
E1A8          377 ;
E1A8 38       378          sec
E1A9          379 ;
E1A9 60       380          rts
E1AA          381 ;
E1AA 20 ED E0 382 HE1AA    jsr HE0ED
E1AD          383 ;
E1AD A5 0F    384          lda ZPG0F
E1AF          385 ;
E1AF A0 04    386          ldy #4
E1B1          387 ;
E1B1 D1 9B    388          cmp (LOWTR),Y
E1B3 D0 E1    389          bne HE196
E1B5          390 ;
E1B5 4C 4B E2 391          jmp HE24B
E1B8          392 ;
E1B8 A5 14    393 HE1B8    lda ZPG14
E1BA F0 05    394          beq HE1C1
E1BC          395 ;
E1BC A2 2A    396          ldx #$2A
E1BE          397 ;
E1BE 4C 12 D4 398          jmp HD412
E1C1          399 ;
E1C1 20 ED E0 400 HE1C1    jsr HE0ED
E1C4 20 E3 D3 401          jsr HD3E3
E1C7          402 ;
E1C7 A9 00    403          lda #ZERO
E1C9 A8       404          tay
E1CA 85 AE    405          sta STRNG2+1
E1CC          406 ;
E1CC A2 05    407          ldx #5
E1CE          408 ;
E1CE A5 81    409          lda LASTVBL
E1D0 91 9B    410          sta (LOWTR),Y
E1D2 10 01    411          bpl HE1D5
E1D4          412 ;
E1D4 CA       413          dex
E1D5          414 ;
E1D5 C8       415 HE1D5    iny
E1D6          416 ;
E1D6 A5 82    417          lda LASTVBL+1
E1D8 91 9B    418          sta (LOWTR),Y
E1DA 10 02    419          bpl HE1DE
E1DC          420 ;
E1DC CA       421          dex
E1DD CA       422          dex
E1DE          423 ;
E1DE 86 AD    424 HE1DE    stx STRNG2
E1E0          425 ;

```

```

E1E0 A5 0F      426      lda ZPG0F
E1E2            427      ;
E1E2 C8         428      iny
E1E3 C8         429      iny
E1E4 C8         430      iny
E1E5            431      ;
E1E5 91 9B      432      sta (LOWTR),Y
E1E7            433      ;
E1E7 A2 0B      434 HE1E7  ldx #$0B
E1E9            435      ;
E1E9 A9 00      436      lda #ZERO
E1EB            437      ;
E1EB 24 10      438      bit ZPG10
E1ED 50 08      439      bvc HE1F7
E1EF            440      ;
E1EF 68         441      pla
E1F0            442      ;
E1F0 18         443      clc
E1F1            444      ;
E1F1 69 01      445      adc #1
E1F3 AA         446      tax
E1F4            447      ;
E1F4 68         448      pla
E1F5 69 00      449      adc #ZERO
E1F7            450      ;
E1F7 C8         451 HE1F7  iny
E1F8            452      ;
E1F8 91 9B      453      sta (LOWTR),Y
E1FA            454      ;
E1FA C8         455      iny
E1FB            456      ;
E1FB 8A         457      txa
E1FC 91 9B      458      sta (LOWTR),Y
E1FE            459      ;
E1FE 20 AD E2    460      jsr HE2AD
E201            461      ;
E201 86 AD      462      stx STRNG2
E203 85 AE      463      sta STRNG2+1
E205            464      ;
E205 A4 5E      465      ldy INDEX
E207            466      ;
E207 C6 0F      467      dec ZPG0F
E209 D0 DC      468      bne HE1E7
E20B            469      ;
E20B 65 95      470      adc HIGHDS+1
E20D B0 5D      471      bcs HE26C
E20F            472      ;
E20F 85 95      473      sta HIGHDS+1
E211 A8         474      tay
E212            475      ;
E212 8A         476      txa
E213 65 94      477      adc HIGHDS
E215 90 03      478      bcc HE21A
E217            479      ;
E217 C8         480      iny
E218 F0 52      481      beq HE26C
E21A            482      ;
E21A 20 E3 D3    483 HE21A  jsr HD3E3
E21D            484      ;
E21D 85 6D      485      sta STREND
E21F 84 6E      486      sty STREND+1

```

```

E221          487 ;
E221 A9 00    488      lda #ZERO
E223          489 ;
E223 E6 AE    490      inc STRNG2+1
E225          491 ;
E225 A4 AD    492      ldy STRNG2
E227 F0 05    493      beq HE22E
E229          494 ;
E229 88       495 HE229  dey
E22A          496 ;
E22A 91 94    497      sta (HIGHDS),Y
E22C D0 FB    498      bne HE229
E22E          499 ;
E22E C6 95    500 HE22E  dec HIGHDS+1
E230          501 ;
E230 C6 AE    502      dec STRNG2+1
E232 D0 F5    503      bne HE229
E234          504 ;
E234 E6 95    505      inc HIGHDS+1
E236          506 ;
E236 38       507      sec
E237          508 ;
E237 A5 6D    509      lda STREND
E239 E5 9B    510      sbc LOWTR
E23B          511 ;
E23B A0 02    512      ldy #2
E23D 91 9B    513      sta (LOWTR),Y
E23F          514 ;
E23F A5 6E    515      lda STREND+1
E241          516 ;
E241 C8       517      iny
E242          518 ;
E242 E5 9C    519      sbc LOWTR+1
E244 91 9B    520      sta (LOWTR),Y
E246          521 ;
E246 A5 10    522      lda ZPG10
E248 D0 62    523      bne HE2AC
E24A          524 ;
E24A C8       525      iny
E24B          526 ;
E24B B1 9B    527 HE24B  lda (LOWTR),Y
E24D 85 0F    528      sta ZPG0F
E24F          529 ;
E24F A9 00    530      lda #ZERO
E251 85 AD    531      sta STRNG2
E253          532 ;
E253 85 AE    533 HE253  sta STRNG2+1
E255          534 ;
E255 C8       535      iny
E256          536 ;
E256 68       537      pla
E257 AA       538      tax
E258 85 A0    539      sta FACMO
E25A          540 ;
E25A 68       541      pla
E25B 85 A1    542      sta FACMO+1
E25D          543 ;
E25D D1 9B    544      cmp (LOWTR),Y
E25F          545 ;
E25F 90 0E    546      bcc HE26F
E261 D0 06    547      bne HE269

```

```

E263          548 ;
E263 C8       549      iny
E264          550 ;
E264 8A       551      txa
E265          552 ;
E265 D1 9B    553      cmp (LOWTR),Y
E267 90 07    554      bcc HE270
E269          555 ;
E269 4C 96 E1 556 HE269    jmp HE196
E26C          557 ;
E26C 4C 10 D4 558 HE26C    jmp HD410
E26F          559 ;
E26F C8       560 HE26F    iny
E270          561 ;
E270 A5 AE    562 HE270    lda STRNG2+1
E272 05 AD    563      ora STRNG2
E274 18       564      clc
E275 F0 0A    565      beq HE281
E277          566 ;
E277 20 AD E2 567      jsr HE2AD
E27A          568 ;
E27A 8A       569      txa
E27B 65 A0    570      adc FACMO
E27D AA       571      tax
E27E          572 ;
E27E 98       573      tya
E27F          574 ;
E27F A4 5E    575      ldy INDEX
E281          576 ;
E281 65 A1    577 HE281    adc FACMO+1
E283          578 ;
E283 86 AD    579      stx STRNG2
E285          580 ;
E285 C6 0F    581      dec ZPG0F
E287 D0 CA    582      bne HE253
E289          583 ;
E289 85 AE    584      sta STRNG2+1
E28B          585 ;
E28B A2 05    586      ldx #5
E28D          587 ;
E28D A5 81    588      lda LASTVBL
E28F 10 01    589      bpl HE292
E291          590 ;
E291 CA       591      dex
E292          592 ;
E292 A5 82    593 HE292    lda LASTVBL+1
E294 10 02    594      bpl HE298
E296          595 ;
E296 CA       596      dex
E297 CA       597      dex
E298          598 ;
E298 86 64    599 HE298    stx LASTMUL+2
E29A          600 ;
E29A A9 00    601      lda #ZERO
E29C          602 ;
E29C 20 B6 E2 603      jsr HE2B6
E29F          604 ;
E29F 8A       605      txa
E2A0 65 94    606      adc HIGHDS
E2A2 85 83    607      sta VARPNT
E2A4          608 ;

```



```

E2A4 98          609          tya
E2A5 65 95      610          adc HIGHDS+1
E2A7 85 84      611          sta VARPNT+1
E2A9 A8         612          tay
E2AA           613          ;
E2AA A5 83      614          lda VARPNT
E2AC           615          ;
E2AC 60         616 HE2AC     rts
E2AD           617          ;
E2AD 84 5E      618 HE2AD     sty INDEX
E2AF           619          ;
E2AF B1 9B      620          lda (LOWTR),Y
E2B1 85 64      621          sta LASTMUL+2
E2B3           622          ;
E2B3 88         623          dey
E2B4           624          ;
E2B4 B1 9B      625          lda (LOWTR),Y
E2B6           626          ;
E2B6 85 65      627 HE2B6     sta LASTMUL+3
E2B8           628          ;
E2B8 A9 10      629          lda #$10
E2BA 85 99      630          sta TEMP2+1
E2BC           631          ;
E2BC A2 00      632          ldx #ZERO
E2BE A0 00      633          ldy #ZERO
E2C0           634          ;
E2C0 8A         635 HE2C0     txa
E2C1 0A         636          asl
E2C2 AA         637          tax
E2C3           638          ;
E2C3 98         639          tya
E2C4 2A         640          rol
E2C5 A8         641          tay
E2C6 B0 A4      642          bcs HE26C
E2C8           643          ;
E2C8 06 AD      644          asl STRNG2
E2CA 26 AE      645          rol STRNG2+1
E2CC 90 0B      646          bcc HE2D9
E2CE           647          ;
E2CE 18         648          clc
E2CF           649          ;
E2CF 8A         650          txa
E2D0 65 64      651          adc LASTMUL+2
E2D2 AA         652          tax
E2D3           653          ;
E2D3 98         654          tya
E2D4 65 65      655          adc LASTMUL+3
E2D6 A8         656          tay
E2D7 B0 93      657          bcs HE26C
E2D9           658          ;
E2D9 C6 99      659 HE2D9     dec TEMP2+1
E2DB D0 E3      660          bne HE2C0
E2DD           661          ;
E2DD 60         662          rts
E2DE           663          ;
E2DE A5 11      664 HE2DE     lda ZPG11
E2E0 F0 03      665          beq HE2E5
E2E2           666          ;
E2E2 20 00 E6   667          jsr HE600
E2E5           668          ;
E2E5 20 84 E4   669 HE2E5     jsr HE484

```

```

E2E8          670 ;
E2E8 38       671      sec
E2E9          672 ;
E2E9 A5 6F    673      lda FRETOP
E2EB E5 6D    674      sbc STREND
E2ED A8       675      tay
E2EE          676 ;
E2EE A5 70    677      lda FRETOP+1
E2F0 E5 6E    678      sbc STREND+1
E2F2          679 ;
E2F2 A2 00    680 HE2F2   ldx #ZERO
E2F4 86 11    681      stx ZPG11
E2F6          682 ;
E2F6 85 9E    683      sta DSCTMP+1
E2F8 84 9F    684      sty DSCTMP+2
E2FA          685 ;
E2FA A2 90    686      ldx #$90
E2FC          687 ;
E2FC 4C 9B EB 688      jmp HEB9B
E2FF          689 ;
E2FF A4 24    690 HE2FF   ldy CH
E301          691 ;
E301 A9 00    692 HE301   lda #ZERO
E303          693 ;
E303 38       694      sec
E304          695 ;
E304 F0 EC    696      beq HE2F2
E306          697 ;
E306 A6 76    698 HE306   ldx CURLIN+1
E308          699 ;
E308 E8       700      inx
E309 D0 A1    701      bne HE2AC
E30B          702 ;
E30B A2 95    703      ldx #$95
E30D          704 ;
E30D 2C 00 00 705      bit *-*
E310          706      dfs !-2
E30E          707 ;
E30E A2 E0    708 HE30E   ldx #$E0
E310          709 ;
E310 4C 12 D4 710      jmp HD412
E313          711 ;
E313 20 41 E3 712 HE313   jsr HE341
E316 20 06 E3 713      jsr HE306
E319 20 BB DE 714      jsr HDEBB
E31C          715 ;
E31C A9 80    716      lda #$80
E31E 85 14    717      sta ZPG14
E320          718 ;
E320 20 E3 DF 719      jsr HDFE3
E323 20 6A DD 720      jsr HDD6A
E326 20 B8 DE 721      jsr HDEB8
E329          722 ;
E329 A9 D0    723      lda #$D0
E32B          724 ;
E32B 20 C0 DE 725      jsr HDEC0
E32E 48       726      pha
E32F          727 ;
E32F A5 84    728      lda VARPNT+1
E331 48       729      pha
E332          730 ;

```

```

E332 A5 83      731      lda VARPNT
E334 48         732      pha
E335           733      ;
E335 A5 B9      734      lda TXTPTR+1
E337 48         735      pha
E338           736      ;
E338 A5 B8      737      lda TXTPTR
E33A 48         738      pha
E33B           739      ;
E33B 20 95 D9   740      jsr HD995
E33E           741      ;
E33E 4C AF E3   742      jmp HE3AF
E341           743      ;
E341 A9 C2      744      HE341 lda #$C2
E343 20 C0 DE   745      jsr HDEC0
E346           746      ;
E346 09 80      747      ora #$80
E348 85 14      748      sta ZPG14
E34A           749      ;
E34A 20 EA DF   750      jsr HDFEA
E34D           751      ;
E34D 85 8A      752      sta TEMP3
E34F 84 8B      753      sty TEMP3+1
E351           754      ;
E351 4C 6A DD   755      jmp HDD6A
E354           756      ;
E354 20 41 E3   757      HE354 jsr HE341
E357           758      ;
E357 A5 8B      759      lda TEMP3+1
E359 48         760      pha
E35A           761      ;
E35A A5 8A      762      lda TEMP3
E35C 48         763      pha
E35D           764      ;
E35D 20 B2 DE   765      jsr HDEB2
E360 20 6A DD   766      jsr HDD6A
E363           767      ;
E363 68         768      pla
E364 85 8A      769      sta TEMP3
E366           770      ;
E366 68         771      pla
E367 85 8B      772      sta TEMP3+1
E369           773      ;
E369 A0 02      774      ldy #2
E36B           775      ;
E36B B1 8A      776      lda (TEMP3),Y
E36D 85 83      777      sta VARPNT
E36F AA         778      tax
E370           779      ;
E370 C8         780      iny
E371           781      ;
E371 B1 8A      782      lda (TEMP3),Y
E373 F0 99      783      beq HE30E
E375           784      ;
E375 85 84      785      sta VARPNT+1
E377           786      ;
E377 C8         787      iny
E378           788      ;
E378 B1 83      789      HE378 lda (VARPNT),Y
E37A 48         790      pha
E37B           791      ;

```

```

E37B 88          792          dey
E37C 10 FA      793          bpl HE378
E37E          794          ;
E37E A4 84      795          ldy VARPNT+1
E380          796          ;
E380 20 2B EB   797          jsr HEB2B
E383          798          ;
E383 A5 B9      799          lda TXTPTR+1
E385 48         800          pha
E386          801          ;
E386 A5 B8      802          lda TXTPTR
E388 48         803          pha
E389          804          ;
E389 B1 8A      805          lda (TEMP3),Y
E38B 85 B8      806          sta TXTPTR
E38D          807          ;
E38D C8         808          iny
E38E          809          ;
E38E B1 8A      810          lda (TEMP3),Y
E390 85 B9      811          sta TXTPTR+1
E392          812          ;
E392 A5 84      813          lda VARPNT+1
E394 48         814          pha
E395          815          ;
E395 A5 83      816          lda VARPNT
E397 48         817          pha
E398          818          ;
E398 20 67 DD   819          jsr HDD67
E39B          820          ;
E39B 68         821          pla
E39C 85 8A      822          sta TEMP3
E39E          823          ;
E39E 68         824          pla
E39F 85 8B      825          sta TEMP3+1
E3A1          826          ;
E3A1 20 B7 00   827          jsr CHRGOT
E3A4 F0 03      828          beq HE3A9
E3A6          829          ;
E3A6 4C C9 DE   830          jmp HDEC9
E3A9          831          ;
E3A9 68         832          HE3A9 pla
E3AA 85 B8      833          sta TXTPTR
E3AC          834          ;
E3AC 68         835          pla
E3AD 85 B9      836          sta TXTPTR+1
E3AF          837          ;
E3AF A0 00      838          HE3AF ldy #ZERO
E3B1          839          ;
E3B1 68         840          pla
E3B2 91 8A      841          sta (TEMP3),Y
E3B4          842          ;
E3B4 68         843          pla
E3B5          844          ;
E3B5 C8         845          iny
E3B6          846          ;
E3B6 91 8A      847          sta (TEMP3),Y
E3B8          848          ;
E3B8 68         849          pla
E3B9          850          ;
E3B9 C8         851          iny
E3BA          852          ;

```

```

E3BA 91 8A      853      sta (TEMP3),Y
E3BC           854      ;
E3BC 68         855      pla
E3BD           856      ;
E3BD C8         857      iny
E3BE           858      ;
E3BE 91 8A      859      sta (TEMP3),Y
E3C0           860      ;
E3C0 68         861      pla
E3C1           862      ;
E3C1 C8         863      iny
E3C2           864      ;
E3C2 91 8A      865      sta (TEMP3),Y
E3C4           866      ;
E3C4 60         867      rts
E3C5           868      ;
E3C5 20 6A DD    869 HE3C5  jsr HDD6A
E3C8           870      ;
E3C8 A0 00       871      ldy #ZERO
E3CA           872      ;
E3CA 20 36 ED    873      jsr HED36
E3CD           874      ;
E3CD 68         875      pla
E3CE 68         876      pla
E3CF           877      ;
E3CF A9 FF       878      lda #NEGONE
E3D1           879      ;
E3D1 A0 00       880      ldy #ZERO
E3D3 F0 12       881      beq HE3E7
E3D5           882      ;
E3D5 A6 A0       883 HE3D5  ldx FACMO
E3D7 A4 A1       884      ldy FACMO+1
E3D9           885      ;
E3D9 86 8C       886      stx GENTPTR
E3DB 84 8D       887      sty GENTPTR+1
E3DD           888      ;
E3DD 20 52 E4    889 HE3DD  jsr HE452
E3E0           890      ;
E3E0 86 9E       891      stx DSCTMP+1
E3E2 84 9F       892      sty DSCTMP+2
E3E4 85 9D       893      sta DSCTMP
E3E6           894      ;
E3E6 60         895      rts
E3E7           896      ;
E3E7 A2 22       897 HE3E7  ldx #$22
E3E9 86 0D       898      stx ZPG0D
E3EB 86 0E       899      stx ZPG0E
E3ED           900      ;
E3ED 85 AB       901 HE3ED  sta STRNG1
E3EF 84 AC       902      sty STRNG1+1
E3F1           903      ;
E3F1 85 9E       904      sta DSCTMP+1
E3F3 84 9F       905      sty DSCTMP+2
E3F5           906      ;
E3F5 A0 FF       907      ldy #NEGONE
E3F7           908      ;
E3F7 C8         909 HE3F7  iny
E3F8           910      ;
E3F8 B1 AB       911      lda (STRNG1),Y
E3FA F0 0C       912      beq HE408
E3FC           913      ;

```

```
E3FC C5 0D      914      cmp ZPG0D
E3FE F0 04      915      beq HE404
E400            916      ;
E400            917      ;
E400            918      icl "E4.L"

LLOAD E4.L,A$4000
```

```

E400          1          ttl "ROM Source Code, E4.L"
E400          2          ;
E400          3          ;
E400          4          ; E4.L
E400          5          ;
E400          6          ;
E400 C5 0E      7          cmp ZPG0E
E402 D0 F3      8          bne HE3F7
E404          9          ;
E404 C9 22     10 HE404    cmp #$22
E406 F0 01     11          beq HE409
E408         12          ;
E408 18        13 HE408    clc
E409         14          ;
E409 84 9D     15 HE409    sty DSCTMP
E40B         16          ;
E40B 98        17          tya
E40C 65 AB     18          adc STRNG1
E40E 85 AD     19          sta STRNG2
E410         20          ;
E410 A6 AC     21          ldx STRNG1+1
E412         22          ;
E412 90 01     23          bcc HE415
E414         24          ;
E414 E8        25          inx
E415         26          ;
E415 86 AE     27 HE415    stx STRNG2+1
E417         28          ;
E417 A5 AC     29          lda STRNG1+1
E419 F0 04     30          beq HE41F
E41B         31          ;
E41B C9 02     32          cmp #2
E41D D0 0B     33          bne HE42A
E41F         34          ;
E41F 98        35 HE41F    tya
E420         36          ;
E420 20 D5 E3   37          jsr HE3D5
E423         38          ;
E423 A6 AB     39          ldx STRNG1
E425 A4 AC     40          ldy STRNG1+1
E427         41          ;
E427 20 E2 E5   42          jsr HE5E2
E42A         43          ;
E42A A6 52     44 HE42A    ldx TEMPPT
E42C E0 5E     45          cpx #INDEX
E42E D0 05     46          bne HE435
E430         47          ;
E430 A2 BF     48          ldx #$BF
E432         49          ;
E432 4C 12 D4   50 HE432    jmp HD412
E435         51          ;
E435 A5 9D     52 HE435    lda DSCTMP
E437 95 00     53          sta LOC0,X
E439         54          ;
E439 A5 9E     55          lda DSCTMP+1
E43B 95 01     56          sta LOC1,X
E43D         57          ;
E43D A5 9F     58          lda DSCTMP+2
E43F 95 02     59          sta ZPG02,X
E441         60          ;

```

```

E441 A0 00      61      ldy #ZERO
E443           62      ;
E443 86 A0      63      stx FACMO
E445 84 A1      64      sty FACMO+1
E447           65      ;
E447 88         66      dey
E448           67      ;
E448 84 11      68      sty ZPG11
E44A 86 53      69      stx LASTPT
E44C           70      ;
E44C E8         71      inx
E44D E8         72      inx
E44E E8         73      inx
E44F           74      ;
E44F 86 52      75      stx TEMPPT
E451           76      ;
E451 60         77      rts
E452           78      ;
E452 46 13      79 HE452   lsr ZPG13
E454           80      ;
E454 48         81 HE454   pha
E455           82      ;
E455 49 FF      83      eor #NEGONE
E457           84      ;
E457 38         85      sec
E458           86      ;
E458 65 6F      87      adc FRETOP
E45A           88      ;
E45A A4 70      89      ldy FRETOP+1
E45C           90      ;
E45C B0 01      91      bcs HE45F
E45E           92      ;
E45E 88         93      dey
E45F           94      ;
E45F C4 6E      95 HE45F   cpy STREND+1
E461           96      ;
E461 90 11      97      bcc HE474
E463 D0 04      98      bne HE469
E465           99      ;
E465 C5 6D     100      cmp STREND
E467 90 0B     101      bcc HE474
E469          102      ;
E469 85 6F     103 HE469   sta FRETOP
E46B 84 70     104      sty FRETOP+1
E46D          105      ;
E46D 85 71     106      sta FRESPC
E46F 84 72     107      sty FRESPC+1
E471          108      ;
E471 AA        109      tax
E472          110      ;
E472 68        111      pla
E473          112      ;
E473 60        113      rts
E474          114      ;
E474 A2 4D     115 HE474   ldx #$4D
E476          116      ;
E476 A5 13     117      lda ZPG13
E478 30 B8     118      bmi HE432
E47A          119      ;
E47A 20 84 E4  120      jsr HE484
E47D          121      ;

```



```

E47D A9 80      122      lda #$80
E47F 85 13      123      sta ZPG13
E481           124      ;
E481 68         125      pla
E482 D0 D0      126      bne HE454
E484           127      ;
E484           128      ;
E484 A9 00      129      HE484  lda #ZERO
E486 85 8F      130      sta SPCLFLAG
E488 85 95      131      sta PROCESS
E48A 8D 07 C0   132      sta CXROMON
E48D           133      ;
E48D           134      ;
E48D A5 69      135      CHKVARS  lda VARTAB
E48F A6 6A      136      ldx VARTAB+1
E491           137      ;
E491 85 9B      138      sta LOWTR
E493 86 9C      139      stx LOWTR+1
E495           140      ;
E495 C5 6B      141      ^1      cmp ARYTAB
E497 D0 04      142      bne >2
E499           143      ;
E499 E4 6C      144      cpx ARYTAB+1
E49B F0 25      145      beq CHKARRYS
E49D           146      ;
E49D A0 00      147      ^2      ldy #ZERO
E49F           148      ;
E49F B1 9B      149      lda (LOWTR),Y
E4A1 30 10      150      bmi >3
E4A3           151      ;
E4A3 C8         152      iny
E4A4           153      ;
E4A4 B1 9B      154      lda (LOWTR),Y
E4A6 10 0B      155      bpl >3
E4A8           156      ;
E4A8 A9 02      157      lda #2
E4AA 20 67 E5   158      jsr NXTVAR
E4AD           159      ;
E4AD 20 00 C6   160      jsr PROCVAR
E4B0           161      ;
E4B0 A9 05      162      lda #SVARLEN-2
E4B2           163      ;
E4B2 2C 00 00   164      bit *-*
E4B5           165      dfs !-2
E4B3           166      ;
E4B3 A9 07      167      ^3      lda #SVARLEN
E4B5           168      ;
E4B5 20 67 E5   169      jsr NXTVAR
E4B8 90 DB      170      bcc <1
E4BA           171      ;
E4BA           172      ;
E4BA A5 96      173      ^0      lda HIGHTR
E4BC A6 97      174      ldx HIGHTR+1
E4BE           175      ;
E4BE 85 9B      176      sta LOWTR
E4C0 86 9C      177      stx LOWTR+1
E4C2           178      ;
E4C2           179      ;
E4C2 C5 6D      180      CHKARRYS  cmp STREND
E4C4 D0 04      181      bne >1
E4C6           182      ;

```

```

E4C6 E4 6E      183      cpx STREND+1
E4C8 F0 33      184      beq >4
E4CA            185      ;
E4CA 18         186      ^1      clc
E4CB            187      ;
E4CB A0 02      188      ldy #2
E4CD            189      ;
E4CD 71 9B      190      adc (LOWTR),Y
E4CF 85 96      191      sta HIGHTR
E4D1            192      ;
E4D1 C8         193      iny
E4D2            194      ;
E4D2 8A         195      txa
E4D3 71 9B      196      adc (LOWTR),Y
E4D5 85 97      197      sta HIGHTR+1
E4D7            198      ;
E4D7 A0 00      199      ldy #ZERO
E4D9            200      ;
E4D9 B1 9B      201      lda (LOWTR),Y
E4DB 30 DD      202      bmi <0
E4DD            203      ;
E4DD C8         204      iny
E4DE            205      ;
E4DE B1 9B      206      lda (LOWTR),Y
E4E0 10 D8      207      bpl <0
E4E2            208      ;
E4E2 A0 04      209      ldy #4
E4E4            210      ;
E4E4 B1 9B      211      lda (LOWTR),Y
E4E6 0A         212      asl
E4E7 69 05      213      adc #AHDRLEN
E4E9            214      ;
E4E9 20 67 E5    215      ^2      jsr NXTVAR
E4EC            216      ;
E4EC C5 96      217      cmp HIGHTR
E4EE D0 04      218      bne >3
E4F0            219      ;
E4F0 E4 97      220      cpx HIGHTR+1
E4F2 F0 CE      221      beq CHKARRYS
E4F4            222      ;
E4F4 A0 01      223      ^3      ldy #1
E4F6            224      ;
E4F6 20 00 C6    225      jsr PROCVAR
E4F9            226      ;
E4F9 A9 03      227      lda #AVARLEN
E4FB D0 EC      228      bne <2
E4FD            229      ;
E4FD 24 95      230      ^4      bit PROCESS
E4FF 10 0B      231      bpl MOVVARS
E501            232      ;
E501            233      ;
E501 A5 8A      234      GARBEXIT lda TEMP3
E503 A6 8B      235      ldx TEMP3+1
E505            236      ;
E505 85 6F      237      sta FRETOP
E507 86 70      238      stx FRETOP+1
E509            239      ;
E509 4C 3C FA    240      jmp CXOFF
E50C            241      ;
E50C            242      ;
E50C A5 73      243      MOVVARS lda MEMSIZE

```

```

E50E A6 74      244      ldx MEMSIZE+1
E510           245      ;
E510 85 8A      246      sta TEMP3
E512 86 8B      247      stx TEMP3+1
E514           248      ;
E514 85 9B      249      sta LOWTR
E516 86 9C      250      stx LOWTR+1
E518           251      ;
E518 A0 00      252      ^1      ldy #ZERO
E51A           253      ;
E51A A5 9B      254      ^2      lda LOWTR
E51C C5 6F      255      cmp FRETOP
E51E D0 04      256      bne >3
E520           257      ;
E520 E4 70      258      cpx FRETOP+1
E522 F0 3A      259      beq >4
E524           260      ;
E524 A9 FF      261      ^3      lda #NEGONE
E526 20 8C E5    262      jsr DECPTR
E529           263      ;
E529 B1 9B      264      lda (LOWTR),Y
E52B 10 ED      265      bpl <2
E52D           266      ;
E52D 29 7F      267      and #MSBCLR
E52F 91 9B      268      sta (LOWTR),Y
E531           269      ;
E531 A9 FE      270      lda #NEGTWO
E533 20 8C E5    271      jsr DECPTR
E536           272      ;
E536 B1 9B      273      lda (LOWTR),Y
E538 85 5E      274      sta INDEX
E53A           275      ;
E53A C8         276      iny
E53B           277      ;
E53B B1 9B      278      lda (LOWTR),Y
E53D 85 5F      279      sta INDEX+1
E53F           280      ;
E53F C8         281      iny
E540           282      ;
E540 B1 5E      283      lda (INDEX),Y
E542           284      ;
E542 88         285      dey
E543           286      ;
E543 91 9B      287      sta (LOWTR),Y
E545           288      ;
E545 B1 5E      289      lda (INDEX),Y
E547           290      ;
E547 88         291      dey
E548           292      ;
E548 91 9B      293      sta (LOWTR),Y
E54A           294      ;
E54A B1 5E      295      lda (INDEX),Y
E54C 85 94      296      sta LEN
E54E           297      ;
E54E 20 73 E5    298      jsr COPYVAR
E551           299      ;
E551 C8         300      iny
E552           301      ;
E552 A5 8A      302      lda TEMP3
E554 91 5E      303      sta (INDEX),Y
E556           304      ;

```

```

E556 C8          305      iny
E557            306      ;
E557 A5 8B       307      lda TEMP3+1
E559 91 5E       308      sta (INDEX),Y
E55B            309      ;
E55B 4C 18 E5    310      jmp <1
E55E            311      ;
E55E 24 8F       312      ^4 bit SPCLFLAG
E560 10 9F       313      bpl GARBEXIT
E562            314      ;
E562 C6 95       315      dec PROCESS
E564            316      ;
E564 4C 8D E4    317      jmp CHKVARS
E567            318      ;
E567            319      ;
E567 18          320      NXTVAR   clc
E568            321      ;
E568 65 9B       322      adc LOWTR
E56A 85 9B       323      sta LOWTR
E56C            324      ;
E56C 90 04       325      bcc >1
E56E            326      ;
E56E E6 9C       327      inc LOWTR+1
E570            328      ;
E570 E8          329      inx
E571            330      ;
E571 18          331      clc
E572            332      ;
E572 60          333      ^1      rts
E573            334      ;
E573            335      ;
E573 38          336      COPYVAR  sec
E574            337      ;
E574 A5 8A       338      lda TEMP3
E576 E5 94       339      sbc LEN
E578 85 8A       340      sta TEMP3
E57A            341      ;
E57A A5 8B       342      lda TEMP3+1
E57C E9 00       343      sbc #ZERO
E57E 85 8B       344      sta TEMP3+1
E580            345      ;
E580 A4 94       346      ldy LEN
E582            347      ;
E582 88          348      ^1      dey
E583            349      ;
E583 B1 9B       350      lda (LOWTR),Y
E585 91 8A       351      sta (TEMP3),Y
E587            352      ;
E587 C0 00       353      cpy #ZERO
E589 D0 F7       354      bne <1
E58B            355      ;
E58B 60          356      rts
E58C            357      ;
E58C            358      ;
E58C 18          359      DECPTR   clc
E58D            360      ;
E58D 65 9B       361      adc LOWTR
E58F 85 9B       362      sta LOWTR
E591            363      ;
E591 B0 03       364      bcs >1
E593            365      ;

```

```

E593 C6 9C      366      dec LOWTR+1
E595           367      ;
E595 CA        368      dex
E596           369      ;
E596 60        370      ^1    rts
E597           371      ;
E597           372      ;
E597           373      ;    dfs $E597-*,ZERO
E597           374      ;
E597           375      ;
E597 A5 A1     376      HE597  lda FACMO+1
E599 48        377      pha
E59A           378      ;
E59A A5 A0     379      lda FACMO
E59C 48        380      pha
E59D           381      ;
E59D 20 60 DE  382      jsr HDE60
E5A0 20 6C DD  383      jsr HDD6C
E5A3           384      ;
E5A3 68        385      pla
E5A4 85 AB     386      sta STRNG1
E5A6           387      ;
E5A6 68        388      pla
E5A7 85 AC     389      sta STRNG1+1
E5A9           390      ;
E5A9 A0 00     391      ldy #ZERO
E5AB           392      ;
E5AB B1 AB     393      lda (STRNG1),Y
E5AD 18        394      clc
E5AE 71 A0     395      adc (FACMO),Y
E5B0 90 05     396      bcc HE5B7
E5B2           397      ;
E5B2 A2 B0     398      ldx #$B0
E5B4           399      ;
E5B4 4C 12 D4  400      jmp HD412
E5B7           401      ;
E5B7 20 D5 E3  402      HE5B7  jsr HE3D5
E5BA 20 D4 E5  403      jsr HE5D4
E5BD           404      ;
E5BD A5 8C     405      lda GENTPTR
E5BF A4 8D     406      ldy GENTPTR+1
E5C1           407      ;
E5C1 20 04 E6  408      jsr HE604
E5C4 20 E6 E5  409      jsr HE5E6
E5C7           410      ;
E5C7 A5 AB     411      lda STRNG1
E5C9 A4 AC     412      ldy STRNG1+1
E5CB           413      ;
E5CB 20 04 E6  414      jsr HE604
E5CE 20 2A E4  415      jsr HE42A
E5D1           416      ;
E5D1 4C 95 DD  417      jmp HDD95
E5D4           418      ;
E5D4 A0 00     419      HE5D4  ldy #ZERO
E5D6           420      ;
E5D6 B1 AB     421      lda (STRNG1),Y
E5D8 48        422      pha
E5D9           423      ;
E5D9 C8        424      iny
E5DA           425      ;
E5DA B1 AB     426      lda (STRNG1),Y

```

```

E5DC AA          427          tax
E5DD            428          ;
E5DD C8          429          iny
E5DE            430          ;
E5DE B1 AB       431          lda (STRNG1),Y
E5E0 A8          432          tay
E5E1            433          ;
E5E1 68          434          pla
E5E2            435          ;
E5E2 86 5E       436 HE5E2    stx INDEX
E5E4 84 5F       437          sty INDEX+1
E5E6            438          ;
E5E6 A8          439 HE5E6    tay
E5E7 F0 0A       440          beq HE5F3
E5E9            441          ;
E5E9 48          442          pha
E5EA            443          ;
E5EA 88          444 HE5EA    dey
E5EB            445          ;
E5EB B1 5E       446          lda (INDEX),Y
E5ED 91 71       447          sta (FRESPC),Y
E5EF            448          ;
E5EF 98          449          tya
E5F0 D0 F8       450          bne HE5EA
E5F2            451          ;
E5F2 68          452          pla
E5F3            453          ;
E5F3 18          454 HE5F3    clc
E5F4            455          ;
E5F4 65 71       456          adc FRESPC
E5F6 85 71       457          sta FRESPC
E5F8 90 02       458          bcc HE5FC
E5FA            459          ;
E5FA E6 72       460          inc FRESPC+1
E5FC            461          ;
E5FC 60          462 HE5FC    rts
E5FD            463          ;
E5FD 20 6C DD     464 HE5FD    jsr HDD6C
E600            465          ;
E600 A5 A0       466 HE600    lda FACMO
E602 A4 A1       467          ldy FACMO+1
E604            468          ;
E604 85 5E       469 HE604    sta INDEX
E606 84 5F       470          sty INDEX+1
E608            471          ;
E608 20 35 E6     472          jsr HE635
E60B            473          ;
E60B 08          474          php
E60C            475          ;
E60C A0 00       476          ldy #ZERO
E60E            477          ;
E60E B1 5E       478          lda (INDEX),Y
E610 48          479          pha
E611            480          ;
E611 C8          481          iny
E612            482          ;
E612 B1 5E       483          lda (INDEX),Y
E614 AA          484          tax
E615            485          ;
E615 C8          486          iny
E616            487          ;

```

```

E616 B1 5E      488      lda (INDEX),Y
E618 A8         489      tay
E619           490      ;
E619 68         491      pla
E61A           492      ;
E61A 28         493      plp
E61B D0 13      494      bne HE630
E61D           495      ;
E61D C4 70      496      cpy FRETOP+1
E61F D0 0F      497      bne HE630
E621           498      ;
E621 E4 6F      499      cpx FRETOP
E623 D0 0B      500      bne HE630
E625           501      ;
E625 48         502      pha
E626           503      ;
E626 18         504      clc
E627           505      ;
E627 65 6F      506      adc FRETOP
E629 85 6F      507      sta FRETOP
E62B 90 02      508      bcc HE62F
E62D           509      ;
E62D E6 70      510      inc FRETOP+1
E62F           511      ;
E62F 68         512      HE62F pla
E630           513      ;
E630 86 5E      514      HE630 stx INDEX
E632 84 5F      515      sty INDEX+1
E634           516      ;
E634 60         517      rts
E635           518      ;
E635 C4 54      519      HE635 cpy EL
E637 D0 0C      520      bne HE645
E639           521      ;
E639 C5 53      522      cmp LASTPT
E63B D0 08      523      bne HE645
E63D           524      ;
E63D 85 52      525      sta TEMPPT
E63F           526      ;
E63F E9 03      527      sbc #3
E641 85 53      528      sta LASTPT
E643           529      ;
E643 A0 00      530      ldy #ZERO
E645           531      ;
E645 60         532      HE645 rts
E646           533      ;
E646 20 FB E6    534      HE646 jsr HE6FB
E649           535      ;
E649 8A         536      txa
E64A 48         537      pha
E64B           538      ;
E64B A9 01      539      lda #1
E64D           540      ;
E64D 20 DD E3    541      jsr HE3DD
E650           542      ;
E650 68         543      pla
E651           544      ;
E651 A0 00      545      ldy #ZERO
E653           546      ;
E653 91 9E      547      sta (DSCTMP+1),Y
E655           548      ;

```

```

E655 68          549          pla
E656 68          550          pla
E657             551          ;
E657 4C 2A E4    552          jmp HE42A
E65A             553          ;
E65A 20 B9 E6    554 HE65A    jsr HE6B9
E65D             555          ;
E65D D1 8C       556          cmp (GENTPTR),Y
E65F             557          ;
E65F 98          558          tya
E660             559          ;
E660 90 04       560 HE660    bcc HE666
E662             561          ;
E662 B1 8C       562          lda (GENTPTR),Y
E664 AA          563          tax
E665             564          ;
E665 98          565          tya
E666             566          ;
E666 48          567 HE666    pha
E667             568          ;
E667 8A          569 HE667    txa
E668             570          ;
E668 48          571 HE668    pha
E669             572          ;
E669 20 DD E3    573          jsr HE3DD
E66C             574          ;
E66C A5 8C       575          lda GENTPTR
E66E A4 8D       576          ldy GENTPTR+1
E670             577          ;
E670 20 04 E6    578          jsr HE604
E673             579          ;
E673 68          580          pla
E674 A8          581          tay
E675             582          ;
E675 68          583          pla
E676             584          ;
E676 18          585          clc
E677             586          ;
E677 65 5E       587          adc INDEX
E679 85 5E       588          sta INDEX
E67B 90 02       589          bcc HE67F
E67D             590          ;
E67D E6 5F       591          inc INDEX+1
E67F             592          ;
E67F 98          593 HE67F    tya
E680             594          ;
E680 20 E6 E5    595          jsr HE5E6
E683             596          ;
E683 4C 2A E4    597          jmp HE42A
E686             598          ;
E686 20 B9 E6    599 HE686    jsr HE6B9
E689             600          ;
E689 18          601          clc
E68A             602          ;
E68A F1 8C       603          sbc (GENTPTR),Y
E68C 49 FF       604          eor #NEGONE
E68E             605          ;
E68E 4C 60 E6    606          jmp HE660
E691             607          ;
E691 A9 FF       608 HE691    lda #NEGONE
E693 85 A1       609          sta FACMO+1

```



```

E695          610 ;
E695 20 B7 00 611      jsr CHRGOT
E698          612 ;
E698 C9 29    613      cmp #$29
E69A F0 06    614      beq HE6A2
E69C          615 ;
E69C 20 BE DE 616      jsr HDEBE
E69F 20 F8 E6 617      jsr HE6F8
E6A2          618 ;
E6A2 20 B9 E6 619 HE6A2 jsr HE6B9
E6A5          620 ;
E6A5 CA       621      dex
E6A6          622 ;
E6A6 8A       623      txa
E6A7 48       624      pha
E6A8          625 ;
E6A8 18       626      clc
E6A9          627 ;
E6A9 A2 00    628      ldx #ZERO
E6AB          629 ;
E6AB F1 8C    630      sbc (GENTPTR),Y
E6AD B0 B8    631      bcs HE667
E6AF          632 ;
E6AF 49 FF    633      eor #NEGONE
E6B1          634 ;
E6B1 C5 A1    635      cmp FACMO+1
E6B3 90 B3    636      bcc HE668
E6B5          637 ;
E6B5 A5 A1    638      lda FACMO+1
E6B7          639 ;
E6B7 B0 AF    640      bcs HE668
E6B9          641 ;
E6B9 20 B8 DE 642 HE6B9 jsr HDEB8
E6BC          643 ;
E6BC 68       644      pla
E6BD A8       645      tay
E6BE          646 ;
E6BE 68       647      pla
E6BF 85 91    648      sta ZPG91
E6C1          649 ;
E6C1 68       650      pla
E6C2 68       651      pla
E6C3          652 ;
E6C3 68       653      pla
E6C4 AA       654      tax
E6C5          655 ;
E6C5 68       656      pla
E6C6 85 8C    657      sta GENTPTR
E6C8          658 ;
E6C8 68       659      pla
E6C9 85 8D    660      sta GENTPTR+1
E6CB          661 ;
E6CB A5 91    662      lda ZPG91
E6CD 48       663      pha
E6CE          664 ;
E6CE 98       665      tya
E6CF 48       666      pha
E6D0          667 ;
E6D0 A0 00    668      ldy #ZERO
E6D2          669 ;
E6D2 8A       670      txa

```

```

E6D3 F0 1D      671      beq HE6F2
E6D5            672      ;
E6D5 60         673      rts
E6D6            674      ;
E6D6 20 DC E6   675 HE6D6   jsr HE6DC
E6D9            676      ;
E6D9 4C 01 E3   677      jmp HE301
E6DC            678      ;
E6DC 20 FD E5   679 HE6DC   jsr HE5FD
E6DF            680      ;
E6DF A2 00      681      ldx #ZERO
E6E1 86 11      682      stx ZPG11
E6E3            683      ;
E6E3 A8         684      tay
E6E4            685      ;
E6E4 60         686      rts
E6E5            687      ;
E6E5 20 DC E6   688 HE6E5   jsr HE6DC
E6E8 F0 08      689      beq HE6F2
E6EA            690      ;
E6EA A0 00      691      ldy #ZERO
E6EC            692      ;
E6EC B1 5E      693      lda (INDEX),Y
E6EE A8         694      tay
E6EF            695      ;
E6EF 4C 01 E3   696      jmp HE301
E6F2            697      ;
E6F2 4C 99 E1   698 HE6F2   jmp HE199
E6F5            699      ;
E6F5 20 B1 00   700 HE6F5   jsr CHRGET
E6F8            701      ;
E6F8 20 67 DD   702 HE6F8   jsr HDD67
E6FB            703      ;
E6FB 20 08 E1   704 HE6FB   jsr HE108
E6FE            705      ;
E6FE A6 A0      706      ldx FACMO
E700 D0 F0      707      bne HE6F2
E702            708      ;
E702 A6 A1      709      ldx FACMO+1
E704            710      ;
E704 4C B7 00   711      jmp CHRGOT
E707            712      ;
E707 20 DC E6   713 HE707   jsr HE6DC
E70A D0 03      714      bne HE70F
E70C            715      ;
E70C 4C 4E E8   716      jmp HE84E
E70F            717      ;
E70F A6 B8      718 HE70F   ldx TXTPTR
E711 A4 B9      719      ldy TXTPTR+1
E713            720      ;
E713 86 AD      721      stx STRNG2
E715 84 AE      722      sty STRNG2+1
E717            723      ;
E717 A6 5E      724      ldx INDEX
E719 86 B8      725      stx TXTPTR
E71B            726      ;
E71B 18         727      clc
E71C            728      ;
E71C 65 5E      729      adc INDEX
E71E 85 60      730      sta P2
E720            731      ;

```

```

E720 A6 5F      732      ldx INDEX+1
E722 86 B9      733      stx TXTPTR+1
E724           734      ;
E724 90 01      735      bcc HE727
E726           736      ;
E726 E8         737      inx
E727           738      ;
E727 86 61      739 HE727  stx P2+1
E729           740      ;
E729 A0 00      741      ldy #ZERO
E72B           742      ;
E72B B1 60      743      lda (P2),Y
E72D 48         744      pha
E72E           745      ;
E72E A9 00      746      lda #ZERO
E730 91 60      747      sta (P2),Y
E732           748      ;
E732 20 B7 00   749      jsr CHRGOT
E735 20 4A EC   750      jsr HEC4A
E738           751      ;
E738 68         752      pla
E739           753      ;
E739 A0 00      754      ldy #ZERO
E73B           755      ;
E73B 91 60      756      sta (P2),Y
E73D           757      ;
E73D A6 AD      758 HE73D  ldx STRNG2
E73F A4 AE      759      ldy STRNG2+1
E741           760      ;
E741 86 B8      761      stx TXTPTR
E743 84 B9      762      sty TXTPTR+1
E745           763      ;
E745 60         764      rts
E746           765      ;
E746 20 67 DD   766 HE746  jsr HDD67
E749 20 52 E7   767      jsr HE752
E74C           768      ;
E74C 20 BE DE   769 HE74C  jsr HDEBE
E74F           770      ;
E74F 4C F8 E6   771      jmp HE6F8
E752           772      ;
E752 A5 9D      773 HE752  lda DSCTMP
E754 C9 91      774      cmp #$91
E756 B0 9A      775      bcs HE6F2
E758           776      ;
E758 20 F2 EB   777      jsr HEBF2
E75B           778      ;
E75B A5 A0      779      lda FACMO
E75D A4 A1      780      ldy FACMO+1
E75F           781      ;
E75F 84 50      782      sty ACL
E761 85 51      783      sta ACH
E763           784      ;
E763 60         785      rts
E764           786      ;
E764 A5 50      787 HE764  lda ACL
E766 48         788      pha
E767           789      ;
E767 A5 51      790      lda ACH
E769 48         791      pha
E76A           792      ;

```

```

E76A 20 52 E7      793      jsr HE752
E76D              794      ;
E76D A0 00        795      ldy #ZERO
E76F              796      ;
E76F B1 50        797      lda (ACL),Y
E771 A8           798      tay
E772              799      ;
E772 68           800      pla
E773 85 51        801      sta ACH
E775              802      ;
E775 68           803      pla
E776 85 50        804      sta ACL
E778              805      ;
E778 4C 01 E3     806      jmp HE301
E77B              807      ;
E77B 20 46 E7     808 HE77B  jsr HE746
E77E 8A           809      txa
E77F              810      ;
E77F A0 00        811      ldy #ZERO
E781 91 50        812      sta (ACL),Y
E783              813      ;
E783 60           814      rts
E784              815      ;
E784 20 46 E7     816 HE784  jsr HE746
E787              817      ;
E787 86 85        818      stx FORPNT
E789              819      ;
E789 A2 00        820      ldx #ZERO
E78B              821      ;
E78B 20 B7 00     822      jsr CHRGOT
E78E F0 03        823      beq HE793
E790              824      ;
E790 20 4C E7     825      jsr HE74C
E793              826      ;
E793 86 86        827 HE793  stx FORPNT+1
E795              828      ;
E795 A0 00        829      ldy #ZERO
E797              830      ;
E797 B1 50        831 HE797  lda (ACL),Y
E799 45 86        832      eor FORPNT+1
E79B 25 85        833      and FORPNT
E79D F0 F8        834      beq HE797
E79F              835      ;
E79F 60           836 HE79F  rts
E7A0              837      ;
E7A0 A9 64        838 HE7A0  lda #HEE64
E7A2 A0 EE        839      ldy /HEE64
E7A4              840      ;
E7A4 4C BE E7     841      jmp HE7BE
E7A7              842      ;
E7A7 20 E3 E9     843 HE7A7  jsr HE9E3
E7AA              844      ;
E7AA A5 A2        845 HE7AA  lda FACSIGN
E7AC 49 FF        846      eor #NEGONE
E7AE 85 A2        847      sta FACSIGN
E7B0              848      ;
E7B0 45 AA        849      eor ARGSGN
E7B2 85 AB        850      sta STRNG1
E7B4              851      ;
E7B4 A5 9D        852      lda DSCTMP
E7B6              853      ;

```

```

E7B6 4C C1 E7      854      jmp HE7C1
E7B9              855      ;
E7B9 20 F0 E8      856      HE7B9 jsr HE8F0
E7BC 90 3C          857      bcc HE7FA
E7BE              858      ;
E7BE 20 E3 E9      859      HE7BE jsr HE9E3
E7C1              860      ;
E7C1 D0 03          861      HE7C1 bne HE7C6
E7C3              862      ;
E7C3 4C 53 EB      863      jmp HEB53
E7C6              864      ;
E7C6 A6 AC          865      HE7C6 ldx STRNG1+1
E7C8 86 92          866      stx ZPG92
E7CA              867      ;
E7CA A2 A5          868      ldx #$A5
E7CC              869      ;
E7CC A5 A5          870      lda ARGEXP
E7CE              871      ;
E7CE A8            872      HE7CE tay
E7CF F0 CE          873      beq HE79F
E7D1              874      ;
E7D1 38            875      sec
E7D2              876      ;
E7D2 E5 9D          877      sbc DSCTMP
E7D4 F0 24          878      beq HE7FA
E7D6              879      ;
E7D6 90 12          880      bcc HE7EA
E7D8              881      ;
E7D8 84 9D          882      sty DSCTMP
E7DA              883      ;
E7DA A4 AA          884      ldy ARGSGN
E7DC 84 A2          885      sty FACSIGN
E7DE              886      ;
E7DE 49 FF          887      eor #NEGONE
E7E0 69 00          888      adc #ZERO
E7E2              889      ;
E7E2 A0 00          890      ldy #ZERO
E7E4 84 92          891      sty ZPG92
E7E6              892      ;
E7E6 A2 9D          893      ldx #$9D
E7E8 D0 04          894      bne HE7EE
E7EA              895      ;
E7EA A0 00          896      HE7EA ldy #ZERO
E7EC 84 AC          897      sty STRNG1+1
E7EE              898      ;
E7EE C9 F9          899      HE7EE cmp #$F9
E7F0 30 C7          900      bmi HE7B9
E7F2              901      ;
E7F2 A8            902      tay
E7F3              903      ;
E7F3 A5 AC          904      lda STRNG1+1
E7F5              905      ;
E7F5 56 01          906      lsr LOC1,X
E7F7              907      ;
E7F7 20 07 E9      908      jsr HE907
E7FA              909      ;
E7FA 24 AB          910      HE7FA bit STRNG1
E7FC 10 57          911      bpl HE855
E7FE              912      ;
E7FE A0 9D          913      ldy #$9D
E800              914      ;

```

```
E800          915  ;  
E800          916      icl "E8.L"
```

```
LLOAD E8.L,A$4000
```

```

E800          1          ttl "ROM Source Code, E8.L"
E800          2          ;
E800          3          ;
E800          4          ; E8.L
E800          5          ;
E800          6          ;
E800 E0 A5     7          cpx #$A5
E802 F0 02     8          beq HE806
E804          9          ;
E804 A0 A5    10          ldy #$A5
E806         11          ;
E806 38       12 HE806   sec
E807         13          ;
E807 49 FF    14          eor #NEGONE
E809 65 92    15          adc ZPG92
E80B 85 AC    16          sta STRNG1+1
E80D         17          ;
E80D B9 04 00 18          lda ZPG04,Y
E810 F5 04    19          sbc ZPG04,X
E812 85 A1    20          sta FACMO+1
E814         21          ;
E814 B9 03 00 22          lda ZPG03,Y
E817 F5 03    23          sbc ZPG03,X
E819 85 A0    24          sta FACMO
E81B         25          ;
E81B B9 02 00 26          lda ZPG02,Y
E81E F5 02    27          sbc ZPG02,X
E820 85 9F    28          sta DSCTMP+2
E822         29          ;
E822 B9 01 00 30          lda LOC1,Y
E825 F5 01    31          sbc LOC1,X
E827 85 9E    32          sta DSCTMP+1
E829         33          ;
E829 B0 03    34 HE829   bcs HE82E
E82B         35          ;
E82B 20 9E E8 36          jsr HE89E
E82E         37          ;
E82E A0 00    38 HE82E   ldy #ZERO
E830 98       39          tya
E831         40          ;
E831 18       41          clc
E832         42          ;
E832 A6 9E    43 HE832   ldx DSCTMP+1
E834 D0 4A    44          bne HE880
E836         45          ;
E836 A6 9F    46          ldx DSCTMP+2
E838 86 9E    47          stx DSCTMP+1
E83A         48          ;
E83A A6 A0    49          ldx FACMO
E83C 86 9F    50          stx DSCTMP+2
E83E         51          ;
E83E A6 A1    52          ldx FACMO+1
E840 86 A0    53          stx FACMO
E842         54          ;
E842 A6 AC    55          ldx STRNG1+1
E844 86 A1    56          stx FACMO+1
E846         57          ;
E846 84 AC    58          sty STRNG1+1
E848         59          ;
E848 69 08    60          adc #8

```

```

E84A C9 20      61      cmp #$20
E84C D0 E4      62      bne HE832
E84E            63      ;
E84E A9 00      64      HE84E    lda #ZERO
E850            65      ;
E850 85 9D      66      HE850    sta DSCTMP
E852            67      ;
E852 85 A2      68      HE852    sta FACSIGN
E854            69      ;
E854 60          70      rts
E855            71      ;
E855 65 92      72      HE855    adc ZPG92
E857 85 AC      73      sta STRNG1+1
E859            74      ;
E859 A5 A1      75      lda FACMO+1
E85B 65 A9      76      adc ARGMANT+3
E85D 85 A1      77      sta FACMO+1
E85F            78      ;
E85F A5 A0      79      lda FACMO
E861 65 A8      80      adc ARGMANT+2
E863 85 A0      81      sta FACMO
E865            82      ;
E865 A5 9F      83      lda DSCTMP+2
E867 65 A7      84      adc ARGMANT+1
E869 85 9F      85      sta DSCTMP+2
E86B            86      ;
E86B A5 9E      87      lda DSCTMP+1
E86D 65 A6      88      adc ARGMANT
E86F 85 9E      89      sta DSCTMP+1
E871            90      ;
E871 4C 8D E8    91      jmp HE88D
E874            92      ;
E874 69 01      93      HE874    adc #1
E876            94      ;
E876 06 AC      95      asl STRNG1+1
E878            96      ;
E878 26 A1      97      rol FACMO+1
E87A 26 A0      98      rol FACMO
E87C            99      ;
E87C 26 9F     100      rol DSCTMP+2
E87E 26 9E     101      rol DSCTMP+1
E880           102      ;
E880 10 F2     103      HE880    bpl HE874
E882           104      ;
E882 38        105      sec
E883           106      ;
E883 E5 9D     107      sbc DSCTMP
E885 B0 C7     108      bcs HE84E
E887           109      ;
E887 49 FF     110      eor #NEGONE
E889 69 01     111      adc #1
E88B 85 9D     112      sta DSCTMP
E88D           113      ;
E88D 90 0E     114      HE88D    bcc HE89D
E88F           115      ;
E88F E6 9D     116      HE88F    inc DSCTMP
E891 F0 42     117      beq HE8D5
E893           118      ;
E893 66 9E     119      ror DSCTMP+1
E895 66 9F     120      ror DSCTMP+2
E897           121      ;

```



```

E897 66 A0      122      ror FACMO
E899 66 A1      123      ror FACMO+1
E89B           124      ;
E89B 66 AC      125      ror STRNG1+1
E89D           126      ;
E89D 60         127      HE89D rts
E89E           128      ;
E89E A5 A2      129      HE89E lda FACSIGN
E8A0 49 FF      130      eor #NEGONE
E8A2 85 A2      131      sta FACSIGN
E8A4           132      ;
E8A4 A5 9E      133      HE8A4 lda DSCTMP+1
E8A6 49 FF      134      eor #NEGONE
E8A8 85 9E      135      sta DSCTMP+1
E8AA           136      ;
E8AA A5 9F      137      lda DSCTMP+2
E8AC 49 FF      138      eor #NEGONE
E8AE 85 9F      139      sta DSCTMP+2
E8B0           140      ;
E8B0 A5 A0      141      lda FACMO
E8B2 49 FF      142      eor #NEGONE
E8B4 85 A0      143      sta FACMO
E8B6           144      ;
E8B6 A5 A1      145      lda FACMO+1
E8B8 49 FF      146      eor #NEGONE
E8BA 85 A1      147      sta FACMO+1
E8BC           148      ;
E8BC A5 AC      149      lda STRNG1+1
E8BE 49 FF      150      eor #NEGONE
E8C0 85 AC      151      sta STRNG1+1
E8C2           152      ;
E8C2 E6 AC      153      inc STRNG1+1
E8C4 D0 0E      154      bne HE8D4
E8C6           155      ;
E8C6 E6 A1      156      HE8C6 inc FACMO+1
E8C8 D0 0A      157      bne HE8D4
E8CA           158      ;
E8CA E6 A0      159      inc FACMO
E8CC D0 06      160      bne HE8D4
E8CE           161      ;
E8CE E6 9F      162      inc DSCTMP+2
E8D0 D0 02      163      bne HE8D4
E8D2           164      ;
E8D2 E6 9E      165      inc DSCTMP+1
E8D4           166      ;
E8D4 60         167      HE8D4 rts
E8D5           168      ;
E8D5 A2 45      169      HE8D5 ldx #$45
E8D7           170      ;
E8D7 4C 12 D4    171      jmp HD412
E8DA           172      ;
E8DA A2 61      173      HE8DA ldx #$61
E8DC           174      ;
E8DC B4 04      175      HE8DC ldy ZPG04,X
E8DE 84 AC      176      sty STRNG1+1
E8E0           177      ;
E8E0 B4 03      178      ldy ZPG03,X
E8E2 94 04      179      sty ZPG04,X
E8E4           180      ;
E8E4 B4 02      181      ldy ZPG02,X
E8E6 94 03      182      sty ZPG03,X

```

```

E8E8          183 ;
E8E8 B4 01    184      ldy LOC1,X
E8EA 94 02    185      sty ZPG02,X
E8EC          186 ;
E8EC A4 A4    187      ldy ZPGA4
E8EE 94 01    188      sty LOC1,X
E8F0          189 ;
E8F0 69 08    190 HE8F0  adc #8
E8F2          191 ;
E8F2 30 E8    192      bmi HE8DC
E8F4 F0 E6    193      beq HE8DC
E8F6          194 ;
E8F6 E9 08    195      sbc #8
E8F8 A8        196      tay
E8F9          197 ;
E8F9 A5 AC    198      lda STRNG1+1
E8FB          199 ;
E8FB B0 14    200      bcs HE911
E8FD          201 ;
E8FD 16 01    202 HE8FD  asl LOC1,X
E8FF 90 02    203      bcc HE903
E901          204 ;
E901 F6 01    205      inc LOC1,X
E903          206 ;
E903 76 01    207 HE903  ror LOC1,X
E905 76 01    208      ror LOC1,X
E907          209 ;
E907 76 02    210 HE907  ror ZPG02,X
E909 76 03    211      ror ZPG03,X
E90B 76 04    212      ror ZPG04,X
E90D          213 ;
E90D 6A        214      ror
E90E          215 ;
E90E C8        216      iny
E90F D0 EC    217      bne HE8FD
E911          218 ;
E911 18        219 HE911  clc
E912          220 ;
E912 60        221      rts
E913          222 ;
E913 81 00 00 223 HE913  hex 8100000000
E916 00 00
E918 03 7F 5E 224 HE918  hex 037F5E56CB
E91B 56 CB
E91D 79 80 13 225      hex 7980139B0B
E920 9B 0B
E922 64 80 76 226      hex 6480763893
E925 38 93
E927 16 82 38 227      hex 168238AA3B
E92A AA 3B
E92C 20        228      hex 20
E92D 80 35 04 229 HE92D  hex 803504F334
E930 F3 34
E932 81 35 04 230 HE932  hex 813504F334
E935 F3 34
E937 80 80 00 231 HE937  hex 8080000000
E93A 00 00
E93C 80 31 72 232 HE93C  hex 80317217F8
E93F 17 F8
E941          233 ;
E941 20 82 EB 234 HE941  jsr HEB82

```

```

E944          235 ;
E944 F0 02    236      beq HE948
E946 10 03    237      bpl HE94B
E948          238 ;
E948 4C 99 E1 239 HE948      jmp HE199
E94B          240 ;
E94B A5 9D    241 HE94B      lda DSCTMP
E94D E9 7F    242      sbc #$7F
E94F 48       243      pha
E950          244 ;
E950 A9 80    245      lda #$80
E952 85 9D    246      sta DSCTMP
E954          247 ;
E954 A9 2D    248      lda #HE92D
E956 A0 E9    249      ldy /HE92D
E958          250 ;
E958 20 BE E7 251      jsr HE7BE
E95B          252 ;
E95B A9 32    253      lda #HE932
E95D A0 E9    254      ldy /HE932
E95F          255 ;
E95F 20 66 EA 256      jsr HEA66
E962          257 ;
E962 A9 13    258      lda #HE913
E964 A0 E9    259      ldy /HE913
E966          260 ;
E966 20 A7 E7 261      jsr HE7A7
E969          262 ;
E969 A9 18    263      lda #HE918
E96B A0 E9    264      ldy /HE918
E96D          265 ;
E96D 20 5C EF 266      jsr HEF5C
E970          267 ;
E970 A9 37    268      lda #HE937
E972 A0 E9    269      ldy /HE937
E974          270 ;
E974 20 BE E7 271      jsr HE7BE
E977          272 ;
E977 68       273      pla
E978          274 ;
E978 20 D5 EC 275      jsr HECD5
E97B          276 ;
E97B A9 3C    277      lda #HE93C
E97D A0 E9    278      ldy /HE93C
E97F          279 ;
E97F 20 E3 E9 280 HE97F      jsr HE9E3
E982          281 ;
E982 D0 03    282 HE982      bne HE987
E984          283 ;
E984 4C E2 E9 284      jmp HE9E2
E987          285 ;
E987 20 0E EA 286 HE987      jsr HEA0E
E98A          287 ;
E98A A9 00    288      lda #ZERO
E98C 85 62    289      sta LASTMUL
E98E 85 63    290      sta LASTMUL+1
E990 85 64    291      sta LASTMUL+2
E992 85 65    292      sta LASTMUL+3
E994          293 ;
E994 A5 AC    294      lda STRNG1+1
E996          295 ;

```

```

E996 20 B0 E9      296      jsr HE9B0
E999              297      ;
E999 A5 A1        298      lda FACMO+1
E99B              299      ;
E99B 20 B0 E9     300      jsr HE9B0
E99E              301      ;
E99E A5 A0        302      lda FACMO
E9A0              303      ;
E9A0 20 B0 E9     304      jsr HE9B0
E9A3              305      ;
E9A3 A5 9F        306      lda DSCTMP+2
E9A5              307      ;
E9A5 20 B0 E9     308      jsr HE9B0
E9A8              309      ;
E9A8 A5 9E        310      lda DSCTMP+1
E9AA              311      ;
E9AA 20 B5 E9     312      jsr HE9B5
E9AD              313      ;
E9AD 4C E6 EA     314      jmp HEAE6
E9B0              315      ;
E9B0 D0 03        316      HE9B0 bne HE9B5
E9B2              317      ;
E9B2 4C DA E8     318      jmp HE8DA
E9B5              319      ;
E9B5 4A           320      HE9B5 lsr
E9B6 09 80        321      ora #$80
E9B8              322      ;
E9B8 A8           323      HE9B8 tay
E9B9              324      ;
E9B9 90 19        325      bcc HE9D4
E9BB              326      ;
E9BB 18           327      clc
E9BC              328      ;
E9BC A5 65        329      lda LASTMUL+3
E9BE 65 A9        330      adc ARGMANT+3
E9C0 85 65        331      sta LASTMUL+3
E9C2              332      ;
E9C2 A5 64        333      lda LASTMUL+2
E9C4 65 A8        334      adc ARGMANT+2
E9C6 85 64        335      sta LASTMUL+2
E9C8              336      ;
E9C8 A5 63        337      lda LASTMUL+1
E9CA 65 A7        338      adc ARGMANT+1
E9CC 85 63        339      sta LASTMUL+1
E9CE              340      ;
E9CE A5 62        341      lda LASTMUL
E9D0 65 A6        342      adc ARGMANT
E9D2 85 62        343      sta LASTMUL
E9D4              344      ;
E9D4 66 62        345      HE9D4 ror LASTMUL
E9D6 66 63        346      ror LASTMUL+1
E9D8 66 64        347      ror LASTMUL+2
E9DA 66 65        348      ror LASTMUL+3
E9DC              349      ;
E9DC 66 AC        350      ror STRNG1+1
E9DE              351      ;
E9DE 98           352      tya
E9DF 4A           353      lsr
E9E0 D0 D6        354      bne HE9B8
E9E2              355      ;
E9E2 60           356      HE9E2 rts

```

```

E9E3          357 ;
E9E3 85 5E    358 HE9E3 sta INDEX
E9E5 84 5F    359 sty INDEX+1
E9E7          360 ;
E9E7 A0 04    361 ldy #4
E9E9          362 ;
E9E9 B1 5E    363 lda (INDEX),Y
E9EB 85 A9    364 sta ARGMANT+3
E9ED          365 ;
E9ED 88       366 dey
E9EE          367 ;
E9EE B1 5E    368 lda (INDEX),Y
E9F0 85 A8    369 sta ARGMANT+2
E9F2          370 ;
E9F2 88       371 dey
E9F3          372 ;
E9F3 B1 5E    373 lda (INDEX),Y
E9F5 85 A7    374 sta ARGMANT+1
E9F7          375 ;
E9F7 88       376 dey
E9F8          377 ;
E9F8 B1 5E    378 lda (INDEX),Y
E9FA 85 AA    379 sta ARGSGN
E9FC          380 ;
E9FC 45 A2    381 eor FACSIGN
E9FE 85 AB    382 sta STRNG1
EA00          383 ;
EA00 A5 AA    384 lda ARGSGN
EA02 09 80    385 ora #$80
EA04 85 A6    386 sta ARGMANT
EA06          387 ;
EA06 88       388 dey
EA07          389 ;
EA07 B1 5E    390 lda (INDEX),Y
EA09 85 A5    391 sta ARGEXP
EA0B          392 ;
EA0B A5 9D    393 lda DSCTMP
EA0D          394 ;
EA0D 60       395 rts
EA0E          396 ;
EA0E A5 A5    397 HEA0E lda ARGEXP
EA10          398 ;
EA10 F0 1F    399 HEA10 beq HEA31
EA12          400 ;
EA12 18       401 clc
EA13          402 ;
EA13 65 9D    403 adc DSCTMP
EA15          404 ;
EA15 90 04    405 bcc HEA1B
EA17 30 1D    406 bmi HEA36
EA19          407 ;
EA19 18       408 clc
EA1A          409 ;
EA1A 2C 00 00 410 bit *-*
EA1D          411 dfs !-2
EA1B          412 ;
EA1B 10 14    413 HEA1B bpl HEA31
EA1D          414 ;
EA1D 69 80    415 adc #$80
EA1F 85 9D    416 sta DSCTMP
EA21 D0 03    417 bne HEA26

```

```

EA23          418 ;
EA23 4C 52 E8 419      jmp HE852
EA26          420 ;
EA26 A5 AB    421 HEA26  lda STRNG1
EA28 85 A2    422      sta FACSIGN
EA2A          423 ;
EA2A 60       424      rts
EA2B          425 ;
EA2B A5 A2    426 HEA2B  lda FACSIGN
EA2D 49 FF    427      eor #NEGONE
EA2F 30 05    428      bmi HEA36
EA31          429 ;
EA31 68       430 HEA31  pla
EA32 68       431      pla
EA33          432 ;
EA33 4C 4E E8 433      jmp HE84E
EA36          434 ;
EA36 4C D5 E8 435 HEA36  jmp HE8D5
EA39          436 ;
EA39 20 63 EB 437 HEA39  jsr HEB63
EA3C          438 ;
EA3C AA       439      tax
EA3D F0 10    440      beq HEA4F
EA3F          441 ;
EA3F 18       442      clc
EA40          443 ;
EA40 69 02    444      adc #2
EA42 B0 F2    445      bcs HEA36
EA44          446 ;
EA44 A2 00    447      ldx #ZERO
EA46 86 AB    448      stx STRNG1
EA48          449 ;
EA48 20 CE E7 450      jsr HE7CE
EA4B          451 ;
EA4B E6 9D    452      inc DSCTMP
EA4D F0 E7    453      beq HEA36
EA4F          454 ;
EA4F 60       455 HEA4F  rts
EA50          456 ;
EA50 84 20 00 457 HEA50  hex 8420000000
EA53 00 00
EA55          458 ;
EA55 20 63 EB 459 HEA55  jsr HEB63
EA58          460 ;
EA58 A9 50    461      lda #HEA50
EA5A A0 EA    462      ldy /HEA50
EA5C          463 ;
EA5C A2 00    464      ldx #ZERO
EA5E          465 ;
EA5E 86 AB    466 HEA5E  stx STRNG1
EA60          467 ;
EA60 20 F9 EA 468 HEA60  jsr HEAF9
EA63          469 ;
EA63 4C 69 EA 470      jmp HEA69
EA66          471 ;
EA66 20 E3 E9 472 HEA66  jsr HE9E3
EA69          473 ;
EA69 F0 76    474 HEA69  beq HEAE1
EA6B          475 ;
EA6B 20 72 EB 476      jsr HEB72
EA6E          477 ;

```

```

EA6E A9 00      478      lda #ZERO
EA70 38         479      sec
EA71 E5 9D      480      sbc DSCTMP
EA73 85 9D      481      sta DSCTMP
EA75           482      ;
EA75 20 0E EA   483      jsr HEA0E
EA78           484      ;
EA78 E6 9D      485      inc DSCTMP
EA7A F0 BA      486      beq HEA36
EA7C           487      ;
EA7C A2 FC      488      ldx #$FC
EA7E           489      ;
EA7E A9 01      490      lda #1
EA80           491      ;
EA80 A4 A6      492      HEA80  ldy ARGMANT
EA82 C4 9E      493      cpy DSCTMP+1
EA84 D0 10      494      bne HEA96
EA86           495      ;
EA86 A4 A7      496      ldy ARGMANT+1
EA88 C4 9F      497      cpy DSCTMP+2
EA8A D0 0A      498      bne HEA96
EA8C           499      ;
EA8C A4 A8      500      ldy ARGMANT+2
EA8E C4 A0      501      cpy FACMO
EA90 D0 04      502      bne HEA96
EA92           503      ;
EA92 A4 A9      504      ldy ARGMANT+3
EA94 C4 A1      505      cpy FACMO+1
EA96           506      ;
EA96 08         507      HEA96  php
EA97           508      ;
EA97 2A         509      rol
EA98 90 09      510      bcc HEAA3
EA9A           511      ;
EA9A E8         512      inx
EA9B           513      ;
EA9B 95 65      514      sta LASTMUL+3,X
EA9D           515      ;
EA9D F0 32      516      beq HEAD1
EA9F 10 34      517      bpl HEAD5
EAA1           518      ;
EAA1 A9 01      519      lda #1
EAA3           520      ;
EAA3 28         521      HEAA3  plp
EAA4 B0 0E      522      bcs HEAB4
EAA6           523      ;
EAA6 06 A9      524      HEAA6  asl ARGMANT+3
EAA8           525      ;
EAA8 26 A8      526      rol ARGMANT+2
EAAA 26 A7      527      rol ARGMANT+1
EAAC 26 A6      528      rol ARGMANT
EAAE           529      ;
EAAE B0 E6      530      bcs HEA96
EAB0 30 CE      531      bmi HEA80
EAB2 10 E2      532      bpl HEA96
EAB4           533      ;
EAB4 A8         534      HEAB4  tay
EAB5           535      ;
EAB5 A5 A9      536      lda ARGMANT+3
EAB7 E5 A1      537      sbc FACMO+1
EAB9 85 A9      538      sta ARGMANT+3

```

```

EABB          539 ;
EABB A5 A8    540      lda ARGMANT+2
EABD E5 A0    541      sbc FACMO
EABF 85 A8    542      sta ARGMANT+2
EAC1          543 ;
EAC1 A5 A7    544      lda ARGMANT+1
EAC3 E5 9F    545      sbc DSCTMP+2
EAC5 85 A7    546      sta ARGMANT+1
EAC7          547 ;
EAC7 A5 A6    548      lda ARGMANT
EAC9 E5 9E    549      sbc DSCTMP+1
EACB 85 A6    550      sta ARGMANT
EACD          551 ;
EACD 98       552      tya
EACE          553 ;
EACE 4C A6 EA 554      jmp HEAA6
EAD1          555 ;
EAD1 A9 40    556 HEAD1  lda #$40
EAD3 D0 CE    557      bne HEAA3
EAD5          558 ;
EAD5 0A       559 HEAD5  asl
EAD6 0A       560      asl
EAD7 0A       561      asl
EAD8 0A       562      asl
EAD9 0A       563      asl
EADA 0A       564      asl
EADB          565 ;
EADB 85 AC    566      sta STRNG1+1
EADD          567 ;
EADD 28       568      plp
EADE          569 ;
EADE 4C E6 EA 570      jmp HEAE6
EAE1          571 ;
EAE1 A2 85    572 HEAE1  ldx #$85
EAE3          573 ;
EAE3 4C 12 D4 574      jmp HD412
EAE6          575 ;
EAE6 A5 62    576 HEAE6  lda LASTMUL
EAE8 85 9E    577      sta DSCTMP+1
EAEA          578 ;
EAEA A5 63    579      lda LASTMUL+1
EAEC 85 9F    580      sta DSCTMP+2
EAEF          581 ;
EAEF A5 64    582      lda LASTMUL+2
EAF0 85 A0    583      sta FACMO
EAF2          584 ;
EAF2 A5 65    585      lda LASTMUL+3
EAF4 85 A1    586      sta FACMO+1
EAF6          587 ;
EAF6 4C 2E E8 588      jmp HE82E
EAF9          589 ;
EAF9 85 5E    590 HEAF9  sta INDEX
EAFB 84 5F    591      sty INDEX+1
EAFD          592 ;
EAFD A0 04    593      ldy #4
EAFF          594 ;
EAFF B1 5E    595      lda (INDEX),Y
EB01 85 A1    596      sta FACMO+1
EB03          597 ;
EB03 88       598      dey
EB04          599 ;

```



```

EB04 B1 5E      600      lda (INDEX),Y
EB06 85 A0      601      sta FACMO
EB08           602      ;
EB08 88         603      dey
EB09           604      ;
EB09 B1 5E      605      lda (INDEX),Y
EB0B 85 9F      606      sta DSCTMP+2
EB0D           607      ;
EB0D 88         608      dey
EB0E           609      ;
EB0E B1 5E      610      lda (INDEX),Y
EB10 85 A2      611      sta FACSIGN
EB12           612      ;
EB12 09 80      613      ora #$80
EB14 85 9E      614      sta DSCTMP+1
EB16           615      ;
EB16 88         616      dey
EB17           617      ;
EB17 B1 5E      618      lda (INDEX),Y
EB19 85 9D      619      sta DSCTMP
EB1B           620      ;
EB1B 84 AC      621      sty STRNG1+1
EB1D           622      ;
EB1D 60         623      rts
EB1E           624      ;
EB1E A2 98      625 HEB1E   ldx #TEMP2
EB20           626      ;
EB20 2C 00 00   627      bit *-*
EB23           628      dfs !-2
EB21           629      ;
EB21 A2 93      630 HEB21   ldx #TEMP1
EB23           631      ;
EB23 A0 00      632      ldy /TEMP1
EB25 F0 04      633      beq HEB2B
EB27           634      ;
EB27 A6 85      635 HEB27   ldx FORPNT
EB29 A4 86      636      ldy FORPNT+1
EB2B           637      ;
EB2B 20 72 EB   638 HEB2B   jsr HEB72
EB2E           639      ;
EB2E 86 5E      640      stx INDEX
EB30 84 5F      641      sty INDEX+1
EB32           642      ;
EB32 A0 04      643      ldy #4
EB34           644      ;
EB34 A5 A1      645      lda FACMO+1
EB36 91 5E      646      sta (INDEX),Y
EB38           647      ;
EB38 88         648      dey
EB39           649      ;
EB39 A5 A0      650      lda FACMO
EB3B 91 5E      651      sta (INDEX),Y
EB3D           652      ;
EB3D 88         653      dey
EB3E           654      ;
EB3E A5 9F      655      lda DSCTMP+2
EB40 91 5E      656      sta (INDEX),Y
EB42           657      ;
EB42 88         658      dey
EB43           659      ;
EB43 A5 A2      660      lda FACSIGN

```

```

EB45 09 7F      661      ora #$7F
EB47 25 9E      662      and DSCTMP+1
EB49 91 5E      663      sta (INDEX),Y
EB4B           664      ;
EB4B 88         665      dey
EB4C           666      ;
EB4C A5 9D      667      lda DSCTMP
EB4E 91 5E      668      sta (INDEX),Y
EB50           669      ;
EB50 84 AC      670      sty STRNG1+1
EB52           671      ;
EB52 60         672      rts
EB53           673      ;
EB53 A5 AA      674 HEB53   lda ARGSGN
EB55           675      ;
EB55 85 A2      676 HEB55   sta FACSIGN
EB57           677      ;
EB57 A2 05      678      ldx #5
EB59           679      ;
EB59 B5 A4      680 HEB59   lda ZPGA4,X
EB5B 95 9C      681      sta TEMP2+4,X
EB5D           682      ;
EB5D CA         683      dex
EB5E D0 F9      684      bne HEB59
EB60           685      ;
EB60 86 AC      686      stx STRNG1+1
EB62           687      ;
EB62 60         688      rts
EB63           689      ;
EB63 20 72 EB   690 HEB63   jsr HEB72
EB66           691      ;
EB66 A2 06      692 HEB66   ldx #6
EB68           693      ;
EB68 B5 9C      694 HEB68   lda TEMP2+4,X
EB6A 95 A4      695      sta ZPGA4,X
EB6C           696      ;
EB6C CA         697      dex
EB6D D0 F9      698      bne HEB68
EB6F           699      ;
EB6F 86 AC      700      stx STRNG1+1
EB71           701      ;
EB71 60         702 HEB71   rts
EB72           703      ;
EB72 A5 9D      704 HEB72   lda DSCTMP
EB74 F0 FB      705      beq HEB71
EB76           706      ;
EB76 06 AC      707      asl STRNG1+1
EB78 90 F7      708      bcc HEB71
EB7A           709      ;
EB7A 20 C6 E8   710 HEB7A   jsr HE8C6
EB7D D0 F2      711      bne HEB71
EB7F           712      ;
EB7F 4C 8F E8   713      jmp HE88F
EB82           714      ;
EB82 A5 9D      715 HEB82   lda DSCTMP
EB84 F0 09      716      beq HEB8F
EB86           717      ;
EB86 A5 A2      718 HEB86   lda FACSIGN
EB88           719      ;
EB88 2A         720 HEB88   rol
EB89           721      ;

```

```

EB89 A9 FF      722      lda #NEGONE
EB8B           723      ;
EB8B B0 02      724      bcs HEB8F
EB8D           725      ;
EB8D A9 01      726      lda #1
EB8F           727      ;
EB8F 60         728      HEB8F rts
EB90           729      ;
EB90 20 82 EB   730      HEB90 jsr HEB82
EB93           731      ;
EB93 85 9E      732      HEB93 sta DSCTMP+1
EB95           733      ;
EB95 A9 00      734      lda #ZERO
EB97 85 9F      735      sta DSCTMP+2
EB99           736      ;
EB99 A2 88      737      ldx #$88
EB9B           738      ;
EB9B A5 9E      739      HEB9B lda DSCTMP+1
EB9D 49 FF      740      eor #NEGONE
EB9F 2A         741      rol
EBA0           742      ;
EBA0 A9 00      743      HEBA0 lda #ZERO
EBA2 85 A1      744      sta FACMO+1
EBA4 85 A0      745      sta FACMO
EBA6 86 9D      746      stx DSCTMP
EBA8 85 AC      747      sta STRNG1+1
EBAA 85 A2      748      sta FACSIGN
EBAC           749      ;
EBAC 4C 29 E8   750      jmp HE829
EBAF           751      ;
EBAF 46 A2      752      HEBAF lsr FACSIGN
EBB1           753      ;
EBB1 60         754      rts
EBB2           755      ;
EBB2 85 60      756      HEBB2 sta P2
EBB4 84 61      757      HEBB4 sty P2+1
EBB6           758      ;
EBB6 A0 00      759      ldy #ZERO
EBB8           760      ;
EBB8 B1 60      761      lda (P2),Y
EBBA           762      ;
EBBA C8         763      iny
EBBB           764      ;
EBBB AA         765      tax
EBBC F0 C4      766      beq HEB82
EBBE           767      ;
EBBE B1 60      768      lda (P2),Y
EBC0 45 A2      769      eor FACSIGN
EBC2 30 C2      770      bmi HEB86
EBC4           771      ;
EBC4 E4 9D      772      cpx DSCTMP
EBC6 D0 21      773      bne HEBE9
EBC8           774      ;
EBC8 B1 60      775      lda (P2),Y
EBCA 09 80      776      ora #$80
EBCC C5 9E      777      cmp DSCTMP+1
EBCE D0 19      778      bne HEBE9
EBD0           779      ;
EBD0 C8         780      iny
EBD1           781      ;
EBD1 B1 60      782      lda (P2),Y

```

```

EBD3 C5 9F      783      cmp DSCTMP+2
EBD5 D0 12      784      bne HEBE9
EBD7           785      ;
EBD7 C8         786      iny
EBD8           787      ;
EBD8 B1 60      788      lda (P2),Y
EBDA C5 A0      789      cmp FACMO
EBDC D0 0B      790      bne HEBE9
EBDE           791      ;
EBDE C8         792      iny
EBDF           793      ;
EBDF A9 7F      794      lda #$7F
EBE1 C5 AC      795      cmp STRNG1+1
EBE3           796      ;
EBE3 B1 60      797      lda (P2),Y
EBE5 E5 A1      798      sbc FACMO+1
EBE7 F0 28      799      beq HEC11
EBE9           800      ;
EBE9 A5 A2      801 HEBE9   lda FACSIGN
EBEB           802      ;
EBEB 90 02      803      bcc HEBEF
EBED           804      ;
EBED 49 FF      805      eor #NEGONE
EBEF           806      ;
EBEF 4C 88 EB   807 HEBEF   jmp HEB88
EBF2           808      ;
EBF2 A5 9D      809 HEBF2   lda DSCTMP
EBF4 F0 4A      810      beq HEC40
EBF6           811      ;
EBF6 38         812      sec
EBF7           813      ;
EBF7 E9 A0      814      sbc #$A0
EBF9           815      ;
EBF9 24 A2      816      bit FACSIGN
EBFB 10 09      817      bpl HEC06
EBFD           818      ;
EBFD AA         819      tax
EBFE           820      ;
EBFE A9 FF      821      lda #NEGONE
EC00 85 A4      822      sta ZPGA4
EC02           823      ;
EC02           824      ;
EC02           825      icl "EC.L"

```

```
LLOAD EC.L,A$4000
```

```

EC02          1          ttl "ROM Source Code, EC.L"
EC02          2          ;
EC02          3          ;
EC02          4          ; EC.L
EC02          5          ;
EC02          6          ;
EC02 20 A4 E8    7          jsr HE8A4
EC05          8          ;
EC05 8A         9          txa
EC06         10         ;
EC06 A2 9D      11 HEC06   ldx #$9D
EC08         12         ;
EC08 C9 F9      13         cmp #$F9
EC0A 10 06      14         bpl HEC12
EC0C         15         ;
EC0C 20 F0 E8   16         jsr HE8F0
EC0F         17         ;
EC0F 84 A4      18         sty ZPGA4
EC11         19         ;
EC11 60        20 HEC11   rts
EC12         21         ;
EC12 A8        22 HEC12   tay
EC13         23         ;
EC13 A5 A2      24         lda FACSIGN
EC15 29 80      25         and #$80
EC17         26         ;
EC17 46 9E      27         lsr DSCTMP+1
EC19         28         ;
EC19 05 9E      29         ora DSCTMP+1
EC1B 85 9E      30         sta DSCTMP+1
EC1D         31         ;
EC1D 20 07 E9   32         jsr HE907
EC20         33         ;
EC20 84 A4      34         sty ZPGA4
EC22         35         ;
EC22 60        36         rts
EC23         37         ;
EC23 A5 9D      38 HEC23   lda DSCTMP
EC25 C9 A0      39         cmp #SPACE
EC27 B0 20      40         bcs HEC49
EC29         41         ;
EC29 20 F2 EB   42         jsr HEBF2
EC2C         43         ;
EC2C 84 AC      44         sty STRNG1+1
EC2E         45         ;
EC2E A5 A2      46         lda FACSIGN
EC30         47         ;
EC30 84 A2      48         sty FACSIGN
EC32         49         ;
EC32 49 80      50         eor #$80
EC34 2A         51         rol
EC35         52         ;
EC35 A9 A0      53         lda #$A0
EC37 85 9D      54         sta DSCTMP
EC39         55         ;
EC39 A5 A1      56         lda FACMO+1
EC3B 85 0D      57         sta ZPG0D
EC3D         58         ;
EC3D 4C 29 E8   59         jmp HE829
EC40         60         ;

```

```

EC40 85 9E      61  HEC40      sta DSCTMP+1
EC42 85 9F      62              sta DSCTMP+2
EC44 85 A0      63              sta FACMO
EC46 85 A1      64              sta FACMO+1
EC48            65  ;
EC48 A8        66              tay
EC49            67  ;
EC49 60        68  HEC49      rts
EC4A            69  ;
EC4A A0 00     70  HEC4A      ldy #ZERO
EC4C            71  ;
EC4C A2 0A     72              ldx #10
EC4E            73  ;
EC4E 94 99     74  HEC4E      sty TEMP2+1,X
EC50            75  ;
EC50 CA        76              dex
EC51 10 FB     77              bpl HEC4E
EC53            78  ;
EC53 90 0F     79              bcc HEC64
EC55            80  ;
EC55 C9 2D     81              cmp #$2D
EC57 D0 04     82              bne HEC5D
EC59            83  ;
EC59 86 A3     84              stx ZPGA3
EC5B F0 04     85              beq HEC61
EC5D            86  ;
EC5D C9 2B     87  HEC5D      cmp #$2B
EC5F D0 05     88              bne HEC66
EC61            89  ;
EC61 20 B1 00  90  HEC61      jsr CHRGET
EC64            91  ;
EC64 90 5B     92  HEC64      bcc HECC1
EC66            93  ;
EC66 C9 2E     94  HEC66      cmp #$2E
EC68 F0 2E     95              beq HEC98
EC6A            96  ;
EC6A C9 45     97              cmp #$45
EC6C D0 30     98              bne HEC9E
EC6E            99  ;
EC6E 20 B1 00 100              jsr CHRGET
EC71 90 17     101             bcc HEC8A
EC73           102  ;
EC73 C9 C9     103             cmp #$C9
EC75 F0 0E     104             beq HEC85
EC77           105  ;
EC77 C9 2D     106             cmp #$2D
EC79 F0 0A     107             beq HEC85
EC7B           108  ;
EC7B C9 C8     109             cmp #$C8
EC7D F0 08     110             beq HEC87
EC7F           111  ;
EC7F C9 2B     112             cmp #$2B
EC81           113  ;
EC81 F0 04     114             beq HEC87
EC83 D0 07     115             bne HEC8C
EC85           116  ;
EC85 66 9C     117  HEC85      ror TEMP2+4
EC87           118  ;
EC87 20 B1 00  119  HEC87      jsr CHRGET
EC8A           120  ;
EC8A 90 5C     121  HEC8A      bcc HECE8

```

```

EC8C          122 ;
EC8C 24 9C    123 HEC8C    bit TEMP2+4
EC8E 10 0E    124        bpl HEC9E
EC90          125 ;
EC90 A9 00    126        lda #ZERO
EC92 38       127        sec
EC93 E5 9A    128        sbc TEMP2+2
EC95          129 ;
EC95 4C A0 EC 130        jmp HECA0
EC98          131 ;
EC98 66 9B    132 HEC98    ror TEMP2+3
EC9A          133 ;
EC9A 24 9B    134        bit TEMP2+3
EC9C 50 C3    135        bvc HEC61
EC9E          136 ;
EC9E A5 9A    137 HEC9E    lda TEMP2+2
ECA0          138 ;
ECA0 38       139 HECA0    sec
ECA1          140 ;
ECA1 E5 99    141        sbc TEMP2+1
ECA3 85 9A    142        sta TEMP2+2
ECA5          143 ;
ECA5 F0 12    144        beq HECB9
ECA7 10 09    145        bpl HECB2
ECA9          146 ;
ECA9 20 55 EA 147 HECA9    jsr HEA55
ECAC          148 ;
ECAC E6 9A    149        inc TEMP2+2
ECAE          150 ;
ECAE D0 F9    151        bne HECA9
ECB0 F0 07    152        beq HECB9
ECB2          153 ;
ECB2 20 39 EA 154 HECB2    jsr HEA39
ECB5          155 ;
ECB5 C6 9A    156        dec TEMP2+2
ECB7 D0 F9    157        bne HECB2
ECB9          158 ;
ECB9 A5 A3    159 HECB9    lda ZPGA3
ECBB 30 01    160        bmi HECBE
ECBD          161 ;
ECBD 60       162        rts
ECBE          163 ;
ECBE 4C D0 EE 164 HECBE    jmp HEED0
ECC1          165 ;
ECC1 48       166 HECC1    pha
ECC2          167 ;
ECC2 24 9B    168        bit TEMP2+3
ECC4 10 02    169        bpl HECC8
ECC6          170 ;
ECC6 E6 99    171        inc TEMP2+1
ECC8          172 ;
ECC8 20 39 EA 173 HECC8    jsr HEA39
ECCB          174 ;
ECCB 68       175        pla
ECCC 38       176        sec
ECCD E9 30    177        sbc #$30
ECCF          178 ;
ECCF 20 D5 EC 179        jsr HECD5
ECD2          180 ;
ECD2 4C 61 EC 181        jmp HEC61
ECD5          182 ;

```

ECD5	48	183	HECD5	pha
ECD6		184		;
ECD6	20 63 EB	185		jsr HEB63
ECD9		186		;
ECD9	68	187		pla
ECDA		188		;
ECDA	20 93 EB	189		jsr HEB93
ECDD		190		;
ECDD	A5 AA	191		lda ARGSGN
ECDF	45 A2	192		eor FACSIGN
ECE1	85 AB	193		sta STRNG1
ECE3		194		;
ECE3	A6 9D	195		ldx DSCTMP
ECE5		196		;
ECE5	4C C1 E7	197		jmp HE7C1
ECE8		198		;
ECE8	A5 9A	199	HECE8	lda TEMP2+2
ECEA	C9 0A	200		cmp #\$0A
ECEC	90 09	201		bcc HECF7
ECEE		202		;
ECEE	A9 64	203		lda #\$64
ECF0		204		;
ECF0	24 9C	205		bit TEMP2+4
ECF2	30 11	206		bmi HED05
ECF4		207		;
ECF4	4C D5 E8	208		jmp HE8D5
ECF7		209		;
ECF7	0A	210	HECF7	asl
ECF8	0A	211		asl
ECF9		212		;
ECF9	18	213		clc
ECFA		214		;
ECFA	65 9A	215		adc TEMP2+2
ECFC	0A	216		asl
ECFD		217		;
ECFD	18	218		clc
ECFE		219		;
ECFE	A0 00	220		ldy #ZERO
ED00		221		;
ED00	71 B8	222		adc (TXTPTR),Y
ED02		223		;
ED02	38	224		sec
ED03		225		;
ED03	E9 30	226		sbc #\$30
ED05		227		;
ED05	85 9A	228	HED05	sta TEMP2+2
ED07		229		;
ED07	4C 87 EC	230		jmp HEC87
ED0A		231		;
ED0A	9B 3E BC	232	HED0A	hex 9B3EBC1FFD
ED0D	1F FD			
ED0F	9E 6E 6B	233	HED0F	hex 9E6E6B27FD
ED12	27 FD			
ED14	9E 6E 6B	234	HED14	hex 9E6E6B2800
ED17	28 00			
ED19		235		;
ED19	A9 58	236	HED19	lda #HD358
ED1B	A0 D3	237		ldy /HD358
ED1D		238		;
ED1D	20 31 ED	239		jsr HED31
ED20		240		;


```

ED20 A5 76      241      lda CURLIN+1
ED22 A6 75      242      ldx CURLIN
ED24           243      ;
ED24 85 9E      244 HED24  sta DSCTMP+1
ED26 86 9F      245      stx DSCTMP+2
ED28           246      ;
ED28 A2 90      247      ldx #$90
ED2A           248      ;
ED2A 38         249      sec
ED2B           250      ;
ED2B 20 A0 EB   251      jsr HEBA0
ED2E 20 34 ED   252      jsr HED34
ED31           253      ;
ED31 4C 3A DB   254 HED31  jmp HDB3A
ED34           255      ;
ED34 A0 01      256 HED34  ldy #1
ED36           257      ;
ED36 A9 2D      258 HED36  lda #$2D
ED38           259      ;
ED38 88         260      dey
ED39           261      ;
ED39 24 A2      262      bit FACSIGN
ED3B 10 04      263      bpl HED41
ED3D           264      ;
ED3D C8         265      iny
ED3E           266      ;
ED3E 99 FF 00   267      sta ZPGFF,Y
ED41           268      ;
ED41 85 A2      269 HED41  sta FACSIGN
ED43           270      ;
ED43 84 AD      271      sty STRNG2
ED45           272      ;
ED45 C8         273      iny
ED46           274      ;
ED46 A9 30      275      lda #$30
ED48           276      ;
ED48 A6 9D      277      ldx DSCTMP
ED4A D0 03      278      bne HED4F
ED4C           279      ;
ED4C 4C 57 EE   280      jmp HEE57
ED4F           281      ;
ED4F A9 00      282 HED4F  lda #ZERO
ED51           283      ;
ED51 E0 80      284      cpx #$80
ED53           285      ;
ED53 F0 02      286      beq HED57
ED55 B0 09      287      bcs HED60
ED57           288      ;
ED57 A9 14      289 HED57  lda #HED14
ED59 A0 ED      290      ldy /HED14
ED5B           291      ;
ED5B 20 7F E9   292      jsr HE97F
ED5E           293      ;
ED5E A9 F7      294      lda #$F7
ED60           295      ;
ED60 85 99      296 HED60  sta TEMP2+1
ED62           297      ;
ED62 A9 0F      298 HED62  lda #HED0F
ED64 A0 ED      299      ldy /HED0F
ED66           300      ;
ED66 20 B2 EB   301      jsr HEBB2

```

```

ED69          302 ;
ED69 F0 1E    303      beq HED89
ED6B 10 12    304      bpl HED7F
ED6D          305 ;
ED6D A9 0A    306 HED6D  lda #HED0A
ED6F A0 ED    307      ldy /HED0A
ED71          308 ;
ED71 20 B2 EB 309      jsr HEBB2
ED74          310 ;
ED74 F0 02    311      beq HED78
ED76 10 0E    312      bpl HED86
ED78          313 ;
ED78 20 39 EA 314 HED78  jsr HEA39
ED7B          315 ;
ED7B C6 99    316      dec TEMP2+1
ED7D D0 EE    317      bne HED6D
ED7F          318 ;
ED7F 20 55 EA 319 HED7F  jsr HEA55
ED82          320 ;
ED82 E6 99    321      inc TEMP2+1
ED84 D0 DC    322      bne HED62
ED86          323 ;
ED86 20 A0 E7 324 HED86  jsr HE7A0
ED89          325 ;
ED89 20 F2 EB 326 HED89  jsr HEBF2
ED8C          327 ;
ED8C A2 01    328      ldx #1
ED8E          329 ;
ED8E A5 99    330      lda TEMP2+1
ED90 18       331      clc
ED91 69 0A    332      adc #$0A
ED93 30 09    333      bmi HED9E
ED95          334 ;
ED95 C9 0B    335      cmp #$0B
ED97 B0 06    336      bcs HED9F
ED99          337 ;
ED99 69 FF    338      adc #NEGONE
ED9B AA       339      tax
ED9C          340 ;
ED9C A9 02    341      lda #2
ED9E          342 ;
ED9E 38       343 HED9E  sec
ED9F          344 ;
ED9F E9 02    345 HED9F  sbc #2
EDA1          346 ;
EDA1 85 9A    347      sta TEMP2+2
EDA3 86 99    348      stx TEMP2+1
EDA5          349 ;
EDA5 8A       350      txa
EDA6          351 ;
EDA6 F0 02    352      beq HEDAA
EDA8 10 13    353      bpl HEDBD
EDAA          354 ;
EDAA A4 AD    355 HEDAA  ldy STRNG2
EDAC          356 ;
EDAC A9 2E    357      lda #$2E
EDAE          358 ;
EDAE C8       359      iny
EDAF          360 ;
EDAF 99 FF 00 361      sta ZPGFF,Y
EDB2          362 ;

```

```

EDB2 8A          363          txa
EDB3 F0 06      364          beq HEDBB
EDB5           365          ;
EDB5 A9 30      366          lda #$30
EDB7           367          ;
EDB7 C8         368          iny
EDB8           369          ;
EDB8 99 FF 00   370          sta ZPGFF,Y
EDBB           371          ;
EDBB 84 AD      372 HEDBB     sty STRNG2
EDBD           373          ;
EDBD A0 00      374 HEDBD     ldz #ZERO
EDBF           375          ;
EDBF A2 80      376          ldz #$80
EDC1           377          ;
EDC1 A5 A1      378 HEDC1     lda FACMO+1
EDC3 18         379          clc
EDC4 79 6C EE   380          adc HEE6C,Y
EDC7 85 A1      381          sta FACMO+1
EDC9           382          ;
EDC9 A5 A0      383          lda FACMO
EDCB 79 6B EE   384          adc HEE6B,Y
EDCE 85 A0      385          sta FACMO
EDD0           386          ;
EDD0 A5 9F      387          lda DSCTMP+2
EDD2 79 6A EE   388          adc HEE6A,Y
EDD5 85 9F      389          sta DSCTMP+2
EDD7           390          ;
EDD7 A5 9E      391          lda DSCTMP+1
EDD9 79 69 EE   392          adc HEE69,Y
EDDC 85 9E      393          sta DSCTMP+1
EDDE           394          ;
EDDE E8         395          inx
EDDF           396          ;
EDDF B0 04      397          bcs HEDE5
EDE1           398          ;
EDE1 10 DE      399          bpl HEDC1
EDE3 30 02      400          bmi HEDE7
EDE5           401          ;
EDE5 30 DA      402 HEDE5     bmi HEDC1
EDE7           403          ;
EDE7 8A         404 HEDE7     txa
EDE8           405          ;
EDE8 90 04      406          bcc HEDEE
EDEA           407          ;
EDEA 49 FF      408          eor #NEGONE
EDEC 69 0A      409          adc #$0A
EDEE           410          ;
EDEE 69 2F      411 HEDEE     adc #$2F
EDF0           412          ;
EDF0 C8         413          iny
EDF1 C8         414          iny
EDF2 C8         415          iny
EDF3 C8         416          iny
EDF4           417          ;
EDF4 84 83      418          sty VARPNT
EDF6           419          ;
EDF6 A4 AD      420          ldz STRNG2
EDF8           421          ;
EDF8 C8         422          iny
EDF9           423          ;

```

```

EDF9 AA          424          tax
EDFA 29 7F       425          and #$7F
EDFC 99 FF 00    426          sta ZPGFF,Y
EDFF             427          ;
EDFF C6 99       428          dec TEMP2+1
EE01 D0 06       429          bne HEE09
EE03             430          ;
EE03 A9 2E       431          lda #$2E
EE05             432          ;
EE05 C8          433          iny
EE06             434          ;
EE06 99 FF 00    435          sta ZPGFF,Y
EE09             436          ;
EE09 84 AD       437 HEE09    sty STRNG2
EE0B             438          ;
EE0B A4 83       439          ldy VARPNT
EE0D             440          ;
EE0D 8A          441          txa
EE0E 49 FF       442          eor #NEGONE
EE10 29 80       443          and #$80
EE12 AA          444          tax
EE13             445          ;
EE13 C0 24       446          cpy #$24
EE15 D0 AA       447          bne HEDC1
EE17             448          ;
EE17 A4 AD       449          ldy STRNG2
EE19             450          ;
EE19 B9 FF 00    451 HEE19    lda ZPGFF,Y
EE1C             452          ;
EE1C 88          453          dey
EE1D             454          ;
EE1D C9 30       455          cmp #$30
EE1F F0 F8       456          beq HEE19
EE21             457          ;
EE21 C9 2E       458          cmp #$2E
EE23 F0 01       459          beq HEE26
EE25             460          ;
EE25 C8          461          iny
EE26             462          ;
EE26 A9 2B       463 HEE26    lda #$2B
EE28             464          ;
EE28 A6 9A       465          ldx TEMP2+2
EE2A             466          ;
EE2A F0 2E       467          beq HEE5A
EE2C 10 08       468          bpl HEE36
EE2E             469          ;
EE2E A9 00       470          lda #ZERO
EE30 38          471          sec
EE31 E5 9A       472          sbc TEMP2+2
EE33 AA          473          tax
EE34             474          ;
EE34 A9 2D       475          lda #$2D
EE36             476          ;
EE36 99 01 01    477 HEE36    sta STACK+1,Y
EE39             478          ;
EE39 A9 45       479          lda #$45
EE3B 99 00 01    480          sta STACK,Y
EE3E             481          ;
EE3E 8A          482          txa
EE3F             483          ;
EE3F A2 2F       484          ldx #$2F

```

```

EE41          485 ;
EE41 38       486      sec
EE42          487 ;
EE42 E8       488 HEE42  inx
EE43          489 ;
EE43 E9 0A    490      sbc #$0A
EE45 B0 FB    491      bcs HEE42
EE47          492 ;
EE47 69 3A    493      adc #$3A
EE49 99 03 01 494      sta STACK+3,Y
EE4C          495 ;
EE4C 8A       496      txa
EE4D 99 02 01 497      sta STACK+2,Y
EE50          498 ;
EE50 A9 00    499      lda #ZERO
EE52 99 04 01 500      sta STACK+4,Y
EE55 F0 08    501      beq HEE5F
EE57          502 ;
EE57 99 FF 00 503 HEE57  sta ZPGFF,Y
EE5A          504 ;
EE5A A9 00    505 HEE5A  lda #ZERO
EE5C 99 00 01 506      sta STACK,Y
EE5F          507 ;
EE5F A9 00    508 HEE5F  lda #ZERO
EE61          509 ;
EE61 A0 01    510      ldy #1
EE63          511 ;
EE63 60       512      rts
EE64          513 ;
EE64 80 00 00 514 HEE64  hex 8000000000
EE67 00 00
EE69          515 ;
EE69 FA       516 HEE69  hex FA
EE6A 0A       517 HEE6A  hex 0A
EE6B 1F       518 HEE6B  hex 1F
EE6C 00       519 HEE6C  hex 00
EE6D 00 98 96 520      hex 00989680
EE70 80
EE71 FF F0 BD 521      hex FFF0BDC0
EE74 C0
EE75 00 01 86 522      hex 000186A0
EE78 A0
EE79 FF FF D8 523      hex FFFF0D8F0
EE7C F0
EE7D 00 00 03 524      hex 000003E8
EE80 E8
EE81 FF FF FF 525      hex FFFFFFF9C
EE84 9C
EE85 00 00 00 526      hex 0000000A
EE88 0A
EE89 FF FF FF 527      hex FFFFFFFF
EE8C FF
EE8D          528 ;
EE8D 20 63 EB 529 HEE8D  jsr HEB63
EE90          530 ;
EE90 A9 64    531      lda #HEE64
EE92 A0 EE    532      ldy /HEE64
EE94          533 ;
EE94 20 F9 EA 534      jsr HEAF9
EE97          535 ;
EE97 F0 70    536 HEE97  beq HEF09

```

```

EE99          537 ;
EE99 A5 A5      538      lda ARGEXP
EE9B D0 03      539      bne HEEA0
EE9D          540 ;
EE9D 4C 50 E8   541      jmp HE850
EEA0          542 ;
EEA0 A2 8A      543 HEEA0   ldx #TEMP3
EEA2 A0 00      544      ldy /TEMP3
EEA4          545 ;
EEA4 20 2B EB   546      jsr HEB2B
EEA7          547 ;
EEA7 A5 AA      548      lda ARGSGN
EEA9 10 0F      549      bpl HEEBA
EEAB          550 ;
EEAB 20 23 EC   551      jsr HEC23
EEAE          552 ;
EEAE A9 8A      553      lda #TEMP3
EEB0 A0 00      554      ldy /TEMP3
EEB2          555 ;
EEB2 20 B2 EB   556      jsr HEBB2
EEB5 D0 03      557      bne HEEBA
EEB7          558 ;
EEB7 98         559      tya
EEB8          560 ;
EEB8 A4 0D      561      ldy ZPG0D
EEBA          562 ;
EEBA 20 55 EB   563 HEEBA   jsr HEB55
EEBD          564 ;
EEBD 98         565      tya
EEBE 48         566      pha
EEBF          567 ;
EEBF 20 41 E9   568      jsr HE941
EEC2          569 ;
EEC2 A9 8A      570      lda #TEMP3
EEC4 A0 00      571      ldy /TEMP3
EEC6          572 ;
EEC6 20 7F E9   573      jsr HE97F
EEC9 20 09 EF   574      jsr HEF09
EECC          575 ;
EECC 68         576      pla
EECD 4A         577      lsr
EECE 90 0A      578      bcc HEEDA
EED0          579 ;
EED0 A5 9D      580 HEED0   lda DSCTMP
EED2 F0 06      581      beq HEEDA
EED4          582 ;
EED4 A5 A2      583      lda FACSIGN
EED6 49 FF      584      eor #NEGONE
EED8 85 A2      585      sta FACSIGN
EEDA          586 ;
EEDA 60         587 HEEDA   rts
EEDB          588 ;
EEDB 81 38 AA   589 HEEDB   hex 8138AA3B29
EEDE 3B 29
EEE0 07 71 34   590 HEEE0   hex 077134
EEE3 58 3E 56   591      hex 583E5674167EB31B
EEE6 74 16 7E
EEE9 B3 1B
EEEB 77 2F EE   592      hex 772FEEE3857A1D84
EEEE E3 85 7A
EEF1 1D 84

```

```

EEF3 1C 2A 7C      593      hex 1C2A7C6359580A7E
EEF6 63 59 58
EEF9 0A 7E
EEFB 75 FD E7      594      hex 75FDE7C680317218
EEFE C6 80 31
EF01 72 18
EF03 10 81 00      595      hex 108100000000
EF06 00 00 00
EF09      596      ;
EF09 A9 DB      597      HEF09      lda #HEEDB
EF0B A0 EE      598      ldy /HEEDB
EF0D      599      ;
EF0D 20 7F E9      600      jsr HE97F
EF10      601      ;
EF10 A5 AC      602      lda STRNG1+1
EF12 69 50      603      adc #$50
EF14 90 03      604      bcc HEF19
EF16      605      ;
EF16 20 7A EB      606      jsr HEB7A
EF19      607      ;
EF19 85 92      608      HEF19      sta ZPG92
EF1B      609      ;
EF1B 20 66 EB      610      jsr HEB66
EF1E      611      ;
EF1E A5 9D      612      lda DSCTMP
EF20 C9 88      613      cmp #$88
EF22 90 03      614      bcc HEF27
EF24      615      ;
EF24 20 2B EA      616      HEF24      jsr HEA2B
EF27      617      ;
EF27 20 23 EC      618      HEF27      jsr HEC23
EF2A      619      ;
EF2A A5 0D      620      lda ZPG0D
EF2C 18      621      clc
EF2D 69 81      622      adc #$81
EF2F F0 F3      623      beq HEF24
EF31      624      ;
EF31 38      625      sec
EF32 E9 01      626      sbc #1
EF34 48      627      pha
EF35      628      ;
EF35 A2 05      629      ldx #5
EF37      630      ;
EF37 B5 A5      631      HEF37      lda ARGEXP,X
EF39 B4 9D      632      ldy DSCTMP,X
EF3B      633      ;
EF3B 95 9D      634      sta DSCTMP,X
EF3D 94 A5      635      sty ARGEXP,X
EF3F      636      ;
EF3F CA      637      dex
EF40 10 F5      638      bpl HEF37
EF42      639      ;
EF42 A5 92      640      lda ZPG92
EF44 85 AC      641      sta STRNG1+1
EF46      642      ;
EF46 20 AA E7      643      jsr HE7AA
EF49 20 D0 EE      644      jsr HEED0
EF4C      645      ;
EF4C A9 E0      646      lda #HEEE0
EF4E A0 EE      647      ldy /HEEE0
EF50      648      ;

```

```

EF50 20 72 EF      649      jsr HEF72
EF53              650      ;
EF53 A9 00        651      lda #ZERO
EF55 85 AB        652      sta STRNG1
EF57              653      ;
EF57 68           654      pla
EF58              655      ;
EF58 20 10 EA     656      jsr HEA10
EF5B              657      ;
EF5B 60           658      rts
EF5C              659      ;
EF5C 85 AD        660 HEF5C  sta STRNG2
EF5E 84 AE        661      sty STRNG2+1
EF60              662      ;
EF60 20 21 EB     663      jsr HEB21
EF63              664      ;
EF63 A9 93        665      lda #TEMP1
EF65              666      ;
EF65 20 7F E9     667      jsr HE97F
EF68 20 76 EF     668      jsr HEF76
EF6B              669      ;
EF6B A9 93        670      lda #TEMP1
EF6D A0 00        671      ldy /TEMP1
EF6F              672      ;
EF6F 4C 7F E9     673      jmp HE97F
EF72              674      ;
EF72 85 AD        675 HEF72  sta STRNG2
EF74 84 AE        676      sty STRNG2+1
EF76              677      ;
EF76 20 1E EB     678 HEF76  jsr HEB1E
EF79              679      ;
EF79 B1 AD        680      lda (STRNG2),Y
EF7B 85 A3        681      sta ZPGA3
EF7D              682      ;
EF7D A4 AD        683      ldy STRNG2
EF7F              684      ;
EF7F C8           685      iny
EF80              686      ;
EF80 98           687      tya
EF81 D0 02        688      bne HEF85
EF83              689      ;
EF83 E6 AE        690      inc STRNG2+1
EF85              691      ;
EF85 85 AD        692 HEF85  sta STRNG2
EF87              693      ;
EF87 A4 AE        694      ldy STRNG2+1
EF89              695      ;
EF89 20 7F E9     696 HEF89  jsr HE97F
EF8C              697      ;
EF8C A5 AD        698      lda STRNG2
EF8E              699      ;
EF8E A4 AE        700      ldy STRNG2+1
EF90              701      ;
EF90 18           702      clc
EF91              703      ;
EF91 69 05        704      adc #5
EF93 90 01        705      bcc HEF96
EF95              706      ;
EF95 C8           707      iny
EF96              708      ;
EF96 85 AD        709 HEF96  sta STRNG2

```



```

EF98 84 AE          710          sty STRNG2+1
EF9A                711          ;
EF9A 20 BE E7      712          jsr HE7BE
EF9D                713          ;
EF9D A9 98         714          lda #TEMP2
EF9F A0 00         715          ldy /TEMP2
EFA1                716          ;
EFA1 C6 A3         717          dec ZPGA3
EFA3 D0 E4         718          bne HEF89
EFA5                719          ;
EFA5 60            720 HEFA5     rts
EFA6                721          ;
EFA6 98 35 44      722 HEFA6     hex 9835447A
EFA9 7A            723 HEFAA     hex 6828B146
EFAA 68 28 B1      724          ;
EFAD 46            725 HEFAE     jsr HEB82
EFAE                726          ;
EFAE 20 82 EB      727          tax
EFB1                728          bmi HEFCC
EFB1 AA            729          ;
EFB2 30 18         730          lda #FPRAND
EFB4                731          ldy /FPRAND
EFB4 A9 C9         732          ;
EFB6 A0 00         733          jsr HEAF9
EFB8                734          ;
EFB8 20 F9 EA      735          txa
EFBB                736          beq HEFA5
EFBB 8A            737          ;
EFBC F0 E7         738          lda #HEFA6
EFBE                739          ldy /HEFA6
EFBE A9 A6         740          ;
EFC0 A0 EF         741          jsr HE97F
EFC2                742          ;
EFC2 20 7F E9      743          lda #HEFAA
EFC5                744          ldy /HEFAA
EFC5 A9 AA         745          ;
EFC7 A0 EF         746          jsr HE7BE
EFC9                747          ;
EFC9 20 BE E7      748 HEFCC     ldx FACMO+1
EFCC                749          lda DSCTMP+1
EFCC A6 A1         750          ;
EFCE A5 9E         751          sta FACMO+1
EFD0                752          stx DSCTMP+1
EFD0 85 A1         753          ;
EFD2 86 9E         754          lda #ZERO
EFD4                755          sta FACSIGN
EFD4 A9 00         756          ;
EFD6 85 A2         757          lda DSCTMP
EFD8                758          sta STRNG1+1
EFD8 A5 9D         759          ;
EFDA 85 AC         760          lda #$80
EFDC                761          sta DSCTMP
EFDC A9 80         762          ;
EFDE 85 9D         763          jsr HE82E
EFE0                764          ;
EFE0 20 2E E8      765          ldx #FPRAND
EFE3                766          ldy /FPRAND
EFE3 A2 C9         767          ;
EFE5 A0 00         768 HEFE7     jmp HEB2B
EFE7                769
EFE7 4C 2B EB

```

```
EFEA          769 ;
EFEA A9 66     770 HEFEA    lda #HF066
EFEC A0 F0     771         ldy /HF066
EFEE          772 ;
EFEE 20 BE E7  773         jsr HE7BE
EFF1          774 ;
EFF1 20 63 EB  775 HEFF1    jsr HEB63
EFF4          776 ;
EFF4 A9 6B     777         lda #HF06B
EFF6 A0 F0     778         ldy /HF06B
EFF8          779 ;
EFF8 A6 AA     780         ldx ARGSGN
EFFA          781 ;
EFFA 20 5E EA  782         jsr HEA5E
EFFD 20 63 EB  783         jsr HEB63
F000          784 ;
F000          785 ;
```

```
BSAVE E0ROM,D1,A$1000,B,L$1000
```

```
F000          786         usr E0ROM,D1
F000          787 ;
F000          788 ;
F000          789         icl "F0.L,D2"
```

```
LLOAD F0.L,D2,A$4000
```

```

F000      1      ttl "ROM Source Code, F0.L"
F000      2      ;
F000      3      ;
F000      4      ; F0.L
F000      5      ;
F000      6      ;
F000      7      obj PAGE10
F000      8      usr
F000      9      ;
F000     10      ;
F000 20 23 EC   11      jsr HEC23
F003     12      ;
F003 A9 00     13      lda #ZERO
F005 85 AB     14      sta STRNG1
F007     15      ;
F007 20 AA E7   16      jsr HE7AA
F00A     17      ;
F00A A9 70     18      lda #HF070
F00C A0 F0     19      ldy /HF070
F00E     20      ;
F00E 20 A7 E7   21      jsr HE7A7
F011     22      ;
F011 A5 A2     23      lda FACSIGN
F013 48        24      pha
F014 10 0D     25      bpl HF023
F016     26      ;
F016 20 A0 E7   27      jsr HE7A0
F019     28      ;
F019 A5 A2     29      lda FACSIGN
F01B 30 09     30      bmi HF026
F01D     31      ;
F01D A5 16     32      lda ZPG16
F01F 49 FF     33      eor #NEGONE
F021 85 16     34      sta ZPG16
F023     35      ;
F023 20 D0 EE   36      HF023 jsr HEED0
F026     37      ;
F026 A9 70     38      HF026 lda #HF070
F028 A0 F0     39      ldy /HF070
F02A     40      ;
F02A 20 BE E7   41      jsr HE7BE
F02D     42      ;
F02D 68        43      pla
F02E 10 03     44      bpl HF033
F030     45      ;
F030 20 D0 EE   46      jsr HEED0
F033     47      ;
F033 A9 75     48      HF033 lda #HF075
F035 A0 F0     49      ldy /HF075
F037     50      ;
F037 4C 5C EF   51      jmp HEF5C
F03A     52      ;
F03A 20 21 EB   53      HF03A jsr HEB21
F03D     54      ;
F03D A9 00     55      lda #ZERO
F03F 85 16     56      sta ZPG16
F041     57      ;
F041 20 F1 EF   58      jsr HEFF1
F044     59      ;
F044 A2 8A     60      ldx #$8A

```

```

F046 A0 00      61      ldy #ZERO
F048           62      ;
F048 20 E7 EF   63      jsr HEFE7
F04B           64      ;
F04B A9 93      65      lda #TEMP1
F04D A0 00      66      ldy /TEMP1
F04F           67      ;
F04F 20 F9 EA   68      jsr HEAF9
F052           69      ;
F052 A9 00      70      lda #ZERO
F054 85 A2      71      sta FACSIGN
F056           72      ;
F056 A5 16      73      lda ZPG16
F058           74      ;
F058 20 62 F0   75      jsr HF062
F05B           76      ;
F05B A9 8A      77      lda #TEMP3
F05D A0 00      78      ldy /TEMP3
F05F           79      ;
F05F 4C 66 EA   80      jmp HEA66
F062           81      ;
F062 48         82      HF062 pha
F063           83      ;
F063 4C 23 F0   84      jmp HF023
F066           85      ;
F066 81 49 0F   86      HF066 hex 81490FDAA2
F069 DA A2      87      HF06B hex 83490FDAA2
F06B 83 49 0F   88      HF070 hex 7F00000000
F06E DA A2      89      HF075 hex 0584E61A2D
F070 7F 00 00   90      hex 1B862807FB
F073 00 00      91      hex F887996889
F075 05 84 E6   92      hex 01872335DF
F078 1A 2D      93      hex E186A55DE7
F07A 1B 86 28   94      hex 2883490FDA
F07D 07 FB      95      hex A2A6D3C1C8
F07F F8 87 99   96      hex D4C8D5C4CECA
F082 68 89      97      ;
F084 01 87 23   98      HF09E lda FACSIGN
F087 35 DF      99      pha
F089 E1 86 A5   100     bpl HF0A6
F08C 5D E7      101     ;
F08E 28 83 49   102     jsr HEED0
F091 0F DA      103     ;
F093 A2 A6 D3   104     HF0A6 lda DSCTMP
F096 C1 C8      105     pha
F098 D4 C8 D5   106     ;
F09B C4 CE CA   107     cmp #$81
F09E           108     bcc HF0B4
F0A0 48         109     ;
F0A1 10 03      110     lda #HE913
F0A3           111
F0A3 20 D0 EE
F0A6           112
F0A6 A5 9D      113
F0A8 48         114
F0A9           115
F0A9 C9 81      116
F0AB 90 07      117
F0AD           118
F0AD A9 13      119

```

```

F0AF A0 E9      111      ldy /HE913
F0B1           112      ;
F0B1 20 66 EA   113      jsr HEA66
F0B4           114      ;
F0B4 A9 CE      115      HF0B4  lda #HF0CE
F0B6 A0 F0      116      ldy /HF0CE
F0B8           117      ;
F0B8 20 5C EF   118      jsr HEF5C
F0BB           119      ;
F0BB 68         120      pla
F0BC C9 81      121      cmp #$81
F0BE 90 07      122      bcc HF0C7
F0C0           123      ;
F0C0 A9 66      124      lda #HF066
F0C2 A0 F0      125      ldy /HF066
F0C4           126      ;
F0C4 20 A7 E7   127      jsr HE7A7
F0C7           128      ;
F0C7 68         129      HF0C7  pla
F0C8 10 03      130      bpl HF0CD
F0CA           131      ;
F0CA 4C D0 EE   132      jmp HEED0
F0CD           133      ;
F0CD 60         134      HF0CD  rts
F0CE           135      ;
F0CE 0B 76 B3   136      HF0CE  hex 0B76B383BD
F0D1 83 BD      137
F0D3 D3 79 1E   137      hex D3791EF4A6
F0D6 F4 A6      138
F0D8 F5 7B 83   138      hex F57B83FCB0
F0DB FC B0      139
F0DD 10 7C 0C   139      hex 107C0C1F67
F0E0 1F 67      140
F0E2 CA 7C DE   140      hex CA7CDE53CB
F0E5 53 CB      141
F0E7 C1 7D 14   141      hex C17D146470
F0EA 64 70      142
F0EC 4C 7D B7   142      hex 4C7DB7EA51
F0EF EA 51      143
F0F1 7A 7D 63   143      hex 7A7D633088
F0F4 30 88      144
F0F6 7E 7E 92   144      hex 7E7E924499
F0F9 44 99      145
F0FB 3A 7E 4C   145      hex 3A7E4CCC91
F0FE CC 91      146
F100 C7 7F AA   146      hex C77FAAAAAA
F103 AA AA      147
F105 13 81 00   147      hex 1381000000
F108 00 00      148
F10A           148      ;
F10A 00         149      HF10A  hex 00
F10B           150      ;
F10B E6 B8      151      HF10B  inc TXTPTR
F10D D0 02      152      bne HF111
F10F           153      ;
F10F E6 B9      154      inc TXTPTR+1
F111           155      ;
F111 AD 60 EA   156      HF111  lda HEA60
F114 C9 3A      157      cmp #$3A
F116 B0 0A      158      bcs HF122
F118           159      ;

```

```

F118 C9 20      160      cmp #$20
F11A F0 EF      161      beq HF10B
F11C            162      ;
F11C 38         163      sec
F11D E9 30      164      sbc #$30
F11F            165      ;
F11F 38         166      sec
F120 E9 D0      167      sbc #$D0
F122            168      ;
F122 60         169      HF122 rts
F123            170      ;
F123 80 4F C7   171      hex 804FC75258
F126 52 58      172      ;
F128            173      HF128
F128 A2 FF      174      ldx #NEGONE
F12A 86 76      175      stx CURLIN+1
F12C            176      ;
F12C A2 FB      177      ldx #$FB
F12E 9A         178      txs
F12F            179      ;
F12F A9 28      180      lda #HF128
F131 A0 F1      181      ldy /HF128
F133            182      ;
F133 85 01      183      sta LOC1
F135 84 02      184      sty ZPG02
F137            185      ;
F137 85 04      186      sta ZPG04
F139 84 05      187      sty ZPG05
F13B            188      ;
F13B 20 73 F2   189      jsr HF273
F13E            190      ;
F13E A9 00      191      lda #*-*           ; lda jmp instruction
F140            192      dfs !-1
F13F 4C 00 00   193      jmp *-*
F142            194      dfs !-2
F140            195      ;
F140 85 00      196      sta LOC0
F142 85 03      197      sta ZPG03
F144 85 90      198      sta ZPG90
F146 85 0A      199      sta ZPG0A
F148            200      ;
F148 A9 99      201      lda #HE199
F14A A0 E1      202      ldy /HE199
F14C            203      ;
F14C 85 0B      204      sta ZPG0B
F14E 84 0C      205      sty ZPG0C
F150            206      ;
F150 A2 1C      207      ldx #$1C
F152            208      ;
F152 BD 0A F1   209      HF152 lda HF10A,X
F155 95 B0      210      sta PRGEND+1,X
F157            211      ;
F157 86 F1      212      stx SPDBYT
F159            213      ;
F159 CA         214      dex
F15A D0 F6      215      bne HF152
F15C            216      ;
F15C 86 F2      217      stx ZPGF2
F15E            218      ;
F15E 8A         219      txa
F15F 85 A4      220      sta ZPGA4

```

```

F161 85 54      220      sta EL
F163 48         221      pha
F164           222      ;
F164 A9 03      223      lda #3
F166 85 8F      224      sta ZPG8F
F168           225      ;
F168 20 FB DA   226      jsr HDAFB
F16B           227      ;
F16B A9 01      228      lda #1
F16D 8D FD 01   229      sta STACK+$FD
F170 8D FC 01   230      sta STACK+$FC
F173           231      ;
F173 A2 55      232      ldx #STRATCH
F175 86 52      233      stx TEMPPT
F177           234      ;
F177 A9 00      235      lda #ZERO
F179 A0 08      236      ldy #8
F17B           237      ;
F17B 85 50      238      sta ACL
F17D 84 51      239      sty ACH
F17F           240      ;
F17F A0 00      241      ldy #ZERO
F181           242      ;
F181 E6 51      243      HF181 inc ACH
F183           244      ;
F183 B1 50      245      lda (ACL),Y
F185 49 FF      246      eor #NEGONE
F187 91 50      247      sta (ACL),Y
F189           248      ;
F189 D1 50      249      cmp (ACL),Y
F18B D0 08      250      bne HF195
F18D           251      ;
F18D 49 FF      252      eor #NEGONE
F18F 91 50      253      sta (ACL),Y
F191           254      ;
F191 D1 50      255      cmp (ACL),Y
F193 F0 EC      256      beq HF181
F195           257      ;
F195 A4 50      258      HF195 ldy ACL
F197           259      ;
F197 A5 51      260      lda ACH
F199 29 F0      261      and #$F0
F19B           262      ;
F19B 84 73      263      sty MEMSIZE
F19D 85 74      264      sta MEMSIZE+1
F19F           265      ;
F19F 84 6F      266      sty FRETOP
F1A1 85 70      267      sta FRETOP+1
F1A3           268      ;
F1A3 A2 00      269      ldx #ZERO
F1A5 A0 08      270      ldy #8
F1A7           271      ;
F1A7 86 67      272      stx PRGTAB
F1A9 84 68      273      sty PRGTAB+1
F1AB           274      ;
F1AB A0 00      275      ldy #ZERO
F1AD 84 D6      276      sty RUNFLAG
F1AF           277      ;
F1AF 98         278      tya
F1B0 91 67      279      sta (PRGTAB),Y
F1B2           280      ;

```

```

F1B2 E6 67      281      inc PRGTAB
F1B4 D0 02      282      bne HF1B8
F1B6            283      ;
F1B6 E6 68      284      inc PRGTAB+1
F1B8            285      ;
F1B8 A5 67      286      HF1B8  lda PRGTAB
F1BA A4 68      287      ldy PRGTAB+1
F1BC            288      ;
F1BC 20 E3 D3   289      jsr HD3E3
F1BF 20 4B D6   290      jsr HD64B
F1C2            291      ;
F1C2 A9 3A      292      lda #HDB3A
F1C4 A0 DB      293      ldy /HDB3A
F1C6            294      ;
F1C6 85 04      295      sta ZPG04
F1C8 84 05      296      sty ZPG05
F1CA            297      ;
F1CA A9 3C      298      lda #HD43C
F1CC A0 D4      299      ldy /HD43C
F1CE            300      ;
F1CE 85 01      301      sta LOC1
F1D0 84 02      302      sty ZPG02
F1D2            303      ;
F1D2 6C 01 00   304      jmp (LOC1)
F1D5            305      ;
F1D5 20 67 DD   306      HF1D5  jsr HDD67
F1D8 20 52 E7   307      jsr HE752
F1DB            308      ;
F1DB 6C 50 00   309      jmp (ACL)
F1DE            310      ;
F1DE 20 F8 E6   311      HF1DE  jsr HE6F8
F1E1            312      ;
F1E1 8A         313      txa
F1E2            314      ;
F1E2 4C 8B FE   315      jmp INPORT
F1E5            316      ;
F1E5 20 F8 E6   317      HF1E5  jsr HE6F8
F1E8            318      ;
F1E8 8A         319      txa
F1E9            320      ;
F1E9 4C 95 FE   321      jmp OUTPORT
F1EC            322      ;
F1EC 20 F8 E6   323      HF1EC  jsr HE6F8
F1EF            324      ;
F1EF E0 30      325      cpx #$30
F1F1 B0 13      326      bcs HF206
F1F3            327      ;
F1F3 86 F0      328      stx FIRST
F1F5            329      ;
F1F5 A9 2C      330      lda #$2C
F1F7            331      ;
F1F7 20 C0 DE   332      jsr HDEC0
F1FA 20 F8 E6   333      jsr HE6F8
F1FD            334      ;
F1FD E0 30      335      cpx #$30
F1FF B0 05      336      bcs HF206
F201            337      ;
F201 86 2C      338      stx H2
F203 86 2D      339      stx V2
F205            340      ;
F205 60         341      rts

```



```

F206          342 ;
F206 4C 99 E1 343 HF206      jmp HE199
F209          344 ;
F209 20 EC F1 345 HF209      jsr HF1EC
F20C          346 ;
F20C E4 F0    347          cpx FIRST
F20E B0 08    348          bcs HF218
F210          349 ;
F210 A5 F0    350          lda FIRST
F212 85 2C    351          sta H2
F214 85 2D    352          sta V2
F216          353 ;
F216 86 F0    354          stx FIRST
F218          355 ;
F218 A9 C5    356 HF218      lda #$C5
F21A          357 ;
F21A 20 C0 DE 358          jsr HDEC0
F21D 20 F8 E6 359          jsr HE6F8
F220          360 ;
F220 E0 30    361          cpx #$30
F222 B0 E2    362          bcs HF206
F224          363 ;
F224 60       364          rts
F225          365 ;
F225 20 EC F1 366 HF225      jsr HF1EC
F228          367 ;
F228 8A       368          txa
F229          369 ;
F229 A4 F0    370          ldy FIRST
F22B C0 28    371          cpy #$28
F22D B0 D7    372          bcs HF206
F22F          373 ;
F22F 4C 00 F8 374          jmp PLOT
F232          375 ;
F232 20 09 F2 376 HF232      jsr HF209
F235          377 ;
F235 8A       378          txa
F236          379 ;
F236 A4 2C    380          ldy H2
F238 C0 28    381          cpy #$28
F23A B0 CA    382          bcs HF206
F23C          383 ;
F23C A4 F0    384          ldy FIRST
F23E          385 ;
F23E 4C 19 F8 386          jmp HLINE
F241          387 ;
F241 20 09 F2 388 HF241      jsr HF209
F244          389 ;
F244 8A       390          txa
F245 A8       391          tay
F246          392 ;
F246 C0 28    393          cpy #$28
F248 B0 BC    394          bcs HF206
F24A          395 ;
F24A A5 F0    396          lda FIRST
F24C          397 ;
F24C 4C 28 F8 398          jmp VLINE
F24F          399 ;
F24F 20 F8 E6 400 HF24F      jsr HE6F8
F252          401 ;
F252 8A       402          txa

```

```

F253          403 ;
F253 4C 64 F8 404      jmp SETCOL
F256          405 ;
F256 20 F8 E6 406 HF256 jsr HE6F8
F259          407 ;
F259 CA       408      dex
F25A          409 ;
F25A 8A       410      txa
F25B C9 18    411      cmp #$18
F25D B0 A7    412      bcs HF206
F25F          413 ;
F25F 4C 5B FB 414      jmp TABV
F262          415 ;
F262 20 F8 E6 416 HF262 jsr HE6F8
F265          417 ;
F265 8A       418      txa
F266 49 FF    419      eor #NEGONE
F268 AA       420      tax
F269          421 ;
F269 E8       422      inx
F26A 86 F1    423      stx SPDBYT
F26C          424 ;
F26C 60       425      rts
F26D          426 ;
F26D 38       427 HF26D sec
F26E 90 00    428      bcc *+2
F270          429      dfs !-1
F26F          430 ;
F26F 18       431 HF26F clc
F270          432 ;
F270 66 F2    433      ror ZPGF2
F272          434 ;
F272 60       435      rts
F273          436 ;
F273 A9 FF    437 HF273 lda #NEGONE
F275 D0 02    438      bne HF279
F277          439 ;
F277 A9 3F    440 HF277 lda #$3F
F279          441 ;
F279 A2 00    442 HF279 ldx #ZERO
F27B          443 ;
F27B 85 32    444 HF27B sta INVFLG
F27D          445 ;
F27D 86 F3    446      stx ORMASK
F27F          447 ;
F27F 60       448      rts
F280          449 ;
F280 A9 7F    450 HF280 lda #$7F
F282          451 ;
F282 A2 40    452      ldx #$40
F284 D0 F5    453      bne HF27B
F286          454 ;
F286 20 67 DD 455 HF286 jsr HDD67
F289 20 52 E7 456      jsr HE752
F28C          457 ;
F28C A5 50    458      lda ACL
F28E C5 6D    459      cmp STREND
F290          460 ;
F290 A5 51    461      lda ACH
F292 E5 6E    462      sbc STREND+1
F294 B0 03    463      bcs HF299

```

```

F296          464 ;
F296 4C 10 D4 465 HF296      jmp HD410
F299          466 ;
F299 A5 50    467 HF299      lda ACL
F29B 85 73    468             sta MEMSIZE
F29D 85 6F    469             sta FRETOP
F29F          470 ;
F29F A5 51    471             lda ACH
F2A1 85 74    472             sta MEMSIZE+1
F2A3 85 70    473             sta FRETOP+1
F2A5          474 ;
F2A5 60       475             rts
F2A6          476 ;
F2A6 20 67 DD 477 HF2A6      jsr HDD67
F2A9 20 52 E7 478             jsr HE752
F2AC          479 ;
F2AC A5 50    480             lda ACL
F2AE C5 73    481             cmp MEMSIZE
F2B0          482 ;
F2B0 A5 51    483             lda ACH
F2B2 E5 74    484             sbc MEMSIZE+1
F2B4 B0 E0    485             bcs HF296
F2B6          486 ;
F2B6 A5 50    487             lda ACL
F2B8 C5 69    488             cmp VARTAB
F2BA          489 ;
F2BA A5 51    490             lda ACH
F2BC E5 6A    491             sbc VARTAB+1
F2BE 90 D6    492             bcc HF296
F2C0          493 ;
F2C0 A5 50    494             lda ACL
F2C2 85 69    495             sta VARTAB
F2C4          496 ;
F2C4 A5 51    497             lda ACH
F2C6 85 6A    498             sta VARTAB+1
F2C8          499 ;
F2C8 4C 6C D6 500             jmp HD66C
F2CB          501 ;
F2CB A9 AB    502 HF2CB      lda #$AB
F2CD          503 ;
F2CD 20 C0 DE 504             jsr HDEC0
F2D0          505 ;
F2D0 A5 B8    506             lda TXTPTR
F2D2 85 F4    507             sta X2
F2D4          508 ;
F2D4 A5 B9    509             lda TXTPTR+1
F2D6 85 F5    510             sta M2
F2D8          511 ;
F2D8 38       512             sec
F2D9          513 ;
F2D9 66 D8    514             ror ERRFLG
F2DB          515 ;
F2DB A5 75    516             lda CURLIN
F2DD 85 F6    517             sta M2+1
F2DF          518 ;
F2DF A5 76    519             lda CURLIN+1
F2E1 85 F7    520             sta M2+2
F2E3          521 ;
F2E3 20 A6 D9 522             jsr HD9A6
F2E6          523 ;
F2E6 4C 98 D9 524             jmp HD998

```

```

F2E9          525 ;
F2E9 86 DE    526 HF2E9 stx ERRNUM
F2EB          527 ;
F2EB A6 F8    528         ldx REMSTK
F2ED 86 DF    529         stx ERRSTK
F2EF          530 ;
F2EF A5 75    531         lda CURLIN
F2F1 85 DA    532         sta ERRLIN
F2F3          533 ;
F2F3 A5 76    534         lda CURLIN+1
F2F5 85 DB    535         sta ERRLIN+1
F2F7          536 ;
F2F7 A5 79    537         lda TEXTPTR
F2F9 85 DC    538         sta ERRPOS
F2FB          539 ;
F2FB A5 7A    540         lda TEXTPTR+1
F2FD 85 DD    541         sta ERRPOS+1
F2FF          542 ;
F2FF A5 F4    543         lda X2
F301 85 B8    544         sta TXTPTR
F303          545 ;
F303 A5 F5    546         lda M2
F305 85 B9    547         sta TXTPTR+1
F307          548 ;
F307 A5 F6    549         lda M2+1
F309 85 75    550         sta CURLIN
F30B          551 ;
F30B A5 F7    552         lda M2+2
F30D 85 76    553         sta CURLIN+1
F30F          554 ;
F30F 20 B7 00 555         jsr CHRGOT
F312 20 3E D9 556         jsr HD93E
F315          557 ;
F315 4C D2 D7 558         jmp HD7D2
F318          559 ;
F318 A5 DA    560 HF318  lda ERRLIN
F31A 85 75    561         sta CURLIN
F31C          562 ;
F31C A5 DB    563         lda ERRLIN+1
F31E 85 76    564         sta CURLIN+1
F320          565 ;
F320 A5 DC    566         lda ERRPOS
F322 85 B8    567         sta TXTPTR
F324          568 ;
F324 A5 DD    569         lda ERRPOS+1
F326 85 B9    570         sta TXTPTR+1
F328          571 ;
F328 A6 DF    572         ldx ERRSTK
F32A 9A       573         txs
F32B          574 ;
F32B 4C D2 D7 575         jmp HD7D2
F32E          576 ;
F32E 4C C9 DE 577 HF32E  jmp HDEC9
F331          578 ;
F331 B0 FB    579 HF331  bcs HF32E
F333          580 ;
F333 A6 AF    581         ldx PRGEND
F335 86 69    582         stx VARTAB
F337          583 ;
F337 A6 B0    584         ldx PRGEND+1
F339 86 6A    585         stx VARTAB+1

```

```

F33B          586 ;
F33B 20 0C DA 587      jsr HDA0C
F33E 20 1A D6 588      jsr HD61A
F341          589 ;
F341 A5 9B    590      lda LOWTR
F343 85 60    591      sta P2
F345          592 ;
F345 A5 9C    593      lda LOWTR+1
F347 85 61    594      sta P2+1
F349          595 ;
F349 A9 2C    596      lda #$2C
F34B          597 ;
F34B 20 C0 DE 598      jsr HDEC0
F34E 20 0C DA 599      jsr HDA0C
F351          600 ;
F351 E6 50    601      inc ACL
F353 D0 02    602      bne HF357
F355          603 ;
F355 E6 51    604      inc ACH
F357          605 ;
F357 20 1A D6 606 HF357 jsr HD61A
F35A          607 ;
F35A A5 9B    608      lda LOWTR
F35C C5 60    609      cmp P2
F35E          610 ;
F35E A5 9C    611      lda LOWTR+1
F360 E5 61    612      sbc P2+1
F362 B0 01    613      bcs HF365
F364          614 ;
F364 60        615      rts
F365          616 ;
F365 A0 00    617 HF365 ldy #ZERO
F367          618 ;
F367 B1 9B    619 HF367 lda (LOWTR),Y
F369 91 60    620      sta (P2),Y
F36B          621 ;
F36B E6 9B    622      inc LOWTR
F36D D0 02    623      bne HF371
F36F          624 ;
F36F E6 9C    625      inc LOWTR+1
F371          626 ;
F371 E6 60    627 HF371 inc P2
F373 D0 02    628      bne HF377
F375          629 ;
F375 E6 61    630      inc P2+1
F377          631 ;
F377 A5 69    632 HF377 lda VARTAB
F379 C5 9B    633      cmp LOWTR
F37B          634 ;
F37B A5 6A    635      lda VARTAB+1
F37D E5 9C    636      sbc LOWTR+1
F37F B0 E6    637      bcs HF367
F381          638 ;
F381 A6 61    639      ldx P2+1
F383          640 ;
F383 A4 60    641      ldy P2
F385 D0 01    642      bne HF388
F387          643 ;
F387 CA        644      dex
F388          645 ;
F388 88        646 HF388 dey

```

```

F389          647 ;
F389 86 6A    648      stx VARTAB+1
F38B 84 69    649      sty VARTAB
F38D          650 ;
F38D 4C F2 D4 651      jmp HD4F2
F390          652 ;
F390 AD 56 C0 653 HF390  lda HIRESOFF
F393 AD 53 C0 654      lda MIXEDON
F396          655 ;
F396 4C 40 FB 656      jmp SETGR
F399          657 ;
F399 AD 54 C0 658 HF399  lda PAGE1ON
F39C          659 ;
F39C 4C 39 FB 660      jmp SETTXT
F39F          661 ;
F39F          662 ;
F39F          663 ; HF39F (29 bytes)
F39F          664 ;
F39F          665 ; HF3BC (28 bytes)
F39F          666 ;
F39F          667 ;
F39F          668 ; Read audio waveform for HEADER, SYNC, and binary DATA to
F39F          669 ; the address in A1 until the address in A2. Wait until
F39F          670 ; three seconds of HEADER has past before looking for SYNC.
F39F          671 ;
F39F 20 B7 D8 672 CXREAD  jsr RD2BIT          ; wait for waveform to change
F3A2          673 ;
F3A2 A9 FF    674      lda #NEGONE          ; initialize CHECKSUM
F3A4 85 2E    675      sta CHKSUM
F3A6          676 ;
F3A6 A2 12    677      ldx #18
F3A8          678 ;
F3A8 20 A8 FC 679 ^1      jsr WAIT          ; waste 167309 cycles
F3AB          680 ;
F3AB CA       681      dex
F3AC D0 FA    682      bne <1
F3AE          683 ;
F3AE 20 B7 D8 684      jsr RD2BIT          ; wait for waveform to change
F3B1          685 ;
F3B1 A0 24    686 RD2      ldy #$24          ; waveform change, 432 cycles
F3B3          687 ;
F3B3 20 BA D8 688      jsr RDBIT
F3B6 B0 F9    689      bcs RD2
F3B8          690 ;
F3B8 20 BA D8 691      jsr RDBIT
F3BB          692 ;
F3BB A0 3B    693      ldy #$3B          ; waveform change, 708 cycles
F3BD          694 ;
F3BD 20 75 F7 695 RD3      jsr RDBYTE          ; read DATA, MSB first
F3C0          696 ;
F3C0 81 3C    697      sta (A1L,X)          ; save data, X-reg = ZERO
F3C2          698 ;
F3C2 45 2E    699      eor CHKSUM
F3C4 85 2E    700      sta CHKSUM          ; update CHECKSUM
F3C6          701 ;
F3C6 20 BA FC 702      jsr NXTA1          ; increment A1, compare to A2
F3C9          703 ;
F3C9 A0 35    704      ldy #$35          ; waveform change, 636 cycles
F3CB          705 ;
F3CB 90 F0    706      bcc RD3          ; from NXTA1
F3CD          707 ;

```

```

F3CD 20 75 F7      708      jsr RDBYTE      ; read CHECKSUM data byte
F3D0              709      ;
F3D0 C5 2E        710      cmp CHKSUM      ; is the data good?
F3D2              711      ;
F3D2 60           712      rts              ; return to CALLER
F3D3              713      ;
F3D3              714      ;
F3D3              715      dfs $F3D8-*,ZERO
F3D8              716      ;
F3D8              717      ;
F3D8 2C 55 C0     718      HF3D8 bit PAGE2ON
F3DB 2C 52 C0     719      bit MIXEDOFF
F3DE              720      ;
F3DE A9 40        721      lda #$40
F3E0 D0 08        722      bne HF3EA
F3E2              723      ;
F3E2 A9 20        724      HF3E2 lda #$20
F3E4              725      ;
F3E4 2C 54 C0     726      bit PAGE1ON
F3E7 2C 53 C0     727      bit MIXEDON
F3EA              728      ;
F3EA 85 E6        729      HF3EA sta HPAG
F3EC              730      ;
F3EC AD 57 C0     731      lda HIRESON
F3EF AD 50 C0     732      lda TEXTOFF
F3F2              733      ;
F3F2 A9 00        734      lda #ZERO
F3F4 85 1C        735      sta HCOLOR1
F3F6              736      ;
F3F6 A5 E6        737      lda HPAG
F3F8 85 1B        738      sta SHAPE+1
F3FA              739      ;
F3FA A0 00        740      ldy #ZERO
F3FC 84 1A        741      sty SHAPE
F3FE              742      ;
F3FE A5 1C        743      HF3FE lda HCOLOR1
F400 91 1A        744      sta (SHAPE),Y
F402              745      ;
F402              746      ;
F402              747      icl "F4.L"

```

LLOAD F4.L,A\$4000

```

F402          1          ttl "ROM Source Code, F4.L"
F402          2          ;
F402          3          ;
F402          4          ; F4.L
F402          5          ;
F402          6          ;
F402 20 7E F4    7          jsr HF47E
F405          8          ;
F405 C8         9          iny
F406 D0 F6      10         bne HF3FE
F408          11         ;
F408 E6 1B      12         inc SHAPE+1
F40A          13         ;
F40A A5 1B      14         lda SHAPE+1
F40C 29 1F      15         and #$1F
F40E D0 EE      16         bne HF3FE
F410          17         ;
F410 60         18         rts
F411          19         ;
F411 85 E2      20 HF411   sta HRYCOOR
F413 86 E0      21         stx HRXCOOR
F415 84 E1      22         sty HRXCOOR+1
F417          23         ;
F417 48         24         pha
F418          25         ;
F418 29 C0      26         and #$C0
F41A 85 26      27         sta GBASL
F41C          28         ;
F41C 4A         29         lsr
F41D 4A         30         lsr
F41E          31         ;
F41E 05 26      32         ora GBASL
F420 85 26      33         sta GBASL
F422          34         ;
F422 68         35         pla
F423 85 27      36         sta GBASH
F425          37         ;
F425 0A         38         asl
F426 0A         39         asl
F427          40         ;
F427 0A         41         asl
F428 26 27      42         rol GBASH
F42A          43         ;
F42A 0A         44         asl
F42B 26 27      45         rol GBASH
F42D          46         ;
F42D 0A         47         asl
F42E 66 26      48         ror GBASL
F430          49         ;
F430 A5 27      50         lda GBASH
F432 29 1F      51         and #$1F
F434 05 E6      52         ora HPAG
F436 85 27      53         sta GBASH
F438          54         ;
F438 8A         55         txa
F439          56         ;
F439 C0 00      57         cpy #ZERO
F43B F0 05      58         beq HF442
F43D          59         ;
F43D A0 23      60         ldY #$23

```



```

F43F      61 ;
F43F 69 04      62      adc #4
F441      63 ;
F441 C8      64 HF441      iny
F442      65 ;
F442 E9 07      66 HF442      sbc #7
F444 B0 FB      67      bcs HF441
F446      68 ;
F446 84 E5      69      sty HRHZNDX
F448      70 ;
F448 AA      71      tax
F449      72 ;
F449      73 ;
F449      74 ; X-reg ranges from $F9 to $FF.
F449      75 ;
F449 BD B9 F4      76      lda BITABLE-$F9,X
F44C 85 30      77      sta COLOR
F44E      78 ;
F44E 98      79      tya
F44F 4A      80      lsr
F450      81 ;
F450 A5 E4      82      lda HRCOLOR
F452 85 1C      83      sta HCOLOR1
F454      84 ;
F454 B0 28      85      bcs HF47E
F456      86 ;
F456 60      87      rts
F457      88 ;
F457      89 ;
F457      90 ; Enter HPLOT routine with start coordinates as follows:
F457      91 ;
F457      92 ; reg-X - HIRES X-coordinate, low order byte (0-279)
F457      93 ; reg-Y - HIRES X-coordinate, high order byte
F457      94 ; reg-A - HIRES Y-coordinate byte (0-191)
F457      95 ;
F457 20 11 F4      96 HPLOT      jsr HF411
F45A      97 ;
F45A A5 1C      98      lda HCOLOR1
F45C 51 26      99      eor (GBASL),Y
F45E 25 30      100     and COLOR
F460 51 26      101     eor (GBASL),Y
F462 91 26      102     sta (GBASL),Y
F464      103 ;
F464 60      104     rts
F465      105 ;
F465 10 23      106 HF465     bpl HF48A
F467      107 ;
F467 A5 30      108     lda COLOR
F469 4A      109     lsr
F46A B0 05      110     bcs HF471
F46C      111 ;
F46C 49 C0      112     eor #$C0
F46E      113 ;
F46E 85 30      114 HF46E     sta COLOR
F470      115 ;
F470 60      116     rts
F471      117 ;
F471 88      118 HF471     dey
F472 10 02      119     bpl HF476
F474      120 ;
F474 A0 27      121     ldY #$27

```

```

F476          122 ;
F476 A9 C0    123 HF476   lda #$C0
F478          124 ;
F478 85 30    125 HF478   sta COLOR
F47A          126 ;
F47A 84 E5    127         sty HRHZNDX
F47C          128 ;
F47C A5 1C    129         lda HCOLOR1
F47E          130 ;
F47E 0A       131 HF47E   asl
F47F          132 ;
F47F C9 C0    133         cmp #$C0
F481 10 06    134         bpl HF489
F483          135 ;
F483 A5 1C    136         lda HCOLOR1
F485 49 7F    137         eor #$7F
F487 85 1C    138         sta HCOLOR1
F489          139 ;
F489 60       140 HF489   rts
F48A          141 ;
F48A A5 30    142 HF48A   lda COLOR
F48C 0A       143         asl
F48D 49 80    144         eor #$80
F48F 30 DD    145         bmi HF46E
F491          146 ;
F491 A9 81    147         lda #$81
F493          148 ;
F493 C8       149         iny
F494          150 ;
F494 C0 28    151         cpy #$28
F496 90 E0    152         bcc HF478
F498          153 ;
F498 A0 00    154         ldy #ZERO
F49A          155 ;
F49A B0 DC    156         bcs HF478
F49C          157 ;
F49C 18       158 HF49C   clc
F49D          159 ;
F49D A5 D1    160 HF49D   lda ZPGD1
F49F 29 04    161         and #4
F4A1 F0 25    162         beq HF4C8
F4A3          163 ;
F4A3 A9 7F    164         lda #$7F
F4A5 25 30    165         and COLOR
F4A7 31 26    166         and (GBASL),Y
F4A9 D0 19    167         bne HF4C4
F4AB          168 ;
F4AB E6 EA    169         inc HRCOLCNT
F4AD          170 ;
F4AD A9 7F    171         lda #$7F
F4AF 25 30    172         and COLOR
F4B1 10 11    173         bpl HF4C4
F4B3          174 ;
F4B3 18       175 HF4B3   clc
F4B4          176 ;
F4B4 A5 D1    177 HF4B4   lda ZPGD1
F4B6 29 04    178         and #4
F4B8 F0 0E    179         beq HF4C8
F4BA          180 ;
F4BA B1 26    181         lda (GBASL),Y
F4BC 45 1C    182         eor HCOLOR1

```

```

F4BE 25 30      183      and COLOR
F4C0 D0 02      184      bne HF4C4
F4C2            185      ;
F4C2 E6 EA      186      inc HRCOLCNT
F4C4            187      ;
F4C4 51 26      188      HF4C4 eor (GBASL),Y
F4C6 91 26      189      sta (GBASL),Y
F4C8            190      ;
F4C8 A5 D1      191      HF4C8 lda ZPGD1
F4CA 65 D3      192      adc ZPGD3
F4CC            193      ;
F4CC 29 03      194      HF4CC and #3
F4CE            195      ;
F4CE C9 02      196      cmp #2
F4D0 6A         197      ror
F4D1 B0 92      198      bcs HF465
F4D3            199      ;
F4D3 30 30      200      HF4D3 bmi HF505
F4D5            201      ;
F4D5 18         202      clc
F4D6            203      ;
F4D6 A5 27      204      lda GBASH
F4D8            205      ;
F4D8 2C B9 F5   206      bit HF5B9
F4DB D0 22      207      bne HF4FF
F4DD            208      ;
F4DD 06 26      209      asl GBASL
F4DF B0 1A      210      bcs HF4FB
F4E1            211      ;
F4E1 2C CD F4   212      bit HF4CC+1
F4E4 F0 05      213      beq HF4EB
F4E6            214      ;
F4E6 69 1F      215      adc #$1F
F4E8            216      ;
F4E8 38         217      sec
F4E9 B0 12      218      bcs HF4FD
F4EB            219      ;
F4EB 69 23      220      HF4EB adc #$23
F4ED 48         221      pha
F4EE            222      ;
F4EE A5 26      223      lda GBASL
F4F0 69 B0      224      adc #$B0
F4F2 B0 02      225      bcs HF4F6
F4F4            226      ;
F4F4 69 F0      227      adc #$F0
F4F6            228      ;
F4F6 85 26      229      HF4F6 sta GBASL
F4F8            230      ;
F4F8 68         231      pla
F4F9            232      ;
F4F9 B0 02      233      bcs HF4FD
F4FB            234      ;
F4FB 69 1F      235      HF4FB adc #$1F
F4FD            236      ;
F4FD 66 26      237      HF4FD ror GBASL
F4FF            238      ;
F4FF 69 FC      239      HF4FF adc #$FC
F501            240      ;
F501 85 27      241      HF501 sta GBASH
F503            242      ;
F503 60         243      rts

```

```

F504          244 ;
F504 18       245      clc
F505          246 ;
F505 A5 27    247 HF505   lda GBASH
F507          248 ;
F507 69 04    249 HF507   adc #4
F509          250 ;
F509 2C B9 F5 251      bit HF5B9
F50C D0 F3    252      bne HF501
F50E          253 ;
F50E 06 26    254      asl GBASL
F510 90 18    255      bcc HF52A
F512          256 ;
F512 69 E0    257      adc #$E0
F514          258 ;
F514 18       259      clc
F515          260 ;
F515 2C 08 F5 261      bit HF507+1
F518 F0 12    262      beq HF52C
F51A          263 ;
F51A A5 26    264      lda GBASL
F51C 69 50    265      adc #$50
F51E 49 F0    266      eor #$F0
F520 F0 02    267      beq HF524
F522          268 ;
F522 49 F0    269      eor #$F0
F524          270 ;
F524 85 26    271 HF524   sta GBASL
F526          272 ;
F526 A5 E6    273      lda HPAG
F528          274 ;
F528 90 02    275      bcc HF52C
F52A          276 ;
F52A 69 E0    277 HF52A   adc #$E0
F52C          278 ;
F52C 66 26    279 HF52C   ror GBASL
F52E 90 D1    280      bcc HF501
F530          281 ;
F530 48       282      pha
F531          283 ;
F531 A9 00    284      lda #ZERO
F533 85 E0    285      sta HRXCOOR
F535 85 E1    286      sta HRXCOOR+1
F537 85 E2    287      sta HRYCOOR
F539          288 ;
F539 68       289      pla
F53A          290 ;
F53A          291 ;
F53A          292 ; Enter HLIN routine with end coordinates as follows:
F53A          293 ;
F53A          294 ; reg-A - HIRES X-coordinate, low order byte (0-255)
F53A          295 ; reg-X - HIRES X-coordinate, high order byte (256-279)
F53A          296 ; reg-Y - HIRES Y-coordinate byte (0-191)
F53A          297 ;
F53A 48       298 HLIN    pha
F53B          299 ;
F53B 38       300      sec
F53C          301 ;
F53C E5 E0    302      sbc HRXCOOR
F53E 48       303      pha
F53F          304 ;

```

```

F53F 8A          305          txa
F540 E5 E1      306          sbc HRXCOOR+1
F542 85 D3      307          sta ZPGD3
F544 B0 0A      308          bcs HF550
F546           309          ;
F546 68         310          pla
F547 49 FF      311          eor #NEGONE
F549 69 01      312          adc #1
F54B 48         313          pha
F54C           314          ;
F54C A9 00      315          lda #ZERO
F54E E5 D3      316          sbc ZPGD3
F550           317          ;
F550 85 D1      318 HF550    sta ZPGD1
F552 85 D5      319          sta ZPGD5
F554           320          ;
F554 68         321          pla
F555 85 D0      322          sta ZPGD0
F557 85 D4      323          sta ZPGD4
F559           324          ;
F559 68         325          pla
F55A 85 E0      326          sta HRXCOOR
F55C           327          ;
F55C 86 E1      328          stx HRXCOOR+1
F55E           329          ;
F55E 98         330          tya
F55F 18         331          clc
F560 E5 E2      332          sbc HRYCOOR
F562 90 04      333          bcc HF568
F564           334          ;
F564 49 FF      335          eor #NEGONE
F566 69 FE      336          adc #$FE
F568           337          ;
F568 85 D2      338 HF568    sta ZPGD2
F56A           339          ;
F56A 84 E2      340          sty HRYCOOR
F56C           341          ;
F56C 66 D3      342          ror ZPGD3
F56E           343          ;
F56E 38         344          sec
F56F E5 D0      345          sbc ZPGD0
F571 AA         346          tax
F572           347          ;
F572 A9 FF      348          lda #NEGONE
F574 E5 D1      349          sbc ZPGD1
F576 85 1D      350          sta COUNTH
F578           351          ;
F578 A4 E5      352          ldY HRHZNDX
F57A           353          ;
F57A           354          .if HLINMOD
F57A           355          ;
F57A B0 04      356          bcs HF580
F57C           357          ;
F57C 0A         358 HF57C    asl
F57D           359          ;
F57D 20 65 F4   360          jsr HF465
F580           361          ;
F580 18         362 HF580    clc
F581           363          ;
F581 A5 D4      364          lda ZPGD4
F583           365          ;

```

```

F583          366      .el
F583          367      ;
F583          368      bcs HF581
F583          369      ;
F583          370      HF57C    asl
F583          371      ;
F583          372      jsr HF465
F583          373      ;
F583          374      sec
F583          375      ;
F583          376      HF581    lda ZPGD4
F583          377      ;
F583          378      .fi
F583          379      ;
F583 65 D2     380      adc ZPGD2
F585 85 D4     381      sta ZPGD4
F587          382      ;
F587 A5 D5     383      lda ZPGD5
F589 E9 00     384      sbc #ZERO
F58B          385      ;
F58B 85 D5     386      HF58B    sta ZPGD5
F58D          387      ;
F58D B1 26     388      lda (GBASL),Y
F58F 45 1C     389      eor HCOLOR1
F591 25 30     390      and COLOR
F593 51 26     391      eor (GBASL),Y
F595 91 26     392      sta (GBASL),Y
F597          393      ;
F597 E8        394      inx
F598 D0 04     395      bne HF59E
F59A          396      ;
F59A E6 1D     397      inc COUNTH
F59C F0 62     398      beq HF600
F59E          399      ;
F59E A5 D3     400      HF59E    lda ZPGD3
F5A0          401      ;
F5A0 B0 DA     402      bcs HF57C
F5A2          403      ;
F5A2 20 D3 F4  404      jsr HF4D3
F5A5          405      ;
F5A5          406      .if HLINMOD
F5A5          407      ;
F5A5 38        408      sec
F5A6          409      ;
F5A6          410      .el
F5A6          411      ;
F5A6          412      clc
F5A6          413      ;
F5A6          414      .fi
F5A6          415      ;
F5A6 A5 D4     416      lda ZPGD4
F5A8 65 D0     417      adc ZPGD0
F5AA 85 D4     418      sta ZPGD4
F5AC          419      ;
F5AC A5 D5     420      lda ZPGD5
F5AE 65 D1     421      adc ZPGD1
F5B0          422      ;
F5B0 50 D9     423      bvc HF58B
F5B2          424      ;
F5B2 81        425      BITABLE  byt %10000001
F5B3 82        426      byt %10000010

```

```

F5B4 84          427          byt %10000100
F5B5 88          428          byt %10001000
F5B6 90          429          byt %10010000
F5B7 A0          430          byt %10100000
F5B8 C0          431          byt %11000000
F5B9             432          ;
F5B9 1C          433  HF5B9    hex 1C
F5BA             434          ;
F5BA FF          435  HF5BA    hex FF
F5BB FE          436  HF5BB    hex FE
F5BC             437          ;
F5BC FA F4       438          hex FAF4
F5BE EC E1       439          hex ECE1
F5C0 D4 C5       440          hex D4C5
F5C2 B4 A1       441          hex B4A1
F5C4 8D 78       442          hex 8D78
F5C6 61 49       443          hex 6149
F5C8 31 18       444          hex 3118
F5CA FF          445          hex FF
F5CB             446          ;
F5CB A5 26       447          lda GBASL
F5CD 0A          448          asl
F5CE             449          ;
F5CE A5 27       450          lda GBASH
F5D0 29 03       451          and #3
F5D2 2A          452          rol
F5D3 05 26       453          ora GBASL
F5D5             454          ;
F5D5 0A          455          asl
F5D6 0A          456          asl
F5D7 0A          457          asl
F5D8             458          ;
F5D8 85 E2       459          sta HRYCOOR
F5DA             460          ;
F5DA A5 27       461          lda GBASH
F5DC 4A          462          lsr
F5DD 4A          463          lsr
F5DE 29 07       464          and #7
F5E0 05 E2       465          ora HRYCOOR
F5E2 85 E2       466          sta HRYCOOR
F5E4             467          ;
F5E4 A5 E5       468          lda HRHZNDX
F5E6 0A          469          asl
F5E7 65 E5       470          adc HRHZNDX
F5E9 0A          471          asl
F5EA AA          472          tax
F5EB             473          ;
F5EB CA          474          dex
F5EC             475          ;
F5EC A5 30       476          lda COLOR
F5EE 29 7F       477          and #$7F
F5F0             478          ;
F5F0 E8          479  HF5F0    inx
F5F1             480          ;
F5F1 4A          481          lsr
F5F2 D0 FC       482          bne HF5F0
F5F4             483          ;
F5F4 85 E1       484          sta HRXCOOR+1
F5F6             485          ;
F5F6 8A          486          txa
F5F7 18          487          clc

```

```

F5F8 65 E5      488      adc HRHZNDX
F5FA 90 02      489      bcc HF5FE
F5FC           490      ;
F5FC E6 E1      491      inc HRXCOOR+1
F5FE           492      ;
F5FE 85 E0      493 HF5FE   sta HRXCOOR
F600           494      ;
F600 60         495 HF600   rts
F601           496      ;
F601 86 1A      497      stx SHAPE
F603 84 1B      498      sty SHAPE+1
F605           499      ;
F605 AA        500 HF605   tax
F606           501      ;
F606 4A         502      lsr
F607 4A         503      lsr
F608 4A         504      lsr
F609 4A         505      lsr
F60A           506      ;
F60A 85 D3      507      sta ZPGD3
F60C           508      ;
F60C 8A         509      txa
F60D 29 0F      510      and #$0F
F60F AA        511      tax
F610           512      ;
F610 BC BA F5   513      ldy HF5BA,X
F613 84 D0      514      sty ZPGD0
F615           515      ;
F615 49 0F      516      eor #$0F
F617 AA        517      tax
F618           518      ;
F618 BC BB F5   519      ldy HF5BB,X
F61B           520      ;
F61B C8         521      iny
F61C 84 D2      522      sty ZPGD2
F61E           523      ;
F61E A4 E5      524      ldy HRHZNDX
F620           525      ;
F620 A2 00      526      ldx #ZERO
F622 86 EA      527      stx HRCOLCNT
F624           528      ;
F624 A1 1A      529      lda (SHAPE,X)
F626           530      ;
F626 85 D1      531 HF626   sta ZPGD1
F628           532      ;
F628 A2 80      533      ldx #$80
F62A 86 D4      534      stx ZPGD4
F62C 86 D5      535      stx ZPGD5
F62E           536      ;
F62E A6 E7      537      ldx SCALE
F630           538      ;
F630 A5 D4      539 HF630   lda ZPGD4
F632           540      ;
F632 38         541      sec
F633           542      ;
F633 65 D0      543      adc ZPGD0
F635 85 D4      544      sta ZPGD4
F637 90 04      545      bcc HF63D
F639           546      ;
F639 20 B3 F4   547      jsr HF4B3
F63C           548      ;

```



```

F63C 18          549      clc
F63D          550      ;
F63D A5 D5      551      HF63D    lda ZPGD5
F63F 65 D2      552          adc ZPGD2
F641 85 D5      553          sta ZPGD5
F643 90 03      554          bcc HF648
F645          555      ;
F645 20 B4 F4   556          jsr HF4B4
F648          557      ;
F648 CA        558      HF648    dex
F649 D0 E5      559          bne HF630
F64B          560      ;
F64B A5 D1      561          lda ZPGD1
F64D          562      ;
F64D 4A        563          lsr
F64E 4A        564          lsr
F64F 4A        565          lsr
F650          566      ;
F650 D0 D4      567          bne HF626
F652          568      ;
F652 E6 1A      569          inc SHAPE
F654 D0 02      570          bne HF658
F656          571      ;
F656 E6 1B      572          inc SHAPE+1
F658          573      ;
F658 A1 1A      574      HF658    lda (SHAPE,X)
F65A D0 CA      575          bne HF626
F65C          576      ;
F65C 60        577          rts
F65D          578      ;
F65D 86 1A      579          stx SHAPE
F65F 84 1B      580          sty SHAPE+1
F661          581      ;
F661 AA        582      HF661    tax
F662          583      ;
F662 4A        584          lsr
F663 4A        585          lsr
F664 4A        586          lsr
F665 4A        587          lsr
F666          588      ;
F666 85 D3      589          sta ZPGD3
F668          590      ;
F668 8A        591          txa
F669 29 0F      592          and #$0F
F66B AA        593          tax
F66C          594      ;
F66C BC BA F5   595          ldy HF5BA,X
F66F 84 D0      596          sty ZPGD0
F671          597      ;
F671 49 0F      598          eor #$0F
F673 AA        599          tax
F674          600      ;
F674 BC BB F5   601          ldy HF5BB,X
F677          602      ;
F677 C8        603          iny
F678 84 D2      604          sty ZPGD2
F67A          605      ;
F67A A4 E5      606          ldy HRHZNDX
F67C          607      ;
F67C A2 00      608          ldx #ZERO
F67E 86 EA      609          stx HRCOLCNT

```

```

F680          610 ;
F680 A1 1A    611      lda (SHAPE,X)
F682          612 ;
F682 85 D1    613 HF682  sta ZPGD1
F684          614 ;
F684 A2 80    615      ldx #$80
F686 86 D4    616      stx ZPGD4
F688 86 D5    617      stx ZPGD5
F68A          618 ;
F68A A6 E7    619      ldx SCALE
F68C          620 ;
F68C A5 D4    621 HF68C  lda ZPGD4
F68E          622 ;
F68E 38       623      sec
F68F          624 ;
F68F 65 D0    625      adc ZPGD0
F691 85 D4    626      sta ZPGD4
F693 90 04    627      bcc HF699
F695          628 ;
F695 20 9C F4 629      jsr HF49C
F698          630 ;
F698 18       631      clc
F699          632 ;
F699 A5 D5    633 HF699  lda ZPGD5
F69B 65 D2    634      adc ZPGD2
F69D 85 D5    635      sta ZPGD5
F69F 90 03    636      bcc HF6A4
F6A1          637 ;
F6A1 20 9D F4 638      jsr HF49D
F6A4          639 ;
F6A4 CA       640 HF6A4  dex
F6A5 D0 E5    641      bne HF68C
F6A7          642 ;
F6A7 A5 D1    643      lda ZPGD1
F6A9          644 ;
F6A9 4A       645      lsr
F6AA 4A       646      lsr
F6AB 4A       647      lsr
F6AC          648 ;
F6AC D0 D4    649      bne HF682
F6AE          650 ;
F6AE E6 1A    651      inc SHAPE
F6B0 D0 02    652      bne HF6B4
F6B2          653 ;
F6B2 E6 1B    654      inc SHAPE+1
F6B4          655 ;
F6B4 A1 1A    656 HF6B4  lda (SHAPE,X)
F6B6 D0 CA    657      bne HF682
F6B8          658 ;
F6B8 60       659      rts
F6B9          660 ;
F6B9 20 67 DD 661 HF6B9  jsr HDD67
F6BC 20 52 E7 662      jsr HE752
F6BF          663 ;
F6BF A4 51    664      ldy ACH
F6C1 A6 50    665      ldx ACL
F6C3          666 ;
F6C3 C0 01    667      cpy #1
F6C5          668 ;
F6C5 90 06    669      bcc HF6CD
F6C7 D0 1D    670      bne HF6E6

```

```

F6C9          671 ;
F6C9 E0 18    672      cpx #$18
F6CB B0 19    673      bcs HF6E6
F6CD          674 ;
F6CD 8A      675 HF6CD  txa
F6CE 48      676      pha
F6CF          677 ;
F6CF 98      678      tya
F6D0 48      679      pha
F6D1          680 ;
F6D1 A9 2C    681      lda #$2C
F6D3          682 ;
F6D3 20 C0 DE 683      jsr HDEC0
F6D6 20 F8 E6 684      jsr HE6F8
F6D9          685 ;
F6D9 E0 C0    686      cpx #$C0
F6DB B0 09    687      bcs HF6E6
F6DD          688 ;
F6DD 86 9D    689      stx DSCTMP
F6DF          690 ;
F6DF 68      691      pla
F6E0 A8      692      tay
F6E1          693 ;
F6E1 68      694      pla
F6E2 AA      695      tax
F6E3          696 ;
F6E3 A5 9D    697      lda DSCTMP
F6E5          698 ;
F6E5 60      699      rts
F6E6          700 ;
F6E6 4C 06 F2 701 HF6E6  jmp HF206
F6E9          702 ;
F6E9 20 F8 E6 703 HF6E9  jsr HE6F8
F6EC          704 ;
F6EC E0 08    705      cpx #8
F6EE B0 F6    706      bcs HF6E6
F6F0          707 ;
F6F0 BD F6 F6 708      lda HF6F6,X
F6F3 85 E4    709      sta HRCOLOR
F6F5          710 ;
F6F5 60      711 HF6F5  rts
F6F6          712 ;
F6F6 00 2A 55 713 HF6F6  hex 002A557F
F6F9 7F
F6FA 80 AA D5 714      hex 80AAD5FF
F6FD FF
F6FE          715 ;
F6FE C9 C1    716 HF6FE  cmp #$C1
F700 F0 0D    717      beq HF70F
F702          718 ;
F702 20 B9 F6 719      jsr HF6B9
F705 20 57 F4 720      jsr HPLOT
F708          721 ;
F708 20 B7 00 722 HF708  jsr CHRGOT
F70B          723 ;
F70B C9 C1    724      cmp #$C1
F70D D0 E6    725      bne HF6F5
F70F          726 ;
F70F 20 C0 DE 727 HF70F  jsr HDEC0
F712 20 B9 F6 728      jsr HF6B9
F715          729 ;

```

```

F715 84 9D      730      sty DSCTMP
F717           731      ;
F717 A8         732      tay
F718 8A         733      txa
F719           734      ;
F719 A6 9D      735      ldx DSCTMP
F71B           736      ;
F71B 20 3A F5   737      jsr HLIN
F71E           738      ;
F71E 4C 08 F7   739      jmp HF708
F721           740      ;
F721 20 F8 E6   741 HF721  jsr HE6F8
F724           742      ;
F724 86 F9      743      stx M1
F726           744      ;
F726 60         745      rts
F727           746      ;
F727 20 F8 E6   747 HF727  jsr HE6F8
F72A           748      ;
F72A 86 E7      749      stx SCALE
F72C           750      ;
F72C 60         751      rts
F72D           752      ;
F72D 20 F8 E6   753 HF72D  jsr HE6F8
F730           754      ;
F730 A5 E8      755      lda HRSHPTBL
F732 85 1A      756      sta SHAPE
F734           757      ;
F734 A5 E9      758      lda HRSHPTBL+1
F736 85 1B      759      sta SHAPE+1
F738           760      ;
F738 8A         761      txa
F739           762      ;
F739 A2 00      763      ldx #ZERO
F73B           764      ;
F73B C1 1A      765      cmp (SHAPE,X)
F73D           766      ;
F73D F0 02      767      beq HF741
F73F B0 A5      768      bcs HF6E6
F741           769      ;
F741 0A         770 HF741  asl
F742 90 03      771      bcc HF747
F744           772      ;
F744 E6 1B      773      inc SHAPE+1
F746           774      ;
F746 18         775      clc
F747           776      ;
F747 A8         777 HF747  tay
F748           778      ;
F748 B1 1A      779      lda (SHAPE),Y
F74A 65 1A      780      adc SHAPE
F74C AA         781      tax
F74D           782      ;
F74D C8         783      iny
F74E           784      ;
F74E B1 1A      785      lda (SHAPE),Y
F750 65 E9      786      adc HRSHPTBL+1
F752           787      ;
F752 85 1B      788      sta SHAPE+1
F754 86 1A      789      stx SHAPE
F756           790      ;

```

```

F756 20 B7 00      791      jsr CHRGOT
F759                792      ;
F759 C9 C5         793      cmp #$C5
F75B D0 09         794      bne HF766
F75D                795      ;
F75D 20 C0 DE      796      jsr HDEC0
F760 20 B9 F6      797      jsr HF6B9
F763 20 11 F4      798      jsr HF411
F766                799      ;
F766 A5 F9         800      HF766   lda M1
F768                801      ;
F768 60            802      rts
F769                803      ;
F769 20 2D F7      804      HF769   jsr HF72D
F76C                805      ;
F76C 4C 05 F6      806      jmp HF605
F76F                807      ;
F76F 20 2D F7      808      HF76F   jsr HF72D
F772                809      ;
F772 4C 61 F6      810      jmp HF661
F775                811      ;
F775                812      ;
F775                813      ; HF775 (18 bytes)
F775                814      ;
F775                815      ;
F775 A2 08         816      RDBYTE   ldx #8                ; bit counter
F777                817      ;
F777 48            818      RDBYT2   pha                ; push current data
F778                819      ;
F778 20 B7 D8      820      jsr RD2BIT                ; get data bit in C-flag
F77B                821      ;
F77B 68            822      pla                ; recall data
F77C 2A            823      rol                ; roll in bit, MSB first
F77D                824      ;
F77D A0 3A         825      ldy #$3A                ; waveform change, 696 cycles
F77F                826      ;
F77F CA            827      dex                ; next bit
F780 D0 F5         828      bne RDBYT2
F782                829      ;
F782 60            830      rts
F783                831      ;
F783                832      ;
F783                833      dfs $F787-*,ZERO
F787                834      ;
F787                835      ;
F787 BD 01 02      836      HF787   lda INPUT+1,X
F78A 10 11         837      bpl HF79D
F78C                838      ;
F78C A5 0E         839      HF78C   lda ZPG0E
F78E F0 16         840      beq HF7A6
F790                841      ;
F790 C9 22         842      cmp #$22
F792 F0 12         843      beq HF7A6
F794                844      ;
F794 A5 13         845      lda ZPG13
F796 C9 49         846      cmp #$49
F798 F0 0C         847      beq HF7A6
F79A                848      ;
F79A BD 00 02      849      HF79A   lda INPUT,X
F79D                850      ;
F79D 08            851      HF79D   php

```

```

F79E          852 ;
F79E C9 61    853      cmp #$61
F7A0 90 02    854      bcc HF7A4
F7A2          855 ;
F7A2 29 5F    856      and #$5F
F7A4          857 ;
F7A4 28       858 HF7A4  plp
F7A5          859 ;
F7A5 60       860      rts
F7A6          861 ;
F7A6 BD 00 02 862 HF7A6  lda INPUT,X
F7A9          863 ;
F7A9 60       864      rts
F7AA          865 ;
F7AA 48       866 HF7AA  pha
F7AB          867 ;
F7AB A9 20    868      lda #$20
F7AD          869 ;
F7AD 20 5C DB 870      jsr HDB5C
F7B0          871 ;
F7B0 68       872      pla
F7B1          873 ;
F7B1 4C 24 ED 874      jmp HED24
F7B4          875 ;
F7B4 A5 24    876 HF7B4  lda CH
F7B6 C9 21    877      cmp #$21
F7B8          878 ;
F7B8 2C 1F C0 879      bit RDVID80
F7BB 10 05    880      bpl HF7C2
F7BD          881 ;
F7BD AD 7B 05 882      lda OURCH
F7C0 C9 49    883      cmp #$49
F7C2          884 ;
F7C2 60       885 HF7C2  rts
F7C3          886 ;
F7C3 8A       887 HF7C3  txa
F7C4          888 ;
F7C4 2C 1F C0 889      bit RDVID80
F7C7 30 08    890      bmi HF7D1
F7C9          891 ;
F7C9 2C 00 00 892      bit *-*
F7CC          893      dfs !-2
F7CA          894 ;
F7CA 85 24    895 HF7CA  sta CH
F7CC          896 ;
F7CC 38       897      sec
F7CD          898 ;
F7CD 8A       899      txa
F7CE E5 24    900      sbc CH
F7D0          901 ;
F7D0 60       902 HF7D0  rts
F7D1          903 ;
F7D1 ED 7B 05 904 HF7D1  sbc OURCH
F7D4          905 ;
F7D4 60       906      rts
F7D5          907 ;
F7D5          908 ;
F7D5          909 ; HF7D5 (4 bytes)
F7D5          910 ;
F7D5          911      dfs 4,ZERO
F7D9          912 ;

```

```

F7D9          913  ;
F7D9          914  ; HF7D9 (14 bytes)
F7D9          915  ;
F7D9          916  ;
F7D9 C1 F0 F0 917  TITLE      asc "Apple //e+"
F7DC EC E5 A0
F7DF AF AF E5
F7E2 AB
F7E3          918  ;
000A          919  TITLEN     equ *-TITLE
001C          920  DELTITLE   equ 40-TITLEN+2      ; for BNE, not BPL at STITLE
000E          921  OFFTITLE   equ DELTITLE/2
F7E3          922  ;
F7E3          923  ;
F7E3          924          dfs $F7E7-*,ZERO
F7E7          925  ;
F7E7          926  ;
F7E7 20 F8 E6 927  HF7E7     jsr HE6F8
F7EA          928  ;
F7EA CA       929          dex
F7EB          930  ;
F7EB A9 28    931  HF7EB     lda #$28
F7ED C5 21    932          cmp WNDWDTH
F7EF B0 02    933          bcs HF7F3
F7F1          934  ;
F7F1 A5 21    935          lda WNDWDTH
F7F3          936  ;
F7F3 20 CA F7 937  HF7F3     jsr HF7CA
F7F6          938  ;
F7F6 86 24    939          stx CH
F7F8          940  ;
F7F8 90 D6    941          bcc HF7D0
F7FA          942  ;
F7FA AA       943          tax
F7FB          944  ;
F7FB 20 FB DA 945          jsr HDAFB
F7FE D0 EB    946          bne HF7EB
F800          947  ;
F800          948  ;
F800          949          icl "F8.L"

```

```

LLOAD F8.L,A$4000

```

```

F800          1          ttl "ROM Source Code, F8.L"
F800          2          ;
F800          3          ;
F800          4          ; F8.L
F800          5          ;
F800          6          ;
F800          7          F8SPACE:
F800          8          ;
F800          9          ;
F800 4A       10         PLOT      lsr
F801 08       11          php              ; save LSB in C-flag
F802         12          ;
F802 20 47 F8 13          jsr GBASCALC
F805         14          ;
F805 28       15          plp              ; recall LSB
F806         16          ;
F806 A9 0F    17          lda #$0F         ; mask 0x0F if even
F808         18          ;
F808 90 02    19          bcc RTMASK
F80A         20          ;
F80A 69 E0    21          adc #$E0         ; mask 0xF0 if odd
F80C         22          ;
F80C 85 2E    23         RTMASK   sta MASK
F80E         24          ;
F80E B1 26    25         PLOT1   lda (GBASL),Y ; get data
F810 45 30    26          eor COLOR       ; apply color
F812         27          ;
F812 25 2E    28          and MASK        ; select bits
F814         29          ;
F814 51 26    30          eor (GBASL),Y   ; apply data
F816 91 26    31          sta (GBASL),Y   ; save it
F818         32          ;
F818 60       33          rts
F819         34          ;
F819         35          ;
F819 20 00 F8 36         HLINE   jsr PLOT          ; plot square
F81C         37          ;
F81C C4 2C    38         HLINE1  cpy H2
F81E B0 11    39          bcs RTS1
F820         40          ;
F820 C8       41          iny
F821         42          ;
F821 20 0E F8 43          jsr PLOT1         ; plot next square
F824 90 F6    44          bcc HLINE1
F826         45          ;
F826 69 01    46         VLINEZ  adc #1         ; next Y-coord
F828         47          ;
F828 48       48         VLINE   pha
F829         49          ;
F829 20 00 F8 50          jsr PLOT          ; plot square
F82C         51          ;
F82C 68       52          pla
F82D C5 2D    53          cmp V2
F82F 90 F5    54          bcc VLINEZ
F831         55          ;
F831 60       56         RTS1     rts
F832         57          ;
F832         58          ;
F832 A0 2F    59         CLRSCR  ldy #$2F         ; max Y, full scrn clr
F834 D0 02    60          bne CLRSC2

```



```

F836      61 ;
F836 A0 27 62 CLRTOP    ldy #$27          ; max Y, top scrn clr
F838      63 ;
F838 84 2D 64 CLRSC2    sty V2
F83A      65 ;
F83A A0 27 66          ldy #$27          ; rightmost X-coord (column)
F83C      67 ;
F83C A9 00 68 CLRSC3    lda #ZERO        ; top coord for VLINE
F83E 85 30 69          sta COLOR        ; clear color to black
F840      70 ;
F840 20 28 F8 71          jsr VLINE      ; draw VLINE
F843      72 ;
F843 88     73          dey
F844 10 F6 74          bpl CLRSC3
F846      75 ;
F846 60     76          rts
F847      77 ;
F847      78 ;
F847 48     79 GBASCALC pha              ; for input ODDEF GH
F848      80 ;
F848 4A     81          lsr
F849      82 ;
F849 29 03 83          and #3
F84B 09 04 84          ora #4
F84D 85 27 85          sta GBASH        ; = 000001FG
F84F      86 ;
F84F 68     87          pla              ; = HDEDE000
F850 29 18 88          and #$18
F852      89 ;
F852 90 02 90          bcc GBCLAC
F854      91 ;
F854 69 7F 92          adc #$7F
F856      93 ;
F856 85 26 94 GBCLAC    sta GBASL
F858      95 ;
F858 0A     96          asl
F859 0A     97          asl
F85A      98 ;
F85A 05 26 99          ora GBASL
F85C 85 26 100         sta GBASL
F85E      101 ;
F85E 60     102         rts
F85F      103 ;
F85F      104 ;
F85F A5 30 105 NXTCOL    lda COLOR        ; increment by 3
F861      106 ;
F861 18     107         clc
F862      108 ;
F862 69 03 109         adc #3
F864      110 ;
F864 29 0F 111 SETCOL    and #$0F        ; COLOR=17*A MOD 16m 114
F866 85 30 112         sta COLOR
F868      113 ;
F868 0A     114         asl              ; both half bytes equal
F869 0A     115         asl
F86A 0A     116         asl
F86B 0A     117         asl
F86C      118 ;
F86C 05 30 119         ora COLOR
F86E 85 30 120         sta COLOR
F870      121 ;

```

```

F870 60          122          rts
F871          123          ;
F871          124          ;
F871 4A          125  SCRN    lsr                ; screen Y-coord/2
F872 08          126          php                ; save LSB
F873          127          ;
F873 20 47 F8    128          jsr GBASCALC        ; calc base address
F876          129          ;
F876 B1 26       130          lda (GBASL),Y      ; get data
F878          131          ;
F878 28          132          plp                ; recall LSB
F879          133          ;
F879 90 04       134  SCRN2   bcc RTMSKZ        ; if even use LO half
F87B          135          ;
F87B 4A          136          lsr                ; shift HI half down
F87C 4A          137          lsr
F87D 4A          138          lsr
F87E 4A          139          lsr
F87F          140          ;
F87F 29 0F       141  RTMSKZ   and #$0F          ; mask 4 bits
F881          142          ;
F881 60          143          rts
F882          144          ;
F882          145          ;
F882 A6 3A       146  INSDS1   ldx PCL            ; print PCL,PCH
F884 A4 3B       147          ldy PCH
F886          148          ;
F886 20 96 FD    149          jsr PRXY2
F889 20 48 F9    150          jsr PRBLNK
F88C          151          ;
F88C A1 3A       152          lda (PCL,X)        ; get opcode
F88E          153          ;
F88E A8          154  INSDS2   tay
F88F          155          ;
F88F 4A          156          lsr                ; even/odd test
F890 90 05       157          bcc IEVEN
F892          158          ;
F892 6A          159          ror                ; bit 1 test
F893 B0 0C       160          bcs ERROR          ; XXXXXX11 invalid OP
F895          161          ;
F895 29 87       162          and #$87          ; mask bits
F897          163          ;
F897 4A          164  IEVEN    lsr                ; C-flag = LSB for later
F898 AA          165          tax
F899          166          ;
F899 BD 62 F9    167          lda FMT1,X        ; get FORMAT index
F89C          168          ;
F89C 20 79 F8    169          jsr SCRN2
F89F D0 04       170          bne GETFMT
F8A1          171          ;
F8A1 A0 03       172  ERROR    ldy #3            ; invalid OP
F8A3 A9 00       173          lda #ZERO          ; error FORMAT
F8A5          174          ;
F8A5          175          ;
F8A5          176          ; Move remaining code to 0xC1-0xC2 because the code that
F8A5          177          ; tests the ROM in slot 3 must be in the 0xF8 ROM space.
F8A5          178          ;
F8A5 AA          179  GETFMT   tax
F8A6          180          ;
F8A6 BD C7 FB    181          lda FMT2,X        ; get instruction format
F8A9 C9 49       182          cmp #$49          ; is it relative (zpage)

```

```

F8AB D0 01      183      bne >1
F8AD           184      ;
F8AD 88         185      dey                      ; correct index
F8AE           186      ;
F8AE AA         187      ^1      tax
F8AF           188      ;
F8AF 84 2A      189      sty BAS2L
F8B1           190      ;
F8B1 A0 10      191      ldy #16
F8B3           192      ;
F8B3 4C B4 FB   193      jmp GOTOROM
F8B6           194      ;
F8B6           195      ;
F8B6           196      ; Test slot 3 for a card containing a ROM.  If there is one
F8B6           197      ; the internal slot 3 firmware for 80 columns will not be
F8B6           198      ; used.  Y-reg is set to a reasonable value.
F8B6           199      ; Bytes checked are 0xC305 and 0xC307.
F8B6           200      ;
F8B6 8D 06 C0   201      TESTROM sta CXROMOFF          ; enable slots
F8B9           202      ;
F8B9 A0 08      203      ldy #8
F8BB           204      ;
F8BB A2 02      205      ^1      ldx #2
F8BD           206      ;
F8BD BD 05 C3   207      ^2      lda BASICIN,X
F8C0 DD 9C FC   208      cmp CLREOL,X
F8C3 D0 07      209      bne >3
F8C5           210      ;
F8C5 CA         211      dex
F8C6 CA         212      dex
F8C7           213      ;
F8C7 10 F4      214      bpl <2
F8C9           215      ;
F8C9 88         216      dey
F8CA D0 EF      217      bne <1
F8CC           218      ;
F8CC 8D 07 C0   219      ^3      sta CXROMON          ; swap in internal ROM
F8CF           220      ;
F8CF 60         221      rts
F8D0           222      ;
F8D0           223      ;
F8D0           224      ; Disassemble instruction.
F8D0           225      ;
F8D0 20 82 F8   226      INSTDSP jsr INSDS1          ; get format, length
F8D3           227      ;
F8D3 48         228      pha
F8D4           229      ;
F8D4 B1 3A      230      PRNTOP  lda (PCL),Y
F8D6           231      ;
F8D6 20 DA FD   232      jsr PRBYTE
F8D9           233      ;
F8D9 A2 01      234      ldx #1                      ; print 2 blanks
F8DB           235      ;
F8DB 20 4A F9   236      PRNTBL  jsr PRBL2
F8DE           237      ;
F8DE C4 2F      238      cpy LENGTH
F8E0           239      ;
F8E0 C8         240      iny
F8E1           241      ;
F8E1 90 F1      242      bcc PRNTOP
F8E3           243      ;

```

```

F8E3 A2 03      244      ldx #3          ; 12 chr field
F8E5            245      ;
F8E5 C0 04      246      cpy #4
F8E7 90 F2      247      bcc PRNTBL
F8E9            248      ;
F8E9 68          249      pla
F8EA A8          250      tay
F8EB            251      ;
F8EB B9 A6 F9    252      lda MNEML,Y      ; get mnemonic
F8EE 85 2C      253      sta LMNEM
F8F0            254      ;
F8F0 B9 EB F9    255      lda MNEMR,Y
F8F3 85 2D      256      sta RMNEM
F8F5            257      ;
F8F5 A9 00      258      PRMN1  lda #ZERO
F8F7 A0 05      259      ldy #5
F8F9            260      ;
F8F9 06 2D      261      PRMN2  asl RMNEM
F8FB 26 2C      262      rol LMNEM
F8FD            263      ;
F8FD 2A          264      rol
F8FE            265      ;
F8FE 88          266      dey
F8FF D0 F8      267      bne PRMN2
F901            268      ;
F901 69 BF      269      adc #"?"          ; add in offset
F903            270      ;
F903 20 ED FD    271      jsr COUT
F906            272      ;
F906 CA          273      dex
F907 D0 EC      274      bne PRMN1
F909            275      ;
F909 20 48 F9    276      jsr PRBLNK          ; print 3 blanks
F90C            277      ;
F90C A4 2F      278      ldy LENGTH
F90E A2 06      279      ldx #6          ; 6 format bits
F910            280      ;
F910 E0 03      281      PRADR1  cpx #3
F912 F0 1C      282      beq PRADR5
F914            283      ;
F914 06 2E      284      PRADR2  asl FORMAT
F916 90 0E      285      bcc PRADR3
F918            286      ;
F918 BD 2F FA    287      lda CHAR1-1,X
F91B            288      ;
F91B 20 ED FD    289      jsr COUT
F91E            290      ;
F91E BD 35 FA    291      lda CHAR2-1,X
F921 F0 03      292      beq PRADR3
F923            293      ;
F923 20 ED FD    294      jsr COUT
F926            295      ;
F926 CA          296      PRADR3  dex
F927 D0 E7      297      bne PRADR1
F929            298      ;
F929 60          299      rts
F92A            300      ;
F92A            301      ;
F92A 88          302      PRADR4  dey
F92B 30 E7      303      bmi PRADR2
F92D            304      ;

```

```

F92D 20 DA FD      305      jsr PRBYTE
F930                306      ;
F930 A5 2E        307 PRADR5  lda FORMAT
F932 C9 E8        308      cmp #$E8                ; relative address mode
F934                309      ;
F934 B1 3A        310      lda (PCL),Y            ; print target, not offset
F936                311      ;
F936 90 F2        312      bcc PRADR4
F938                313      ;
F938 20 56 F9     314 RELADR  jsr PCADJ3
F93B                315      ;
F93B AA          316      tax
F93C                317      ;
F93C E8          318      inx
F93D D0 01       319      bne PRNTYX
F93F                320      ;
F93F C8          321      iny
F940                322      ;
F940 98          323 PRNTYX  tya
F941                324      ;
F941 20 DA FD     325 PRNTAX  jsr PRBYTE
F944                326      ;
F944 8A          327 PRNTAX  txa
F945                328      ;
F945 4C DA FD     329      jmp PRBYTE
F948                330      ;
F948                331      ;
F948 A2 03       332 PRBLNK  ldx #3                ; blank count
F94A                333      ;
F94A A9 A0       334 PRBL2   lda #SPACE
F94C                335      ;
F94C 20 ED FD     336 PRBL3   jsr COUT
F94F                337      ;
F94F CA          338      dex
F950 D0 F8       339      bne PRBL2
F952                340      ;
F952 60          341      rts
F953                342      ;
F953                343      ;
F953                344      ; A-reg = PCL + LENGTH + 1, carry into Y-reg (PCH).
F953                345      ;
F953 38          346 PCADJ    sec
F954                347      ;
F954 A5 2F       348 PCADJ2   lda LENGTH
F956                349      ;
F956 A4 3B       350 PCADJ3   ldy PCH
F958                351      ;
F958 AA          352      tax
F959 10 01       353      bpl PCADJ4
F95B                354      ;
F95B 88          355      dey
F95C                356      ;
F95C 65 3A       357 PCADJ4   adc PCL
F95E 90 01       358      bcc RTS2
F960                359      ;
F960 C8          360      iny
F961                361      ;
F961 60          362 RTS2    rts
F962                363      ;
F962                364      ;
F962                365      ; Opcodes of the form XXXX XXY0:

```

```

F962      366 ;
F962      367 ;   Use XXXXXX for index into FMT1.
F962      368 ;
F962      369 ;   If Y=0, use lower nibble for index into FMT2.
F962      370 ;   If Y=1, use upper nibble for index into FMT2.
F962      371 ;
F962      372 ;
F962      373 FMT1:
F962 04 22 54 374      hex 04225433ED824493
F965 33 ED 82
F968 44 93
F96A 03 22 54 375      hex 03225433ED884499
F96D 33 ED 88
F970 44 99
F972 04 20 54 376      hex 04205433ED804490
F975 33 ED 80
F978 44 90
F97A 04 22 54 377      hex 0422543BED88449F
F97D 3B ED 88
F980 44 9F
F982 0D 22 44 378      hex 0D224433EDC84493
F985 33 ED C8
F988 44 93
F98A 11 22 44 379      hex 11224433EDC844A9
F98D 33 ED C8
F990 44 A9
F992 01 22 44 380      hex 01224433ED804490
F995 33 ED 80
F998 44 90
F99A 01 22 44 381      hex 01224433ED804490
F99D 33 ED 80
F9A0 44 90
F9A2      382 ;
F9A2      383 ;
F9A2      384 ;   Opcodes of the form ZZXX XY01:
F9A2      385 ;
F9A2 26 31 87 386      hex 2631879A
F9A5 9A
F9A6      387 ;
F9A6      388 ;
F9A6      389 ;   Mnemonic extraction from MNEML and MNEMR:
F9A6      390 ;
F9A6      391 ;   Table:  <MNEML-><MNEMR->
F9A6      392 ;       Bit:  7654321076543210
F9A6      393 ;       -----
F9A6      394 ;       Chr1 Chr2 Chr3
F9A6      395 ;
F9A6      396 ;   Mnemonic = Chr1+0xBF Chr2+0xBF Chr3+0xBF
F9A6      397 ;
F9A6      398 MNEML:
F9A6 1C 8A 1C 399      hex 1C8A1C235D8B1BA1
F9A9 23 5D 8B
F9AC 1B A1
F9AE 9D 8A 1D 400      hex 9D8A1D239D8B1DA1
F9B1 23 9D 8B
F9B4 1D A1
F9B6 1C 29 19 401      hex 1C2919AE69A81923
F9B9 AE 69 A8
F9BC 19 23
F9BE 24 53 1B 402      hex 24531B23245319A1
F9C1 23 24 53

```

```

F9C4 19 A1
F9C6 AD 1A 5B    403      hex AD1A5B5BA5692424
F9C9 5B A5 69
F9CC 24 24
F9CE AE AE A8    404      hex AEAEA8AD298A7C8B
F9D1 AD 29 8A
F9D4 7C 8B
F9D6 15 9C 6D    405      hex 159C6D9CA5692953
F9D9 9C A5 69
F9DC 29 53
F9DE 84 13 34    406      hex 84133411A56923A0
F9E1 11 A5 69
F9E4 23 A0
F9E6 00 8A 8B    407      hex 008A8BACA5
F9E9 AC A5
F9EB              408      ;
F9EB              409      ;
F9EB              410      MNEMR:
F9EB D8 62 5A    411      hex D8625A4826629488
F9EE 48 26 62
F9F1 94 88
F9F3 54 44 C8    412      hex 5444C8546844E894
F9F6 54 68 44
F9F9 E8 94
F9FB C4 B4 08    413      hex C4B4088474B4286E
F9FE 84 74 B4
FA01 28 6E
FA03 74 F4 CC    414      hex 74F4CC4A72F2A48A
FA06 4A 72 F2
FA09 A4 8A
FA0B 06 AA A2    415      hex 06AAA2A274747472
FA0E A2 74 74
FA11 74 72
FA13 44 68 B2    416      hex 4468B232B2722272
FA16 32 B2 72
FA19 22 72
FA1B 1A 1A 26    417      hex 1A1A2626727288C8
FA1E 26 72 72
FA21 88 C8
FA23 C4 CA 26    418      hex C4CA26484444A2C8
FA26 48 44 44
FA29 A2 C8
FA2B 00 74 74    419      hex 007474C676
FA2E C6 76
FA30              420      ;
FA30              421      ;
FA30 AC A9 AC    422      CHAR1      hex ACA9ACA3A8A4      ; , ),#($
FA33 A3 A8 A4
FA36 D9 00 D8    423      CHAR2      hex D900D8A4A400      ; Y X$$
FA39 A4 A4 00
FA3C              424      ;
FA3C              425      ;
FA3C 8D 06 C0    426      CXOFF      sta CXROMOFF
FA3F              427      ;
FA3F 60          428      CXRTN      rts
FA40              429      ;
FA40              430      ;
FA40              431      ; This code is useless, and probably only supports the old
FA40              432      ; BREAK vector at 0xFA40. It assumes that RDCXROM is off.
FA40              433      ;
FA40 85 45        434      OLDIRQ      sta AREG

```

```

FA42 A5 45      435      lda AREG
FA44           436      ;
FA44 4C FA C3   437      jmp IRQRTN
FA47           438      ;
FA47           439      ;
FA47 8D 06 C0   440 NEWBREAK sta CXROMOFF      ; enable slots
FA4A           441      ;
FA4A 85 45      442      sta AREG
FA4C           443      ;
FA4C 28         444 BREAK   plp
FA4D           445      ;
FA4D 20 4C FF   446      jsr SAV1      ; save registers
FA50           447      ;
FA50 68         448      pla
FA51 85 3A      449      sta PCL
FA53           450      ;
FA53 68         451      pla
FA54 85 3B      452      sta PCH
FA56           453      ;
FA56 6C F0 03   454      jmp (BRKADR)
FA59           455      ;
FA59           456      ;
FA59 20 82 F8   457 OLDBRK  jsr INSDS1      ; print PC
FA5C 20 DA FA   458      jsr REGDSP1      ; print registers
FA5F           459      ;
FA5F 4C 65 FF   460      jmp MON      ; enter Monitor
FA62           461      ;
FA62           462      ;
FA62 AD 58 C0   463 RESET   lda ANN1OFF
FA65 AD 5A C0   464      lda ANN2OFF
FA68           465      ;
FA68 AD 5D C0   466      lda ANN3ON
FA6B AD 5F C0   467      lda ANN4ON
FA6E           468      ;
FA6E A0 09      469      ldy #9      ; //e init
FA70 D0 0C      470      bne RESET1      ; always taken
FA72           471      ;
FA72           472      ;
FA72 8D 07 C0   473 SWEET16 sta CXROMON
FA75           474      ;
FA75 4C 70 C6   475      jmp SW16
FA78           476      ;
FA78 8D 06 C0   477 SW16RTN sta CXROMOFF
FA7B           478      ;
FA7B 6C 1E 00   479      jmp (R15L)
FA7E           480      ;
FA7E           481      ;
FA7E 20 B4 FB   482 RESET1  jsr GOTOROM
FA81           483      ;
FA81           484      ;
FA81 D8         485 NEWMON  cld
FA82           486      ;
FA82 20 3A FF   487      jsr BELL
FA85           488      ;
FA85 AD F3 03   489      lda AUTORSET+1      ; check for power up
FA88 49 A5      490      eor #PWRUPBYT
FA8A           491      ;
FA8A CD F4 03   492      cmp PWRSTATE
FA8D D0 17      493      bne PWRUP
FA8F           494      ;
FA8F AD F2 03   495      lda AUTORSET      ; BASIC coldstart?

```



```

FA92 D0 0F      496      bne NOFIX
FA94            497      ;
FA94 A9 E0      498      lda /BASIC
FA96 CD F3 03   499      cmp AUTORSET+1
FA99 D0 08      500      bne NOFIX
FA9B            501      ;
FA9B A0 03      502      FIXSEV  ldy #BASIC2
FA9D 8C F2 03   503      sty AUTORSET
FAA0            504      ;
FAA0 4C 00 E0   505      jmp BASIC
FAA3            506      ;
FAA3            507      ;
FAA3 6C F2 03   508      NOFIX    jmp (AUTORSET)
FAA6            509      ;
FAA6            510      ;
FAA6            511      ; Set the page 3 vectors.
FAA6            512      ;
FAA6 20 60 FB   513      PWRUP    jsr APPLE2
FAA9            514      ;
FAA9 A2 05      515      SETPG3   ldx #PWRCONLN
FAAB            516      ;
FAAB BD FC FA   517      SETPLP   lda PWRCON-1,X
FAAE 9D EF 03   518      sta BRKADR-1,X
FAB1            519      ;
FAB1 CA         520      dex
FAB2 D0 F7      521      bne SETPLP
FAB4            522      ;
FAB4 A9 C8      523      lda /PAGEC8          ; high slot + 1
FAB6            524      ;
FAB6 86 00      525      stx LOC0          ; must return X-reg=0
FAB8 85 01      526      sta LOC1
FABA            527      ;
FABA            528      ;
FABA            529      ; Check 3 ID bytes instead of 4 to allow devices other
FABA            530      ; than Disk ][ to be bootable.
FABA            531      ;
FABA A0 03      532      SLOOP    ldy #DISKIDLN-3
FABC            533      ;
FABC C6 01      534      dec LOC1
FABE            535      ;
FABE A5 01      536      lda LOC1
FAC0 8D F8 07   537      sta MSLOT
FAC3            538      ;
FAC3 C9 C0      539      cmp /PAGEC0          ; last slot?
FAC5 F0 D4      540      beq FIXSEV
FAC7            541      ;
FAC7 B1 00      542      NXTBYT   lda (LOC0),Y
FAC9 D9 02 FB   543      cmp DISKID,Y
FACC D0 EC      544      bne SLOOP
FACE            545      ;
FACE 88         546      dey
FACF 88         547      dey
FAD0            548      ;
FAD0 10 F5      549      bpl NXTBYT
FAD2            550      ;
FAD2 6C 00 00   551      jmp (LOC0)
FAD5            552      ;
FAD5            553      ;
FAD5            554      dfs 2,ZERO
FAD7            555      ;
FAD7            556      ;

```

```

FAD7          557 ; Display register contents with labels.
FAD7          558 ;
FAD7 20 8E FD 559 REGDSP   jsr CROUT
FADA          560 ;
FADA A9 45    561 REGDSP1  lda #AREG
FADC 85 40    562          sta A3L
FADE          563 ;
FADE A9 00    564          lda /AREG
FAE0 85 41    565          sta A3H
FAE2          566 ;
FAE2 A2 FB    567          ldx #$100-RTBLN
FAE4          568 ;
FAE4 A9 A0    569 RDSP1    lda #SPACE
FAE6 20 ED FD 570          jsr COUT
FAE9          571 ;
FAE9 BD 1E FA 572          lda RTBL-$100-RTBLN,X
FAEC 20 ED FD 573          jsr COUT
FAEF          574 ;
FAEF A9 BD    575          lda #""
FAF1 20 ED FD 576          jsr COUT
FAF4          577 ;
FAF4 B5 4A    578          lda AREG+5,X          ; #RTBLN or $100-$FB
FAF6 20 DA FD 579          jsr PRBYTE
FAF9          580 ;
FAF9 E8       581          inx
FAFA 30 E8    582          bmi RDSP1
FAFC          583 ;
FAFC 60       584          rts
FAFD          585 ;
FAFD          586 ;
FAFD 59 FA    587 PWRCON   adr OLDBRK
FAFF 00 E0    588          adr BASIC
FB01 45       589          byt PWRUPBYT^BASIC/PAGESIZE
FB02          590 ;
0005          591 PWRCONLN equ *-PWRCON
FB02          592 ;
FB02          593 ;
FB02          594 ; Only the first 3 ID bytes are checked for the //e.
FB02          595 ;
FB02 FF 20    596 DISKID   hex FF20
FB04 FF 00    597          hex FF00
FB06 FF 03    598          hex FF03
FB08          599          hex FF3C
FB08          600 ;
0006          601 DISKIDLN equ *-DISKID
FB08          602 ;
FB08          603 ;
FB08 20 84 FE 604 RSETINIT jsr SETNORM
FB0B 20 2F FB 605          jsr INIT
FB0E 20 93 FE 606          jsr SETVID
FB11          607 ;
FB11 4C 89 FE 608          jmp SETKBD
FB14          609 ;
FB14          610 ;
FB14          611 ; Translate table for IJKLM to DBALC.
FB14          612 ;
FB14 C4 C2 C1 613 XLTLBL   asc "DBALC"
FB17 CC C3
FB19          614 ;
FB19          615 ;
FB19          616 ; Display register table.

```

```

FB19          617 ;
FB19 C1 D8 D9 618 RTBL      asc "AXYPS"
FB1C D0 D3
FB1E          619 ;
0005          620 RTBLN     equ *-RTBL
FB1E          621 ;
FB1E          622 ;
FB1E          623 ; Paddle read routine.  Count Y-reg every 11 usec.
FB1E          624 ;
FB1E AD 70 C0 625 PREAD     lda GCTOGL
FB21          626 ;
FB21 A0 00    627         ldy #ZERO
FB23          628 ;
FB23 EA       629         nop                ; compensate for 1st count
FB24 EA       630         nop
FB25          631 ;
FB25 BD 64 C0 632 PREAD2    lda GC1IN,X
FB28 10 04    633         bpl RTS2D
FB2A          634 ;
FB2A C8       635         iny
FB2B D0 F8    636         bne PREAD2
FB2D          637 ;
FB2D 88       638         dey
FB2E          639 ;
FB2E 60       640 RTS2D     rts
FB2F          641 ;
FB2F          642 ;
FB2F          643 ; Initialize status, text mode, graphics mode, and window.
FB2F          644 ;
FB2F A9 00    645 INIT      lda #ZERO
FB31 85 48    646         sta PREG
FB33          647 ;
FB33 AD 56 C0 648         lda HIRESOFF
FB36 AD 54 C0 649         lda PAGE1ON
FB39          650 ;
FB39 AD 51 C0 651 SETTXT    lda TEXTON
FB3C          652 ;
FB3C A9 00    653         lda #ZERO
FB3E F0 0B    654         beq SETWND                ; always taken
FB40          655 ;
FB40          656 ;
FB40 AD 50 C0 657 SETGR     lda TEXTOFF
FB43 AD 53 C0 658         lda MIXEDON
FB46          659 ;
FB46 20 36 F8 660         jsr CLRTOP
FB49          661 ;
FB49 A9 14    662         lda #20
FB4B          663 ;
FB4B 85 22    664 SETWND    sta WNDTOP
FB4D          665 ;
FB4D A9 00    666         lda #ZERO
FB4F 85 20    667         sta WNDLFT
FB51          668 ;
FB51 A0 0C    669         ldy #12
FB53 D0 5F    670         bne GOTOROM                ; always taken
FB55          671 ;
FB55          672 ;
FB55          673 ; RDCXROM code sets WNDWDTH, WNDBTM, and CV values, thus
FB55          674 ; the following code until TABV is not used.
FB55          675 ;
FB55 A9 18    676         lda #24

```

```

FB57 85 23      677      sta WNDBTM
FB59           678      ;
FB59 A9 17      679      lda #23
FB5B           680      ;
FB5B           681      ;
FB5B 85 25      682 TABV   sta CV
FB5D           683      ;
FB5D 4C 22 FC   684      jmp VTAB
FB60           685      ;
FB60           686      ;
FB60           687      ; TITLE was moved and is 1 byte longer.
FB60           688      ;
FB60 20 58 FC   689 APPLE2 jsr HOME
FB63           690      ;
FB63 A0 0A      691      ldy #TITLEN
FB65           692      ;
FB65 B9 D8 F7   693 STITLE  lda TITLE-1,Y
FB68 99 0E 04   694      sta TEXTPG1+OFFTITL,Y
FB6B           695      ;
FB6B 88         696      dey
FB6C D0 F7      697      bne STITLE
FB6E           698      ;
FB6E 60         699      rts
FB6F           700      ;
FB6F           701      ;
FB6F           702      ; Routine to calculate the power up byte from the RESET
FB6F           703      ; vector.
FB6F           704      ;
FB6F AD F3 03   705 SETPWRC  lda AUTORSET+1
FB72 49 A5      706      eor #PWRUPBYT
FB74 8D F4 03   707      sta PWRSTATE
FB77           708      ;
FB77 60         709      rts
FB78           710      ;
FB78           711      ;
FB78 C9 8D      712 VIDWAIT  cmp #RETURN
FB7A D0 18      713      bne NOWAIT
FB7C           714      ;
FB7C AC 00 C0   715      ldy KEY
FB7F 10 13      716      bpl NOWAIT
FB81           717      ;
FB81 C0 93      718      cpy #CTRLS      ; ctrl-S pressed?
FB83 D0 0F      719      bne NOWAIT
FB85           720      ;
FB85 2C 10 C0   721      bit CLRKEY
FB88           722      ;
FB88           723      ;
FB88 AC 00 C0   724 KBDWAIT  ldy KEY
FB8B 10 FB      725      bpl KBDWAIT
FB8D           726      ;
FB8D C0 83      727      cpy #CTRLC      ; ctrl-C pressed?
FB8F F0 03      728      beq NOWAIT
FB91           729      ;
FB91 2C 10 C0   730      bit CLRKEY
FB94           731      ;
FB94 4C FD FB   732 NOWAIT  jmp VIDOUT
FB97           733      ;
FB97           734      ;
FB97 38         735 ESCOLD   sec      ; insure carry set
FB98           736      ;
FB98 4C 2C FC   737      jmp ESC1

```

```

FB9B      738 ;
FB9B      739 ;
FB9B A8    740 ESCNOW    tay                ; character is index
FB9C      741 ;
FB9C B9 4B FA 742          lda XLTBL-"I",Y    ; IJKM -> CBAD
FB9F      743 ;
FB9F 20 97 FB 744          jsr ESCOLD
FBA2 20 21 FD 745          jsr RDESC
FBA5      746 ;
FBA5      747 ;
FBA5 C9 CE   748 ESCNEW    cmp #"N"
FBA7 B0 EE   749          bcs ESCOLD          ; N or greater
FBA9      750 ;
FBA9 C9 C9   751          cmp #"I"
FBAB 90 EA   752          bcc ESCOLD          ; less than I
FBAD      753 ;
FBAD C9 CC   754          cmp #"L"
FBAF F0 E6   755          beq ESCOLD          ; do L
FBB1      756 ;
FBB1 D0 E8   757          bne ESCNOW          ; try again
FBB3      758 ;
FBB3      759 ;
FBB3 06      760 ROMSIG    hex 06                ; ROM ID byte
FBB4      761 ;
FBB4      762 ;
FBB4      763 ; Get state of CX ROM.  If +, return via CXOFF and turn CX
FBB4      764 ; ROM off.  If -, return via CXRTN and leave CX ROM on.
FBB4      765 ;
FBB4 2C 15 C0 766 GOTOROM bit RDCXROM          ; read current state
FBB7      767 ;
FBB7 08      768          php                ; push state onto stack
FBB8      769 ;
FBB8 8D 07 C0 770          sta CXROMON          ; enable CX ROM
FBBB      771 ;
FBBB 4C 00 C1 772          jmp DOCXCMD
FBBE      773 ;
FBBE      774 ;
FBBE      775          dfs 2,ZERO
FBC0      776 ;
FBC0      777 ;
FBC0      778 ; Signature byte.  Original Apple //e uses 0xEA.
FBC0      779 ;           Enhanced Apple //e uses 0xE0.
FBC0      780 ;
FBC0 E0      781 SIGBYTE    hex E0                ; //e ROM ID byte
FBC1      782 ;
FBC1      783 ;
FBC1      784 ; This is the same routine at 0xCABA, and the entry point
FBC1      785 ; already existed but was unused.
FBC1      786 ;
FBC1 84 28   787 BASCALC    sty BASL
FBC3      788 ;
FBC3 A0 02   789          ldy #2
FBC5 D0 ED   790          bne GOTOROM          ; always taken
FBC7      791 ;
FBC7      792 ;
FBC7      793 ; FMT2 bits: 6543 21LL
FBC7      794 ;
FBC7      795 ; LL sets value/address length:
FBC7      796 ;
FBC7      797 ; 0 - no extra bytes (1 byte)
FBC7      798 ; 1 - value or zpage (2 bytes)

```

```

FBC7      799 ;      2 - absolute address (3 bytes)
FBC7      800 ;      3 - 1 byte relative branch for abs. addr. (2 bytes)
FBC7      801 ;
FBC7      802 ;      Xreg index into CHAR1/CHAR2 tables for bit set:
FBC7      803 ;
FBC7      804 ;      6 - $      |
FBC7      805 ;      5 - ($    } left of value/address
FBC7      806 ;      4 - #$    |
FBC7      807 ;
FBC7      808 ;      3 - ,X    |
FBC7      809 ;      2 - )    } right of value/address
FBC7      810 ;      1 - ,Y    |
FBC7      811 ;
FBC7      812 ;
FBC7      813 FMT2:
FBC7 00      814      byt %00000000      ; error
FBC8 21      815      byt %00100001      ; immediate; 1 byte
FBC9 81      816      byt %10000001      ; zpage; 1 byte
FBCA 82      817      byt %10000010      ; absolute; 2 bytes
FBCB 00      818      byt %00000000      ; implied; 0 bytes
FBCC 00      819      byt %00000000      ; accumulator; 0 bytes
FBCD 59      820      byt %01011001      ; (zpage,X); 1 byte
FBCE 4D      821      byt %01001101      ; (zpage),Y; 1 byte
FBCF 91      822      byt %10010001      ; zpage,X; 1 byte
FBD0 92      823      byt %10010010      ; absolute,X; 2 bytes
FBD1 86      824      byt %10000110      ; absolute,Y; 2 bytes
FBD2 4A      825      byt %01001010      ; (absolute); 2 bytes
FBD3 85      826      byt %10000101      ; zpage,Y; 1 byte
FBD4 9D      827      byt %10011101      ; relative; 1 byte
FBD5 49      828      byt %01001001      ; (zpage); 1 byte (was 0x4B)
FBD6 5A      829      byt %01011010      ; (absolute,X); 2 bytes
FBD7      830 ;
FBD7      831 ;
FBD7      832      dfs 2,ZERO
FBD9      833 ;
FBD9      834 ;
FBD9 C9 87    835 BELL1      cmp #$87      ; ^G
FBDB D0 12    836      bne RTS2B
FBDD      837 ;
FBDD A9 40    838      lda #$40      ; delay 0.01 seconds
FBDF      839 ;
FBDF 20 A8 FC 840      jsr WAIT
FBE2      841 ;
FBE2 A0 C0    842      ldy #$C0
FBE4      843 ;
FBE4 A9 0C    844 BELL2      lda #12      ; 1 KHz for 1 second
FBE6      845 ;
FBE6 20 A8 FC 846      jsr WAIT
FBE9      847 ;
FBE9 AD 30 C0 848      lda SPKR
FBEC      849 ;
FBEC 88      850      dey
FBED D0 F5    851      bne BELL2
FBEF      852 ;
FBEF 60      853 RTS2B      rts
FBF0      854 ;
FBF0      855 ;
FBF0      856 ; Store character on screen and advance cursor.
FBF0      857 ;
FBF0 A4 24    858 STORADV   ldy CH
FBF2      859 ;

```

```
FBF2 91 28      860      sta (BASL),Y
FBF4           861      ;
FBF4 E6 24      862 ADVANCE inc CH
FBF6           863      ;
FBF6 A5 24      864      lda CH
FBF8 C5 21      865      cmp WNDWDTH
FBFA B0 66      866      bcs CR
FBFC           867      ;
FBFC 60         868 RTS3    rts
FBFD           869      ;
FBFD           870      ;
FBFD           871      icl "FC.L"
```

```
LLOAD FC.L,A$4000
```

```

FBFD      1          ttl "ROM Source Code, FC.L"
FBFD      2      ;
FBFD      3      ;
FBFD      4      ; FC.L
FBFD      5      ;
FBFD      6      ;
FBFD      7      ; Check for NORMAL, INVERSE, and control characters.
FBFD      8      ;
FBFD C9 A0      9  VIDOUT    cmp #SPACE
FBFF B0 EF     10          bcs STORADV
FC01      11      ;
FC01 A8       12          tay
FC02 10 EC     13          bpl STORADV
FC04      14      ;
FC04 C9 8D     15          cmp #RETURN
FC06 F0 5A     16          beq CR
FC08      17      ;
FC08 C9 8A     18          cmp #DARROW
FC0A F0 5A     19          beq LF
FC0C      20      ;
FC0C C9 88     21          cmp #LARROW
FC0E D0 C9     22          bne BELL1
FC10      23      ;
FC10      24      ;
FC10 C6 24     25  BS      dec CH
FC12 10 E8     26          bpl RTS3
FC14      27      ;
FC14 A5 21     28          lda WNDWDTH
FC16 85 24     29          sta CH
FC18      30      ;
FC18 C6 24     31          dec CH
FC1A      32      ;
FC1A      33      ;
FC1A A5 22     34  UP      lda WNDTOP
FC1C C5 25     35          cmp CV
FC1E B0 DC     36          bcs RTS3
FC20      37      ;
FC20 C6 25     38          dec CV
FC22      39      ;
FC22      40      ;
FC22      41      ; Slightly modified.
FC22      42      ;
FC22 A5 25     43  VTAB    lda CV
FC24      44      ;
FC24 84 28     45  VTABZ   sty BASL
FC26      46      ;
FC26 A0 04     47          ldy #4
FC28 D0 8A     48          bne GOTOROM          ; always taken
FC2A      49      ;
FC2A      50      ;
FC2A      51          dfs 2,ZERO
FC2C      52      ;
FC2C      53      ;
FC2C      54      ; Carry set on entry.
FC2C      55      ;
FC2C 49 C0     56  ESC1    eor #"@"          ; esc-@ check
FC2E F0 28     57          beq HOME
FC30      58      ;
FC30 69 FD     59          adc #!-3
FC32 90 C0     60          bcc ADVANCE          ; esc-A check

```



```

FC34      61 ;
FC34 F0 DA      62          beq BS          ; esc-B check
FC36      63 ;
FC36 69 FD      64          adc #!-3
FC38 90 2C      65          bcc LF          ; esc-C check
FC3A      66 ;
FC3A F0 DE      67          beq UP          ; esc-D check
FC3C      68 ;
FC3C 69 FD      69          adc #!-3
FC3E 90 5C      70          bcc CLREOL      ; esc-E check
FC40      71 ;
FC40 D0 BA      72          bne RTS3        ; not esc-F check
FC42      73 ;
FC42 A0 0A      74 CLREOP    ldy #10        ; esc-F check
FC44 D0 14      75          bne GOTOROM1    ; always taken
FC46      76 ;
FC46      77 ;
FC46      78 ; New VIDWAIT to handle 40 and 80 columns.
FC46      79 ;
FC46 2C 1F C0    80 NEWVW    bit RDVID80      ; 80 column enabled?
FC49 10 04      81          bpl NEWVW1
FC4B      82 ;
FC4B A0 00      83          ldy #ZERO        ; print 80 column
FC4D F0 0B      84          beq GOTOROM1    ; always taken
FC4F      85 ;
FC4F      86 ;
FC4F      87 ; Print 40 column.
FC4F      88 ;
FC4F 98      89 NEWVW1    tya
FC50 48      90          pha
FC51      91 ;
FC51 20 78 FB    92          jsr VIDWAIT
FC54      93 ;
FC54 68      94          pla
FC55      95 ;
FC55 A4 35      96          ldy YSAV1
FC57      97 ;
FC57 60      98          rts
FC58      99 ;
FC58      100 ;
FC58 A0 05      101 HOME    ldy #5
FC5A      102 ;
FC5A 4C B4 FB    103 GOTOROM1 jmp GOTOROM
FC5D      104 ;
FC5D      105 ;
FC5D      106          dfs 2,ZERO
FC5F      107 ;
FC5F      108 ;
FC5F      109 ; Return from BRK instruction in STEP/TRACE.
FC5F      110 ;
FC5F 4C 59 FA    111 STEPRTN2 jmp OLDBRK
FC62      112 ;
FC62      113 ;
FC62 A9 00      114 CR      lda #ZERO
FC64 85 24      115          sta CH
FC66      116 ;
FC66 E6 25      117 LF      inc CV
FC68      118 ;
FC68 A5 25      119          lda CV
FC6A C5 23      120          cmp WNDBTM
FC6C 90 B6      121          bcc VTABZ

```

```

FC6E      122 ;
FC6E C6 25 123      dec CV
FC70      124 ;
FC70 A0 06 125  SCROLL  ldy #6
FC72 D0 E6 126      bne GOTOROM1          ; always taken
FC74      127 ;
FC74      128 ;
FC74 8D 06 C0 129  GOTOIRQ  sta CXROMOFF          ; enable slots
FC77      130 ;
FC77 6C FE 03 131      jmp (IRQADR)
FC7A      132 ;
FC7A      133 ;
FC7A      134 ; IRQDONE (0xC3F4) jumps here after interrupt because
FC7A      135 ; this code cannot be done from 0xCn00 space.
FC7A      136 ;
FC7A 68      137  IRQDONE2 pla
FC7B 8D F8 07 138      sta MSLOT
FC7E      139 ;
FC7E C9 C1 140      cmp /PAGEC1
FC80 90 0D 141      bcc IRQNOSLT
FC82      142 ;
FC82 8D FF CF 143      sta CLRROM
FC85      144 ;
FC85 A0 00 145      ldy #ZERO
FC87      146 ;
FC87 A6 01 147      ldx LOC1
FC89      148 ;
FC89 85 01 149      sta LOC1
FC8B      150 ;
FC8B B1 00 151      lda (LOC0),Y
FC8D      152 ;
FC8D 86 01 153      stx LOC1
FC8F      154 ;
FC8F 8D 07 C0 155  IRQNOSLT sta CXROMON          ; enable CX ROM
FC92      156 ;
FC92 4C 7C C4 157      jmp IRQFIX          ; restore the machine
FC95      158 ;
FC95      159 ;
FC95 90 02 160  CHKINV  bcc CHKINV1
FC97      161 ;
FC97 25 32 162      and INVFLG
FC99      163 ;
FC99 4C F7 FD 164  CHKINV1 jmp COUTZ1
FC9C      165 ;
FC9C      166 ;
FC9C 38      167  CLREOL  sec
FC9D      168 ;
FC9D 90 00 169      bcc *+2
FC9F      170      dfs !-1
FC9E      171 ;
FC9E 18      172  CLEOLZ  clc
FC9F      173 ;
FC9F 84 2A 174      sty BAS2L
FCA1      175 ;
FCA1 A0 07 176      ldy #7
FCA3      177 ;
FCA3 B0 B5 178      bcs GOTOROM1
FCA5      179 ;
FCA5 C8      180      iny
FCA6 D0 B2 181      bne GOTOROM1          ; always taken
FCA8      182 ;

```

```

FCA8      183 ;
FCA8      184 ; A-reg = delay value.  Clock is 1,020,484 cycles/second.
FCA8      185 ;
FCA8      186 ; Delay = 2.5*A*A + 13.5*A + 13 cycles.
FCA8      187 ;
FCA8      188 ; A = ( Delay / 2.5 + 2.09 ) ^ 0.5 - 2.7.
FCA8      189 ;
FCA8 38    190 WAIT      sec
FCA9      191 ;
FCA9 48    192 WAIT2     pha
FCAA      193 ;
FCAA E9 01 194 WAIT3     sbc #1
FCAC D0 FC 195           bne WAIT3
FCAE      196 ;
FCAE 68    197           pla
FCAF      198 ;
FCAF E9 01 199           sbc #1
FCB1 D0 F6 200           bne WAIT2
FCB3      201 ;
FCB3 60    202           rts
FCB4      203 ;
FCB4      204 ;
FCB4      205 ; Increment A4, compare A1 to A2, increment A1.
FCB4      206 ;
FCB4 E6 42 207 NXTA4     inc A4L
FCB6 D0 02 208           bne NXTA1
FCB8      209 ;
FCB8 E6 43 210           inc A4H
FCBA      211 ;
FCBA A5 3C 212 NXTA1     lda A1L
FCBC C5 3E 213           cmp A2L
FCBE      214 ;
FCBE A5 3D 215           lda A1H
FCC0 E5 3F 216           sbc A2H
FCC2      217 ;
FCC2 E6 3C 218           inc A1L
FCC4 D0 02 219           bne RTS4B
FCC6      220 ;
FCC6 E6 3D 221           inc A1H
FCC8      222 ;
FCC8 60    223 RTS4B     rts
FCC9      224 ;
FCC9      225 ;
FCC9 60    226 HEADR     rts ; HEADR removed
FCCA      227 ;
FCCA      228 ;
FCCA      229 ; Return from STEP/TRACE.  If carry set, then BRK.
FCCA      230 ;
FCCA 8D 06 C0 231 STEPRTN  sta CXROMOFF
FCCD      232 ;
FCCD B0 90  233           bcs STEPRTN2
FCCF      234 ;
FCCF 4C 73 FF 235           jmp NXTITM
FCD2      236 ;
FCD2      237 ;
FCD2 8D 06 C0 238 ERR2A     sta CXROMOFF ; enable slots
FCD5      239 ;
FCD5 20 4A F9 240           jsr PRBL2 ; tab to error
FCD8      241 ;
FCD8 A9 DE  242           lda #"^"
FCDA 20 ED FD 243           jsr COUT

```

```

FCDD      244 ;
FCDD 20 3A FF 245      jsr BELL
FCE0      246 ;
FCE0 4C F0 FC 247      jmp NXTLINE
FCE3      248 ;
FCE3      249 ;
FCE3      250 ; End of Mini-Assembler processing of instruction entry.
FCE3      251 ;
FCE3 8D 06 C0 252 FINDOP3 sta CXROMOFF      ; enable slots
FCE6      253 ;
FCE6 20 D0 F8 254      jsr INSTDSP
FCE9 20 53 F9 255      jsr PCADJ
FCEC      256 ;
FCEC 84 3B      257      sty PCH
FCEE 85 3A      258      sta PCL
FCF0      259 ;
FCF0      260 ;
FCF0      261 ; Start of Mini-Assembler processing of instruction entry.
FCF0      262 ;
FCF0 A9 A1      263 NXTLINE lda #"!"
FCF2 85 33      264      sta PROMPT
FCF4      265 ;
FCF4 20 67 FD 266      jsr GETLNZ
FCF7      267 ;
FCF7 8D 07 C0 268      sta CXROMON      ; enable CX ROM
FCFA      269 ;
FCFA 4C 9C CF 270      jmp NXTLINE2
FCFD      271 ;
FCFD      272 ;
FCFD      273 ; Change lowercase to uppercase.
FCFD      274 ;
FCFD B9 00 02 275 UPMON  lda INPUT,Y
FD00      276 ;
FD00 C8      277      iny
FD01      278 ;
FD01 C9 E1      279 UPRCASE  cmp #"a"
FD03 90 06      280      bcc UPMON2
FD05      281 ;
FD05 C9 FB      282      cmp #"z"+1
FD07 B0 02      283      bcs UPMON2
FD09      284 ;
FD09 29 DF      285      and #LWRMASK
FD0B      286 ;
FD0B 60      287 UPMON2  rts
FD0C      288 ;
FD0C      289 ;
FD0C 4C 13 FD 290 RDKEY  jmp RDKEY1
FD0F      291 ;
FD0F      292 ;
FD0F      293      dfs 1,ZERO
FD10      294 ;
FD10      295 ;
FD10      296 ; Preserve this entry point, but do nothing.
FD10      297 ;
FD10 6C 38 00 298 FDIO    jmp (KSWL)
FD13      299 ;
FD13      300 ;
FD13 A0 0B      301 RDKEY1  ldy #11
FD15 20 B4 FB 302      jsr GOTOROM
FD18      303 ;
FD18 6C 38 00 304 RDKEY2  jmp (KSWL)

```

```

FD1B          305 ;
FD1B          306 ;
FD1B A0 03    307 KEYIN      ldy #3
FD1D          308 ;
FD1D 4C B4 FB 309 GOTOROM4  jmp GOTOROM
FD20          310 ;
FD20          311 ;
FD20          312 ;         dfs 1,ZERO
FD21          313 ;
FD21          314 ;
FD21 20 13 FD 315 RDESC      jsr RDKEY1          ; get a key
FD24          316 ;
FD24 A0 01    317 ;         ldy #1
FD26 D0 F5    318 ;         bne GOTOROM4          ; always taken
FD28          319 ;
FD28          320 ;
FD28          321 ; All slot cards that use the 0xC800 space must save their
FD28          322 ; slot number in MSLOT in order to set its MSB.  If the
FD28          323 ; MSB is clear, that is a flag to the video firmware that
FD28          324 ; escapes are allowed.
FD28          325 ;
FD28 4E F8 07 326 NEWRDKEY  lsr MSLOT          ; allow escapes
FD2B          327 ;
FD2B 4C 13 FD 328 ;         jmp RDKEY1          ; now read the key
FD2E          329 ;
FD2E          330 ;
FD2E          331 ;         dfs 1,ZERO
FD2F          332 ;
FD2F          333 ;
FD2F 20 21 FD 334 ESC        jsr RDESC          ; remap keys
FD32 20 A5 FB 335 ;         jsr ESCNEW          ; do ESC function
FD35          336 ;
FD35 20 28 FD 337 RDCHAR      jsr NEWRDKEY
FD38          338 ;
FD38 C9 9B    339 ;         cmp #ESCAPE
FD3A F0 F3    340 ;         beq ESC
FD3C          341 ;
FD3C 60       342 ;         rts
FD3D          343 ;
FD3D          344 ;
FD3D          345 ; Do 80 column pick and fix.
FD3D          346 ;
FD3D A0 0F    347 PICKFIX    ldy #15
FD3F 20 B4 FB 348 ;         jsr GOTOROM
FD42          349 ;
FD42 A4 24    350 ;         ldy CH
FD44          351 ;
FD44 9D 00 02 352 ;         sta INPUT,X
FD47          353 ;
FD47 20 ED FD 354 NOTCR      jsr COUT
FD4A          355 ;
FD4A EA       356 ;         nop
FD4B EA       357 ;         nop
FD4C EA       358 ;         nop
FD4D          359 ;
FD4D BD 00 02 360 ;         lda INPUT,X
FD50 C9 88    361 ;         cmp #LARROW
FD52 F0 1D    362 ;         beq BCKSPC
FD54          363 ;
FD54 C9 98    364 ;         cmp #CTRLX          ; ctrl-X pressed?
FD56 F0 0A    365 ;         beq CANCEL

```

```

FD58      366 ;
FD58 E0 F8 367      cpx #$F8
FD5A 90 03 368      bcc NOTCR1          ; margin?
FD5C      369 ;
FD5C 20 3A FF 370      jsr BELL
FD5F      371 ;
FD5F E8      372 NOTCR1    inx
FD60 D0 13 373      bne NXTCHAR          ; always taken
FD62      374 ;
FD62      375 ;
FD62      376 ; Print a backslash after a cancelled line.
FD62      377 ;
FD62 A9 DC 378 CANCEL    lda #"\ "
FD64 20 ED FD 379      jsr COUT
FD67      380 ;
FD67 20 8E FD 381 GETLNZ    jsr CROUT
FD6A      382 ;
FD6A A5 33 383 GETLN    lda PROMPT
FD6C 20 ED FD 384      jsr COUT
FD6F      385 ;
FD6F A2 01 386      ldx #1
FD71      387 ;
FD71 8A      388 BCKSPC    txa
FD72 F0 F3 389      beq GETLNZ
FD74      390 ;
FD74 CA      391      dex
FD75      392 ;
FD75 20 35 FD 393 NXTCHAR  jsr RDCHAR
FD78      394 ;
FD78      395 ;
FD78      396 ; For ^U processing use the screen character, either 40
FD78      397 ; column pick or PICKFIX if in 80 columns.
FD78      398 ;
FD78 C9 95 399      cmp #$95
FD7A D0 08 400      bne ADDINP
FD7C      401 ;
FD7C B1 28 402      lda (BASL),Y          ; 40 column pick
FD7E      403 ;
FD7E      404 ;
FD7E      405 ; CAPTST entry gone.
FD7E      406 ;
FD7E      407 ;
FD7E 2C 1F C0 408      bit RDVID80
FD81 30 BA 409      bmi PICKFIX          ; 80 column pick
FD83      410 ;
FD83 EA      411      nop
FD84      412 ;
FD84      413 ;
FD84      414 ; Add to input buffer.
FD84      415 ;
FD84 9D 00 02 416 ADDINP    sta INPUT,X
FD87 C9 8D 417      cmp #RETURN
FD89 D0 BC 418      bne NOTCR
FD8B      419 ;
FD8B 20 9C FC 420      jsr CLREOL          ; clear to EOL after CR
FD8E      421 ;
FD8E      422 ;
FD8E A9 8D 423 CROUT    lda #RETURN
FD90 D0 5B 424      bne COUT          ; always taken
FD92      425 ;
FD92      426 ;

```

```

FD92          427 ; Print CR, then A1 in HEX.
FD92          428 ;
FD92 A4 3D    429 PRA1      ldy A1H
FD94 A6 3C    430          ldx A1L
FD96          431 ;
FD96 20 8E FD 432 PRXY2    jsr CROUT
FD99 20 40 F9 433          jsr PRNTYX
FD9C          434 ;
FD9C A0 00    435          ldy #ZERO
FD9E          436 ;
FD9E A9 AD    437          lda #"-"
FDA0          438 ;
FDA0 4C ED FD 439          jmp COUT
FDA3          440 ;
FDA3          441 ;
FDA3 A5 3C    442 XAM8     lda A1L
FDA5 09 07    443          ora #7
FDA7 85 3E    444          sta A2L
FDA9          445 ;
FDA9 A5 3D    446          lda A1H
FDAB 85 3F    447          sta A2H
FDAD          448 ;
FDAD A5 3C    449 MOD8CHK  lda A1L
FDAF 29 07    450          and #7
FDB1 D0 03    451          bne DATAOUT
FDB3          452 ;
FDB3 20 92 FD 453 XAM      jsr PRA1
FDB6          454 ;
FDB6 A9 A0    455 DATAOUT  lda #SPACE
FDB8 20 ED FD 456          jsr COUT
FDBB          457 ;
FDBB B1 3C    458          lda (A1L),Y
FDBD 20 DA FD 459          jsr PRBYTE
FDC0          460 ;
FDC0 20 BA FC 461          jsr NXTA1
FDC3 90 E8    462          bcc MOD8CHK
FDC5          463 ;
FDC5 60       464          rts
FDC6          465 ;
FDC6          466 ;
FDC6          467 ; Determine if monitor mode is examine, add, or subtract.
FDC6          468 ;
FDC6 4A       469 XAMPM     lsr
FDC7 90 EA    470          bcc XAM
FDC9          471 ;
FDC9 4A       472          lsr
FDCA 4A       473          lsr
FDCB          474 ;
FDCB A5 3E    475          lda A2L
FDCD          476 ;
FDCD 90 02    477          bcc ADD
FDCF          478 ;
FDCF 49 FF    479          eor #NEGONE
FDD1          480 ;
FDD1 65 3C    481 ADD      adc A1L
FDD3 48       482          pha
FDD4          483 ;
FDD4 A9 BD    484          lda #"="
FDD6 20 ED FD 485          jsr COUT
FDD9          486 ;
FDD9 68       487          pla

```

; set to finish at MOD 8=7

; 2's complement for subtract

```

FDDA          488 ;
FDDA          489 ;
FDDA          490 ; Print byte as 2 HEX digits.
FDDA          491 ;
FDDA 48       492 PRBYTE   pha
FDDDB         493 ;
FDDDB 4A      494         lsr
FDDC 4A       495         lsr
FDDD 4A       496         lsr
FDDE 4A       497         lsr
FDDF          498 ;
FDDF 20 E5 FD 499         jsr PRHEXZ
FDE2          500 ;
FDE2 68       501         pla
FDE3          502 ;
FDE3          503 ;
FDE3          504 ; Print HEX digit in A-reg.
FDE3          505 ;
FDE3 29 0F    506 PRHEX    and #$0F
FDE5          507 ;
FDE5 09 B0    508 PRHEXZ   ora #"0"
FDE7          509 ;
FDE7 C9 BA    510         cmp #"9"+1
FDE9 90 02    511         bcc COUT
FDEB          512 ;
FDEB 69 06    513         adc #6                      ; for HEX letters
FDED          514 ;
FDED          515 ;
FDED          516 ; Vector to user output routing.
FDED          517 ;
FDED 6C 36 00 518 COUT     jmp (CSWL)
FDF0          519 ;
FDF0          520 ;
FDF0 48       521 COUT1    pha
FDF1          522 ;
FDF1 C9 A0    523         cmp #SPACE
FDF3          524 ;
FDF3 4C 95 FC 525         jmp CHKINV
FDF6          526 ;
FDF6          527 ;
FDF6 48       528 COUTZ    pha
FDF7          529 ;
FDF7 84 35    530 COUTZ1   sty YSAV1
FDF9          531 ;
FDF9 A8       532         tay                      ; masked character
FDFA          533 ;
FDFA 68       534         pla                      ; original character
FDFB          535 ;
FDFB 4C 46 FC 536         jmp NEWVW
FDFE          537 ;
FDFE          538 ;
FDFE          539         dfs 2,ZERO
FE00          540 ;
FE00          541 ;
FE00 C6 34    542 BL1      dec YSAV
FE02 F0 9F    543         beq XAM8
FE04          544 ;
FE04 CA       545 BLANK    dex
FE05 D0 16    546         bne SETMDZ
FE07          547 ;
FE07 C9 BA    548         cmp #": "

```



```

FE09 D0 BB      549      bne XAMPM
FE0B            550      ;
FE0B 85 31      551  STOR      sta MODE
FE0D            552      ;
FE0D A5 3E      553      lda A2L
FE0F            554      ;
FE0F 91 40      555  STOR2     sta (A3L),Y
FE11            556      ;
FE11 E6 40      557  NXTA3     inc A3L
FE13 D0 02      558      bne RTS5
FE15            559      ;
FE15 E6 41      560      inc A3H
FE17            561      ;
FE17 60          562  RTS5      rts
FE18            563      ;
FE18            564      ;
FE18            565      ; Save converted ':', '+', '-', or '.' as MODE.
FE18            566      ;
FE18 A4 34      567  SETMODE   ldy YSAV
FE1A            568      ;
FE1A B9 FF 01   569      lda INPUT-1,Y
FE1D            570      ;
FE1D 85 31      571  SETMDZ    sta MODE
FE1F            572      ;
FE1F 60          573      rts
FE20            574      ;
FE20            575      ;
FE20            576      ; Copy A2 to A4 and A5.
FE20            577      ;
FE20 A2 01      578  LT        ldx #1
FE22            579      ;
FE22 B5 3E      580  LT2       lda A2L,X
FE24 95 42      581      sta A4L,X
FE26 95 44      582      sta A5L,X
FE28            583      ;
FE28 CA          584      dex
FE29 10 F7      585      bpl LT2
FE2B            586      ;
FE2B 60          587      rts
FE2C            588      ;
FE2C            589      ;
FE2C            590      ; Move A1 through A2 to A4.
FE2C            591      ;
FE2C B1 3C      592  MOVE      lda (A1L),Y
FE2E 91 42      593      sta (A4L),Y
FE30            594      ;
FE30 20 B4 FC   595      jsr NXTA4
FE33 90 F7      596      bcc MOVE
FE35            597      ;
FE35 60          598      rts
FE36            599      ;
FE36            600      ;
FE36            601      ; Verify A1 through A2 with A4.
FE36            602      ;
FE36 B1 3C      603  VFY       lda (A1L),Y
FE38 D1 42      604      cmp (A4L),Y
FE3A F0 1C      605      beq VFYOK
FE3C            606      ;
FE3C 20 92 FD   607      jsr PRA1
FE3F            608      ;
FE3F B1 3C      609      lda (A1L),Y

```

```

FE41 20 DA FD      610      jsr PRBYTE
FE44              611      ;
FE44 A9 A0         612      lda #SPACE
FE46 20 ED FD      613      jsr COUT
FE49              614      ;
FE49 A9 A8         615      lda #"("
FE4B 20 ED FD      616      jsr COUT
FE4E              617      ;
FE4E B1 42         618      lda (A4L),Y
FE50 20 DA FD      619      jsr PRBYTE
FE53              620      ;
FE53 A9 A9         621      lda #")"
FE55 20 ED FD      622      jsr COUT
FE58              623      ;
FE58 20 B4 FC      624      VFYOK jsr NXTA4
FE5B 90 D9         625      bcc VFY
FE5D              626      ;
FE5D 60            627      rts
FE5E              628      ;
FE5E              629      ;
FE5E              630      ; Move A1 to PC if specified and disassemble 20
FE5E              631      ; instructions.
FE5E              632      ;
FE5E 20 75 FE      633      LIST jsr A1PC
FE61              634      ;
FE61 A9 14         635      lda #20
FE63              636      ;
FE63 48            637      LIST2 pha
FE64              638      ;
FE64 20 D0 F8      639      jsr INSTDSP
FE67 20 53 F9      640      jsr PCADJ
FE6A              641      ;
FE6A 85 3A         642      sta PCL
FE6C 84 3B         643      sty PCH
FE6E              644      ;
FE6E 68            645      pla
FE6F              646      ;
FE6F 38            647      sec
FE70              648      ;
FE70 E9 01         649      sbc #1
FE72 D0 EF         650      bne LIST2
FE74              651      ;
FE74 60            652      rts
FE75              653      ;
FE75              654      ;
FE75              655      ; If an address was specified copy it from A1 to PC.
FE75              656      ;
FE75 8A            657      A1PC txa
FE76 F0 07         658      beq A1PCRTS
FE78              659      ;
FE78 B5 3C         660      A1PCLP lda A1L,X
FE7A 95 3A         661      sta PCL,X
FE7C              662      ;
FE7C CA            663      dex
FE7D 10 F9         664      bpl A1PCLP
FE7F              665      ;
FE7F 60            666      A1PCRTS rts
FE80              667      ;
FE80              668      ;
FE80              669      ; Set INVERSE/NORMAL video.
FE80              670      ;

```

```

FE80 A0 3F      671  SETINV      ldy #$3F
FE82 D0 02      672          bne SETIFLG
FE84           673  ;
FE84 A0 FF      674  SETNORM      ldy #NEGONE
FE86           675  ;
FE86 84 32      676  SETIFLG      sty INVFLG
FE88           677  ;
FE88 60         678          rts
FE89           679  ;
FE89           680  ;
FE89 A9 00      681  SETKBD      lda #ZERO          ; IN#0
FE8B           682  ;
FE8B 85 3E      683  INPORT      sta A2L          ; IN#n
FE8D           684  ;
FE8D A2 38      685  INPRT      ldx #KSWL
FE8F A0 1B      686          ldy #KEYIN
FE91           687  ;
FE91 D0 08      688          bne IOPRT          ; always taken
FE93           689  ;
FE93           690  ;
FE93 A9 00      691  SETVID      lda #ZERO          ; PR#0
FE95           692  ;
FE95 85 3E      693  OUTPORT      sta A2L          ; PR#n
FE97           694  ;
FE97 A2 36      695  OUTPRT      ldx #CSWL
FE99 A0 F0      696          ldy #COUT1
FE9B           697  ;
FE9B A5 3E      698  IOPRT      lda A2L
FE9D 29 0F      699          and #$0F
FE9F F0 04      700          beq IOPRT1
FEA1           701  ;
FEA1 09 C0      702          ora /PAGEC0
FEA3           703  ;
FEA3 A0 00      704          ldy #ZERO
FEA5           705  ;
FEA5 94 00      706  IOPRT1      sty LOC0,X
FEA7 95 01      707          sta LOC1,X
FEA9           708  ;
FEA9 A0 0E      709          ldy #14
FEAB           710  ;
FEAB 4C B4 FB   711          jmp GOTOROM
FEAE           712  ;
FEAE           713  ;
FEAE F0 55      714  ZAPMEM      beq ZAPMEM2          ; Y-reg = 0, always taken
FEB0           715  ;
FEB0           716  ;
FEB0 4C 00 E0   717  XBASIC      jmp BASIC          ; cold start
FEB3           718  ;
FEB3           719  ;
FEB3 4C 03 E0   720  BASCONT      jmp BASIC2          ; warm start
FEB6           721  ;
FEB6           722  ;
FEB6 20 75 FE   723  GO          jsr A1PC
FEB9 20 3F FF   724          jsr RESTORE
FEBF           725  ;
FEBF 6C 3A 00   726          jmp (PCL)
FEBF           727  ;
FEBF           728  ;
FEBF 4C D7 FA   729  REGZ      jmp REGDSP
FEC2           730  ;
FEC2           731  ;

```

```

FEC2 C6 34      732 TRACE      dec YSAV
FEC4           733 ;
FEC4 8D 07 C0   734 STEPZ      sta CXROMON
FEC7           735 ;
FEC7 4C 08 C5   736             jmp CXSTEP
FECA           737 ;
FECA           738 ;
FECA           739 ; Jump to user ^Y vector.
FECA           740 ;
FECA 4C F8 03   741 USR        jmp CTRLYRTN
FECD           742 ;
FECD           743 ;
FECD           744             dfs 1,ZERO
FECE           745 ;
FECE           746 ;
FECE C9 F1      747 CHRTBLX3  cmp #$89+$B0^"X"      ; SEARCH command
FED0 D0 3C      748             bne ZAPRTS
FED2           749 ;
FED2           750 ; New 'X' command, used in the following ways:
FED2           751 ;
FED2           752 ; `char<$strt.$end X <cr>      "char<$strt.$end X <cr>
FED2           753 ; `char`char<$strt.$end X <cr> "char"char<$strt.$end X <cr>
FED2           754 ; `char"char<$strt.$end X <cr> "char`char<$strt.$end X <cr>
FED2           755 ;
FED2           756 ; $val<$strt.$end X <cr> where $val is MSB/LSB
FED2           757 ;
FED2 A0 01      758 SEARCH    ldy #1
FED4           759 ;
FED4 A5 43      760             lda A4H
FED6 F0 04      761             beq SEARCH1
FED8           762 ;
FED8 D1 3C      763             cmp (A1L),Y
FEDA D0 0A      764             bne SEARCH2
FEDC           765 ;
FEDC 88         766 SEARCH1    dey
FEDD           767 ;
FEDD A5 42      768             lda A4L
FEDF D1 3C      769             cmp (A1L),Y
FEE1 D0 03      770             bne SEARCH2
FEE3           771 ;
FEE3 20 92 FD   772             jsr PRA1
FEE6           773 ;
FEE6 20 BA FC   774 SEARCH2    jsr NXTA1
FEE9 90 E7      775             bcc SEARCH
FEEB           776 ;
FEEB 20 8E FD   777 SEARCH3    jsr CROUT
EEEE           778 ;
EEEE 4C F9 FE   779             jmp CRMON1          ; fix program counter
FEF1           780 ;
FEF1           781 ;
FEF1           782 ; Enter the Mini-Assembler.  Fall into CRMON.
FEF1           783 ;
FEF1 A0 0D      784 MINIASM    ldy #13
FEF3           785 ;
FEF3 20 B4 FB   786             jsr GOTOROM
FEF6           787 ;
FEF6           788 ;
FEF6 20 00 FE   789 CRMON      jsr BL1
FEF9           790 ;
FEF9 68        791 CRMON1     pla
FEFA 68        792             pla

```

```

FEFB      793 ;
FEFB D0 6C 794      bne MONZ                ; always taken
FEFD      795 ;
FEFD      796 ;
FEFD      797 ; Enter the cassette READ routine.  If CHKSUM compares then
FEFD      798 ; sound BELL and return to CALLER or enter PRERR.
FEFD      799 ;
FEFD      800 ; This command is used in the following way:
FEFD      801 ;
FEFD      802 ; $strt.$end R <cr>
FEFD      803 ;
FEFD 20 9F F3 804 READ      jsr CXREAD
FF00      805 ;
FF00 F0 38 806      beq BELL
FF02      807 ;
FF02 D0 29 808      bne PRERR                ; always taken
FF04      809 ;
FF04      810 ;
FF04      811      dfs 1,ZERO
FF05      812 ;
FF05      813 ;
FF05      814 ; New 'Z' command, used in the following way:
FF05      815 ;
FF05      816 ; $val<$strt.$end Z <cr>
FF05      817 ;
FF05 A5 42 818 ZAPMEM2   lda A4L
FF07 91 3C 819          sta (A1L),Y
FF09      820 ;
FF09 20 BA FC 821          jsr NXTA1
FF0C 90 F7 822          bcc ZAPMEM2
FF0E      823 ;
FF0E 60 824 ZAPRTS     rts
FF0F      825 ;
FF0F      826 ;
FF0F C9 EB 827 CHRTBLX2  cmp #$89+$B0^"R"      ; READ command
FF11 F0 EA 828          beq READ
FF13      829 ;
FF13 C9 A0 830          cmp #$89+$B0^"'"      ; APOSTROPHE command
FF15 D0 B7 831          bne CHRTBLX3
FF17      832 ;
FF17 18 833          clc
FF18      834 ;
FF18 08 835 LOOKASC1  php
FF19      836 ;
FF19 B9 00 02 837          lda INPUT,Y
FF1C      838 ;
FF1C C9 8D 839          cmp #RETURN
FF1E F0 0A 840          beq LOOKASC3
FF20      841 ;
FF20 28 842          plp
FF21      843 ;
FF21 B0 02 844          bcs LOOKASC2
FF23      845 ;
FF23 29 7F 846          and #MSBCLR
FF25      847 ;
FF25 A2 07 848 LOOKASC2  ldx #7
FF27      849 ;
FF27 C8 850          iny
FF28 D0 66 851          bne NXTBIT                ; always taken
FF2A      852 ;
FF2A 28 853 LOOKASC3  plp

```

```

FF2B      854 ;
FF2B F0 7A 855      beq GETNUM      ; always taken
FF2D      856 ;
FF2D      857 ;
FF2D      858 ; Print "ERR" and fall into BELL.
FF2D      859 ;
FF2D A9 C5 860 PRERR      lda #"E"
FF2F 20 ED FD 861      jsr COUT
FF32      862 ;
FF32 A9 D2 863      lda #"R"
FF34 20 ED FD 864      jsr COUT
FF37 20 ED FD 865      jsr COUT
FF3A      866 ;
FF3A      867 ;
FF3A A9 87 868 BELL      lda #$87
FF3C      869 ;
FF3C 4C ED FD 870      jmp COUT
FF3F      871 ;
FF3F      872 ;
FF3F      873 ; Restore the 65C02 registers.
FF3F      874 ;
FF3F A5 48 875 RESTORE    lda PREG
FF41 48      876      pha
FF42      877 ;
FF42 A5 45 878      lda AREG
FF44      879 ;
FF44 A6 46 880 RESTR1    ldx XREG
FF46 A4 47 881      ldy YREG
FF48      882 ;
FF48 28      883      plp
FF49      884 ;
FF49 60      885      rts
FF4A      886 ;
FF4A      887 ;
FF4A      888 ; Save the 65C02 registers.
FF4A      889 ;
FF4A 85 45 890 SAVE      sta AREG
FF4C      891 ;
FF4C 86 46 892 SAV1      stx XREG
FF4E 84 47 893      sty YREG
FF50      894 ;
FF50 08      895      php
FF51      896 ;
FF51 68      897      pla
FF52 85 48 898      sta PREG
FF54      899 ;
FF54 BA      900      tsx
FF55 86 49 901      stx SPNT
FF57      902 ;
FF57 D8      903      cld
FF58      904 ;
FF58 60      905 IORTS      rts
FF59      906 ;
FF59      907 ;
FF59 20 08 FB 908 OLDRST    jsr RSETINIT
FF5C      909 ;
FF5C 4C 65 FF 910      jmp MON
FF5F      911 ;
FF5F      912 ;
FF5F C9 9B 913 CHRTBLX1  cmp #$89+$B0^""      ; QUOTE command
FF61 F0 B5 914      beq LOOKASC1

```

```

FF63          915 ;
FF63 D0 AA    916         bne CHRTBLX2          ; always taken
FF65          917 ;
FF65          918 ;
FF65          919 ; Monitor entry point.
FF65          920 ;
FF65 D8       921 MON      cld
FF66          922 ;
FF66 20 3A FF  923         jsr BELL
FF69          924 ;
FF69          925 ;
FF69 A9 AA     926 MONZ     lda #"*"
FF6B 85 33     927         sta PROMPT
FF6D          928 ;
FF6D 20 67 FD  929         jsr GETLNZ
FF70 20 C7 FF  930         jsr ZMODE
FF73          931 ;
FF73 20 A7 FF  932 NXTITM   jsr GETNUM
FF76          933 ;
FF76 84 34     934         sty YSAV
FF78          935 ;
FF78 A0 17     936         ldy #SUBTBL-CHRTBL
FF7A          937 ;
FF7A 88        938 CHRSRCH  dey
FF7B 30 E8     939         bmi MON
FF7D          940 ;
FF7D D9 CC FF  941         cmp CHRTBL,Y
FF80 D0 F8     942         bne CHRSRCH
FF82          943 ;
FF82 20 BE FF  944         jsr TOSUB
FF85          945 ;
FF85 A4 34     946         ldy YSAV          ; process next entry
FF87          947 ;
FF87 4C 73 FF  948         jmp NXTITM
FF8A          949 ;
FF8A          950 ;
FF8A A2 03     951 DIG      ldx #3
FF8C          952 ;
FF8C 0A        953         asl
FF8D 0A        954         asl
FF8E 0A        955         asl
FF8F 0A        956         asl
FF90          957 ;
FF90 0A        958 NXTBIT   asl
FF91          959 ;
FF91 26 3E     960         rol A2L
FF93 26 3F     961         rol A2H
FF95          962 ;
FF95 CA       963         dex
FF96 10 F8     964         bpl NXTBIT
FF98          965 ;
FF98          966 ;
FF98          967 ; If MODE is zero copy A2 to A1 and A3.
FF98          968 ;
FF98 A5 31     969 NXTBAS   lda MODE
FF9A D0 06     970         bne NXTBS2
FF9C          971 ;
FF9C B5 3F     972         lda A2H,X
FF9E 95 3D     973         sta A1H,X
FFA0 95 41     974         sta A3H,X
FFA2          975 ;

```

```

FFA2 E8          976  NXTBS2    inx
FFA3 F0 F3      977          beq NXTBAS
FFA5            978  ;
FFA5 D0 06      979          bne NXTCHR          ; always taken
FFA7            980  ;
FFA7            981  ;
FFA7 A2 00      982  GETNUM    ldx #ZERO
FFA9 86 3E      983          stx A2L
FFAB 86 3F      984          stx A2H
FFAD            985  ;
FFAD 20 FD FC   986  NXTCHR    jsr UPMON
FFB0            987  ;
FFB0 49 B0      988          eor #"0"
FFB2            989  ;
FFB2 C9 0A      990          cmp #10
FFB4 90 D4      991          bcc DIG
FFB6            992  ;
FFB6 69 88      993          adc #$88
FFB8 C9 FA      994          cmp #$FA
FFBA B0 CE      995          bcs DIG
FFBC            996  ;
FFBC 90 A1      997          bcc CHRTBLX1          ; always taken
FFBE            998  ;
FFBE            999  ;
FFBE A9 FE     1000  TOSUB     lda /PAGEFE
FFC0 48         1001          pha
FFC1            1002  ;
FFC1 B9 E3 FF   1003          lda SUBTBL,Y
FFC4 48         1004          pha
FFC5            1005  ;
FFC5 A5 31      1006          lda MODE
FFC7            1007  ;
FFC7            1008  ;
FFC7 A0 00      1009  ZMODE    ldy #ZERO
FFC9 84 31      1010          sty MODE
FFCB            1011  ;
FFCB 60         1012          rts
FFCC            1013  ;
FFCC            1014  ;
FFCC            1015  CHRTBL:
FFCC BC         1016          byt $89+$B0^$83          ; ctrl-C, jmp 0xE003
FFCD B2         1017          byt $89+$B0^$99          ; ctrl-Y, jmp 0x3F8
FFCE BE         1018          byt $89+$B0^$85          ; ctrl-E, display registers
FFCF ED         1019          byt $89+$B0^"T"          ; T, trace
FFD0 EF         1020          byt $89+$B0^"V"          ; V, verify memory
FFD1 C4         1021          byt $89+$B0^$8B          ; ctrl-K, set input device
FFD2 EC         1022          byt $89+$B0^"S"          ; S, step
FFD3 A9         1023          byt $89+$B0^$90          ; ctrl-P, set output device
FFD4 BB         1024          byt $89+$B0^$82          ; ctrl-B, jmp 0xE000
FFD5 A6         1025          byt $89+$B0^"- "         ; -, math operator
FFD6 A4         1026          byt $89+$B0^"+ "         ; +, math operator
FFD7 06         1027          byt $89+$B0^"M"          ; M, move memory
FFD8 95         1028          byt $89+$B0^"<"          ; <, move direction
FFD9 07         1029          byt $89+$B0^"N"          ; N, set normal
FFDA 02         1030          byt $89+$B0^"I"          ; I, set inverse
FFDB 05         1031          byt $89+$B0^"L"          ; L, list memory
FFDC 9A         1032          byt $89+$B0^"! "         ; !, enter mini-assembler
FFDD 00         1033          byt $89+$B0^"G"          ; G, jmp to memory
FFDE F3         1034          byt $89+$B0^"Z"          ; Z, fill memory with value
FFDF 93         1035          byt $89+$B0^": "         ; :, input instruction mode
FFE0 A7         1036          byt $89+$B0^"."          ; ., memory delimiter

```



```

FFE1 C6      1037      byt $89+$B0^$8D      ; CR, carriage return
FFE2 99      1038      byt $89+$B0^" "      ; space, input instruct mode
FFE3        1039      ;
FFE3        1040      ;
FFE3        1041      SUBTBL:
FFE3 B2      1042      byt BASCONT-1      ; ctrl-C <cr>
FFE4 C9      1043      byt USR-1      ; ctrl-Y <cr>
FFE5 BE      1044      byt REGZ-1      ; ctrl-E <cr>
FFE6 C1      1045      byt TRACE-1      ; trace
FFE7 35      1046      byt VFY-1      ; $dst<$strt.$end V <cr>
FFE8 8C      1047      byt INPRT-1      ; #slot ctrl-K <cr>
FFE9 C3      1048      byt STEPZ-1      ; step
FFEA 96      1049      byt OUTPRT-1      ; #slot ctrl-P <cr>
FFEB AF      1050      byt XBASIC-1      ; ctrl-B <cr>
FFEC 17      1051      byt SETMODE-1      ; $val-$val <cr>
FFED 17      1052      byt SETMODE-1      ; $val+$val <cr>
FFEE 2B      1053      byt MOVE-1      ; $dst<$strt.$end M <cr>
FFEF 1F      1054      byt LT-1      ; $dst<$strt ::: <cr>
FFF0 83      1055      byt SETNORM-1      ; N <cr>
FFF1 7F      1056      byt SETINV-1      ; I <cr>
FFF2 5D      1057      byt LIST-1      ; $adr L <cr>
FFF3 F0      1058      byt MINIASM-1      ; mini-assembler
FFF4 B5      1059      byt GO-1      ; $adr G <cr>
FFF5 AD      1060      byt ZAPMEM-1      ; $val<$strt.$end Z <cr>
FFF6 17      1061      byt SETMODE-1      ; $adr:$val ... <cr>
FFF7 17      1062      byt SETMODE-1      ; $strt.$end
FFF8 F5      1063      byt CRMON-1      ; <cr>
FFF9 03      1064      byt BLANK-1      ; <space>
FFFA        1065      ;
FFFA        1066      ;
FFFA FB 03   1067      adr NMIRTN
FFFC 62 FA   1068      adr RESET
FFFE FA C3   1069      adr IRQRTN
0000        1070      ;
0000        1071      ;

```

BSAVE F0ROM,D1,A\$1000,B,L\$1000

```

0000        1072      usr F0ROM,D1
0000        1073      ;
CD D2

0000        1074      dcm "CD D2"
0000        1075      ;
0000        1076      ;
0000        1077      stt "ROM2E Symbol Table"
0000        1078      ;
0000        1079      ;
0000        1080      end 111

```

*** End of Assembly

Symbol List starts at 0x7000, ends at 0xB0B0, used 0x40B0, remaining 0x0448

Symbols unsorted:

LOC0	0000	LOC1	0001	R0L	0000	R0H	0001	R12L	0018
R12H	0019	R14L	001C	R14H	001D	R15L	001E	R15H	001F
ZPG02	0002	ZPG03	0003	ZPG04	0004	ZPG05	0005	ZPG0A	000A
ZPG0B	000B	ZPG0C	000C	ZPG0D	000D	ZPG0E	000E	ZPG0F	000F
ZPG10	0010	ZPG11	0011	ZPG12	0012	ZPG13	0013	ZPG14	0014
ZPG15	0015	ZPG16	0016	SHAPE	001A	HCOLOR1	001C	COUNTH	001D
WNDLFT	0020	WNDWDTH	0021	WNDTOP	0022	WNCBTM	0023	CH	0024
CV	0025	GBASL	0026	GBASH	0027	BASL	0028	BASH	0029
BAS2L	002A	BAS2H	002B	H2	002C	LMNEM	002C	V2	002D
RMNEM	002D	CHKSUM	002E	FORMAT	002E	MASK	002E	LENGTH	002F
LASTIN	002F	SIGN	002F	COLOR	0030	HMASK	0030	MODE	0031
INVFLG	0032	PROMPT	0033	YSAV	0034	YSAV1	0035	CSWL	0036
CSWH	0037	KSWL	0038	KSWH	0039	PCL	003A	PCH	003B
A1L	003C	A1H	003D	A2L	003E	A2H	003F	A3L	0040
A3H	0041	A4L	0042	A4H	0043	A5L	0044	MACSTAT	0044
OPRND	0044	AREG	0045	XREG	0046	YREG	0047	PREG	0048
SPNT	0049	RNDL	004E	RNDH	004F	LINNUM	0050	ACL	0050
ACH	0051	TEMPPT	0052	LASTPT	0053	EL	0054	STRATCH	0055
INDEX	005E	P2	0060	LASTMUL	0062	PRGTAB	0067	VARTAB	0069
ARYTAB	006B	STREND	006D	FRETOP	006F	FRESPC	0071	MEMSIZE	0073
CURLIN	0075	OLDLIN	0077	TEXTPTR	0079	DATLIN	007B	DATPTR	007D
SRCPTR	007F	LASTVBL	0081	ZPG80	0080	VARPNT	0083	FORPNT	0085
GENTEMP	0087	TEMP3	008A	GENTPTR	008C	SPCLFLAG	008F	ZPG8F	008F
ZPG90	0090	ZPG91	0091	ZPG92	0092	TEMP1	0093	HIGHDS	0094
LEN	0094	PROCESS	0095	HIGHTR	0096	TEMP2	0098	LOWTR	009B
DSCTMP	009D	FACMO	00A0	FACSIGN	00A2	ZPGA3	00A3	ZPGA4	00A4
ARGEXP	00A5	ARGMANT	00A6	ARGSGN	00AA	STRNG1	00AB	STRNG2	00AD
PRGEND	00AF	CHRGET	00B1	CHRGOT	00B7	TXTPTR	00B8	FPRAND	00C9
ZPGD0	00D0	ZPGD1	00D1	ZPGD2	00D2	ZPGD3	00D3	ZPGD4	00D4
ZPGD5	00D5	RUNFLAG	00D6	ERRFLG	00D8	ERRLIN	00DA	ERRPOS	00DC
ERRNUM	00DE	ERRSTK	00DF	HRXCOOR	00E0	HRYCOOR	00E2	HRCOLOR	00E4
HRHZNDX	00E5	HPAG	00E6	SCALE	00E7	HRSHPTBL	00E8	HRCOLCNT	00EA
FIRST	00F0	SPDBYT	00F1	ZPGF2	00F2	ORMASK	00F3	X2	00F4
M2	00F5	REMSTK	00F8	M1	00F9	ZPGFF	00FF	HLINMOD	0001
ZERO	0000	AVARLEN	0003	AHDRLN	0005	SVARLEN	0007	MSBCLR	007F
MSBSET	0080	CTRLC	0083	LARROW	0088	DARROW	008A	UARROW	008B
RETURN	008D	CTRLS	0093	RARROW	0095	CTRLX	0098	ESCAPE	009B
SPACE	00A0	LWRMASK	00DF	NEGTWO	00FE	NEGONE	00FF	GOODF8	0006
PWRUPBYT	00A5	PAGESIZE	0100	STACK	0100	INPUT	0200	XFERADR	03ED
BRKADR	03F0	AUTORSET	03F2	PWRSTATE	03F4	AMPERRTN	03F5	CTRLYRTN	03F8
NMIRTN	03FB	IRQADR	03FE	TEXTPG1	0400	PG1TXLOC	05B0	OLDCH	047B
XMODE	04FB	OURCH	057B	OURCV	05FB	CHAR	067B	XCOORD	06FB
XTEMP1	077B	OLDBASL	077B	MSLOT	07F8	XTEMP2	07FB	OLDBASH	07FB
PAGE08	0800	PAGE0C	0C00	PAGE10	1000	PAGEBF	BF00	PAGEC0	C000
PAGEC1	C100	PAGEC8	C800	PAGEF0	F000	PAGEFE	FE00	KEY	C000
STR80OFF	C000	STR80ON	C001	RAMRDOFF	C002	RAMRDON	C003	RAMWROFF	C004
RAMWRON	C005	CXROMOFF	C006	CXROMON	C007	AUXZPOFF	C008	AUXZPON	C009
C3ROMOFF	C00A	C3ROMON	C00B	VID80OFF	C00C	VID80ON	C00D	ALTCHOFF	C00E
ALTCHON	C00F	CLRKEY	C010	RDBANK2	C011	RDLCRAM	C012	RDRAMRD	C013
RDRAMWR	C014	RDCXROM	C015	RDAUXZP	C016	RDC3ROM	C017	RDSTR80	C018
RDVRTBLK	C019	RDTEXT	C01A	RDMIXED	C01B	RDPAGE2	C01C	RDHIRES	C01D
RDALTCH	C01E	RDVID80	C01F	TAPEOUT	C020	SPKR	C030	TEXTOFF	C050
TEXTON	C051	MIXEDOFF	C052	MIXEDON	C053	PAGE1ON	C054	PAGE2ON	C055
HIRESOFF	C056	HIRESON	C057	ANN1OFF	C058	ANN2OFF	C05A	ANN3ON	C05D
ANN4ON	C05F	TAPEIN	C060	PB1IN	C061	PB2IN	C062	GC1IN	C064
GCTOGL	C070	RAM2WP	C080	ROM2WE	C081	ROM2WP	C082	RAM2WE	C083

RAM1WP	C088	RAM1WE	C08B	PAGED0	D000	M.6	0040	M.CTL2	0020
M.4	0010	M.CTL	0008	M.2	0004	M.1	0002	M.MOUSE	0001
M.PASCAL	0080	M.CURSOR	0010	M.GOXY	0008	M.VMODE	0004	M.PAS1.0	0002
IOSPACE	C000	DOCXCMD	C100	XCLREOP	C103	XCLREOP1	C107	XHOME	C119
XSCROLL	C123	XSCRL1	C129	XSCRL2	C13F	XSCRL3	C148	XVTAB0	C14D
XVTAB0Z	C14F	XSETWND	C152	XCLEOLZ	C160	YSCROLL	C165	YCLREOL	C168
YCLEOLZ	C16B	YCLREOP	C170	YSETWND	C173	XRESET	C176	YRESET	C176
YRDKEY	C179	YHOME	C17C	YIOPRT	C18A	XIOPRT	C195	XIOPRT1	C199
XIOPRT2	C19D	ISO	C1A0	XRDKEY	C1A9	XBASCLC	C1B6	XRDESC	C1BD
XNEWVW	C1CF	XGETFMT	C1D5	YGETFMT	C1D5	XGOMINI	C1E1	YGOMINI	C1E1
XPICKFIX	C1E8	YPICKFIX	C1E8	XCLREOL	C1F1	XCLREOLZ	C1F3	XVTAB	C203
CXEXIT	C208	CXEXIT2	C20E	DOCMD	C211	YREGTBLX	C243	YREGTBLY	C24F
XKEYIN	C25B	XSETWNDX	C2A5	XRESETX	C2B5	CXRESET	C2D9	KBDTBL	C2EB
KBDOUT	C2EF	C3SPACE	C300	BASICINT	C300	BASICIN	C305	BASICOUT	C307
AUXMOVE	C311	XFER	C314	BASICENT	C317	JC8	C344	JBASINIT	C347
JPINIT	C34A	JPREAD	C350	JPWRITE	C356	JPSTAT	C35C	SETC8	C36D
DOMOVE	C376	DOXFER	C3C3	IRQDONE	C3F4	IRQRTN	C3FA	IRQFIX	C47C
RAMSWTBL	C4C1	SWTBLEN	0006	FORM2	C4C8	FORM3	C4E5	FORM4	C4E6
FORM5	C4E7	FORM6	C4F5	FORM7	C4FA	GETNSP	C500	CXSTEP	C508
XQINIT	C512	XQ1	C567	XQ2	C569	XJMPX	C575	XRTI	C584
XRTS	C588	PCINC2	C58C	PCINC3	C58E	XJSR	C598	XJMP	C5A3
XJMPAT	C5A4	NEWPCL	C5AC	STEPEXIT	C5B6	BRANCH	C5B9	NBRNCH	C5C7
INITBL	C5CD	INITBLEN	0008	XGETFMT2	C5D5	PROCVAR	C600	PROCSPCL	C64E
SW16	C670	SW16B	C679	SW16C	C67F	SW16D	C685	TOBR	C6A2
TOBR2	C6A8	SETZ	C6B2	SET2	C6C5	RSZ	C6C6	BSNSZ	C6D7
BRTBL	C6E2	OPTBL	C6E3	RTNCMD	C701	SETCMD	C709	RSCMD	C70B
BSNSCMD	C70D	LDCMD	C70F	STCMD	C718	LD@CMD	C721	ST@CMD	C72B
ST@2	C72D	ST@3	C731	INRCMD	C733	INR2	C739	LDD@CMD	C73A
STD@CMD	C743	POP@CMD	C74C	POP@CMD	C753	POP@3	C75E	STP@CMD	C763
ADDCMD	C76C	SUBCMD	C77A	CPRCMD	C77C	CPR2	C788	BSCMD	C790
BRCMD	C79C	BNCCMD	C79D	BR2	C7A4	BRTS	C7AD	BCCMD	C7AE
BPCMD	C7B1	BMCMD	C7B6	BZCMD	C7BB	BNZCMD	C7C2	BM1CMD	C7C9
BNM1CMD	C7D2	SOUTCMD	C7DB	RSNSCMD	C7E0	SJMPCMD	C7E9	DCRCMD	C7F7
DCR2	C7FD	PXINIT	C800	BASCINIT	C803	C3HOOKS	C82A	C3IN	C832
ESCCHAR	C83B	ESCHRLEN	0011	PXREAD	C84D	CSETUP	C850	CXNEWVW	C870
CXNEWVW2	C874	CXVIDCK3	C87C	CXVIDCK4	C87E	CTLON	C8BD	BIORET	C8C5
XINPUT	C8E6	ESCTABL	C96B	STAUX	C97C	CXKEYIN	C993	CXKEYIN2	C999
PXWRITE	C9AA	PINIT1	C9B0	PPINIT	C9B4	PPREAD	C9D6	PPWRITE	C9F0
DOBASL	CA1F	PWRITER	CA29	PRTS	CA2E	TBLC	CA71	TBLL	CA7D
TSTROMCD	CA89	CXRTS3	CA8F	TESTCARD	CA90	XBASCALC	CABA	CTLCHAR0	CAD2
CTLCHAR	CAD6	CXRTS4	CB06	CTLXFER	CB07	PCURON	CB0D	PSAVCUR	CB14
CXRTS5	CB17	PCUROFF	CB18	XBELL	CB21	CXWAIT	CB34	XBS	CB40
XCR	CB51	XEM	CB5F	XFS	CB6B	XUS	CB79	XSO	CB84
XSI	CB8F	CTLADRL	CB9E	CTLADRH	CBB9	SCROLLDN	CBD4	XLF	CBD8
SCROLLUP	CBEB	XVT	CC74	XFF	CC90	XSUB	CC96	XGS	CC9A
XGSEOLZ	CC9D	CLR40	CCA8	CLRHAF	CCB0	CLR80	CCBD	CLR2	CCD5
XDC1	CCEA	XDC1A	CCEF	XDC2	CCFC	DO40	CD2E	SETTOP	CD31
MOUSEOFF	CD3D	MOUSEON	CD44	XNAK	CD4D	SETKEYIN	CD5B	SETCOUT1	CD64
FULL40	CD6D	FULL80	CD71	QUIT	CD80	SCRN84	CD91	SCRN48	CDC4
SCRNRET	CDF8	XVTAB2	CDFE	XVTABZ	CE03	XRDKEYX	CE14	PASINV	CE1F
INVERT	CE26	STORCHAR	CE38	CXRTS6	CE43	PICK	CE44	STORIT	CE70
CXRTS7	CEAC	ESCON	CEB1	ESCOFF	CEC4	ESCRET	CECD	PSETUP	CED4
COPYROM	CEF4	REL	CF3A	REL2	CF46	REL3	CF50	ERR3	CF53
FINDOP	CF55	FINDOP2	CF57	TRYNEXT	CF6B	NEXTOP	CF8B	ERR	CF95
ERR2	CF97	NXTLINE2	CF9C	NXTLIN1	CFAB	ERR4	CFB0	GOTSPACE	CFB8
NXTMN	CFBC	NXTM2	CFCA	FORM8	CFED	FORM9	CFFC	CLRROM	CFFF
HD000	D000	HD0B2	D0B2	HD260	D260	HD350	D350	HD358	D358
HD35D	D35D	HD365	D365	HD36A	D36A	HD37F	D37F	HD38B	D38B
HD392	D392	BLTU	D393	HD39A	D39A	HD3B7	D3B7	HD3C3	D3C3
HD3C7	D3C7	HD3CE	D3CE	HD3D6	D3D6	HD3E3	D3E3	HD3ED	D3ED
HD3F1	D3F1	HD3FC	D3FC	HD40F	D40F	HD410	D410	HD412	D412

HD413	D413	HD419	D419	HD41F	D41F	HD431	D431	HD43C	D43C
HD45C	D45C	HD49F	D49F	HD4A7	D4A7	HD4B5	D4B5	HD4D1	D4D1
HD4EA	D4EA	HD4F2	D4F2	HD4FE	D4FE	HD50F	D50F	HD511	D511
HD52C	D52C	HD52E	D52E	HD539	D539	HD541	D541	HD54C	D54C
HD553	D553	HD559	D559	HD56C	D56C	HD56D	D56D	HD578	D578
HD588	D588	HD590	D590	HD5A2	D5A2	HD5A7	D5A7	HD5A8	D5A8
HD5CB	D5CB	HD5CD	D5CD	HD5E0	D5E0	HD5E2	D5E2	HD5E9	D5E9
HD5F2	D5F2	HD5F9	D5F9	HD5FD	D5FD	HD604	D604	HD610	D610
HD61A	D61A	HD61E	D61E	HD635	D635	HD63E	D63E	HD647	D647
HD648	D648	HD649	D649	HD64B	D64B	HD665	D665	HD66A	D66A
HD66C	D66C	HD683	D683	HD696	D696	HD697	D697	HD6A5	D6A5
HD6B1	D6B1	HD6C4	D6C4	HD6CC	D6CC	HD6DA	D6DA	HD6F5	D6F5
HD6F7	D6F7	HD6FE	D6FE	HD702	D702	HD712	D712	HD724	D724
HD72C	D72C	HD731	D731	HD734	D734	HD746	D746	HD749	D749
HD750	D750	HD755	D755	HD75F	D75F	HD766	D766	HD777	D777
HD7AF	D7AF	HD7C3	D7C3	HD7D2	D7D2	HD7E5	D7E5	HD805	D805
HD81D	D81D	HD826	D826	HD828	D828	HD82A	D82A	HD83F	D83F
HD842	D842	HD846	D846	HD849	D849	HD853	D853	HD857	D857
HD858	D858	HD860	D860	HD863	D863	HD86C	D86C	HD86E	D86E
HD870	D870	HD871	D871	HD888	D888	HD88A	D88A	HD893	D893
HD896	D896	HD8A1	D8A1	HD8AF	D8AF	RD2BIT	D8B7	RDBIT	D8BA
HD8C9	D8C9	HD8ED	D8ED	HD8F0	D8F0	HD901	D901	HD912	D912
HD91B	D91B	HD921	D921	HD935	D935	HD93E	D93E	HD955	D955
HD959	D959	HD96A	D96A	HD96B	D96B	HD97C	D97C	HD981	D981
HD984	D984	HD995	D995	HD998	D998	HD9A2	D9A2	HD9A3	D9A3
HD9A6	D9A6	HD9AE	D9AE	HD9B6	D9B6	HD9C5	D9C5	HD9C9	D9C9
HD9D8	D9D8	HD9DC	D9DC	HD9E1	D9E1	HD9E9	D9E9	HD9EC	D9EC
HD9F4	D9F4	HD9F8	D9F8	HDA00	DA00	HDA0B	DA0B	HDA0C	DA0C
HDA12	DA12	HDA40	DA40	HDA46	DA46	HDA63	DA63	HDA77	DA77
HDA7A	DA7A	HDA7B	DA7B	HDA8C	DA8C	HDA9A	DA9A	HDAA1	DAA1
HDAB7	DAB7	HDACF	DACF	HDAD5	DAD5	HDAD7	DAD7	HDAFB	DAFB
HDB00	DB00	HDB02	DB02	HDB03	DB03	HDB11	DB11	HDB19	DB19
HDB25	DB25	HDB2B	DB2B	HDB2C	DB2C	HDB2F	DB2F	HDB35	DB35
HDB3A	DB3A	HDB3D	DB3D	HDB44	DB44	HDB57	DB57	HDB5A	DB5A
HDB5C	DB5C	HDB64	DB64	HDB71	DB71	HDB7B	DB7B	HDB7F	DB7F
HDB83	DB83	HDB86	DB86	HDB87	DB87	HDB90	DB90	HDBA0	DBA0
HDBB2	DBB2	HDBC4	DBC4	HDBC7	DBC7	HDBDC	DBDC	HDBE2	DBE2
HDBE9	DBE9	HDBEB	DBEB	HDBF1	DBF1	HDC1F	DC1F	HDC27	DC27
HDC2B	DC2B	HDC3F	DC3F	HDC4B	DC4B	HDC4C	DC4C	HDC57	DC57
HDC63	DC63	HDC69	DC69	HDC72	DC72	HDC7E	DC7E	HDC99	DC99
HDCA0	DCA0	HDCB9	DCB9	HDCC6	DCC6	HDCD1	DCD1	HDCDE	DCDE
HDCDF	DCDF	HDCEF	DCEF	HDCF9	DCF9	HDCFF	DCFF	HDD02	DD02
HDD0D	DD0D	HDD0F	DD0F	HDD52	DD52	HDD55	DD55	HDD67	DD67
HDD6A	DD6A	HDD6C	DD6C	HDD6D	DD6D	HDD73	DD73	HDD74	DD74
HDD76	DD76	HDD78	DD78	HDD7B	DD7B	HDD81	DD81	HDD86	DD86
HDD95	DD95	HDD98	DD98	HDDB4	DDB4	HDDC5	DDC5	HDDCD	DDCD
HDDD6	DDD6	HDDD7	DDD7	HDDE4	DDE4	HDDEE	DDEE	HDDF6	DDF6
HDDFD	DDFD	HDE0D	DE0D	HDE10	DE10	HDE15	DE15	HDE20	DE20
HDE35	DE35	HDE38	DE38	HDE3A	DE3A	HDE41	DE41	HDE43	DE43
HDE5D	DE5D	HDE60	DE60	HDE64	DE64	HDE69	DE69	HDE6C	DE6C
HDE81	DE81	HDE8A	DE8A	HDE90	DE90	HDE98	DE98	HDE9F	DE9F
HDEA4	DEA4	HDEAB	DEAB	HDEB2	DEB2	HDEB8	DEB8	HDEBB	DEBB
HDEBE	DEBE	HDEC0	DEC0	HDEC9	DEC9	HDECE	DECE	HDED0	DED0
HDED5	DED5	HDEE5	DEE5	HDEF6	DEF6	HDEF9	DEF9	HDF0C	DF0C
HDF3A	DF3A	HDF3F	DF3F	HDF4F	DF4F	HDF55	DF55	HDF5D	DF5D
HDF60	DF60	HDF65	DF65	HDF7D	DF7D	HDFA5	DFA5	HDFAA	DFAA
HDFB0	DFB0	HDFB5	DFB5	HDFC1	DFC1	HDFCA	DFCA	HDFCD	DFCD
HDFD6	DFD6	HDFD9	DFD9	HDFE3	DFE3	HDFE8	DFE8	HDFEA	DFEA
HDFFF4	DFF4	HDFFF7	DFF7	BASIC	E000	BASIC2	E003	HE007	E007
HE011	E011	HE012	E012	HE01C	E01C	HE026	E026	HE036	E036
HE03D	E03D	HE046	E046	HE049	E049	HE04F	E04F	HE059	E059

HE05B	E05B	HE065	E065	HE073	E073	HE07D	E07D	HE086	E086
HE087	E087	HE09A	E09A	HE09C	E09C	HE0A2	E0A2	HE0B2	E0B2
HE0DE	E0DE	HE0E8	E0E8	HE0ED	E0ED	HE0EF	E0EF	HE0F9	E0F9
HE0FE	E0FE	HE102	E102	EVALEXPR	E105	HE108	E108	HE10C	E10C
HE119	E119	HE11B	E11B	HE11E	E11E	HE12C	E12C	HE169	E169
HE16D	E16D	HE179	E179	HE188	E188	HE196	E196	HE199	E199
HE19B	E19B	HE19E	E19E	HE1AA	E1AA	HE1B8	E1B8	HE1C1	E1C1
HE1D5	E1D5	HE1DE	E1DE	HE1E7	E1E7	HE1F7	E1F7	HE21A	E21A
HE229	E229	HE22E	E22E	HE24B	E24B	HE253	E253	HE269	E269
HE26C	E26C	HE26F	E26F	HE270	E270	HE281	E281	HE292	E292
HE298	E298	HE2AC	E2AC	HE2AD	E2AD	HE2B6	E2B6	HE2C0	E2C0
HE2D9	E2D9	HE2DE	E2DE	HE2E5	E2E5	HE2F2	E2F2	HE2FF	E2FF
HE301	E301	HE306	E306	HE30E	E30E	HE313	E313	HE341	E341
HE354	E354	HE378	E378	HE3A9	E3A9	HE3AF	E3AF	HE3C5	E3C5
HE3D5	E3D5	HE3DD	E3DD	HE3E7	E3E7	HE3ED	E3ED	HE3F7	E3F7
HE404	E404	HE408	E408	HE409	E409	HE415	E415	HE41F	E41F
HE42A	E42A	HE432	E432	HE435	E435	HE452	E452	HE454	E454
HE45F	E45F	HE469	E469	HE474	E474	HE484	E484	CHKVARS	E48D
CHKARRYS	E4C2	GARBEXIT	E501	MOVVARs	E50C	NXTVAR	E567	COPYVAR	E573
DECPTR	E58C	HE597	E597	HE5B7	E5B7	HE5D4	E5D4	HE5E2	E5E2
HE5E6	E5E6	HE5EA	E5EA	HE5F3	E5F3	HE5FC	E5FC	HE5FD	E5FD
HE600	E600	HE604	E604	HE62F	E62F	HE630	E630	HE635	E635
HE645	E645	HE646	E646	HE65A	E65A	HE660	E660	HE666	E666
HE667	E667	HE668	E668	HE67F	E67F	HE686	E686	HE691	E691
HE6A2	E6A2	HE6B9	E6B9	HE6D6	E6D6	HE6DC	E6DC	HE6E5	E6E5
HE6F2	E6F2	HE6F5	E6F5	HE6F8	E6F8	HE6FB	E6FB	HE707	E707
HE70F	E70F	HE727	E727	HE73D	E73D	HE746	E746	HE74C	E74C
HE752	E752	HE764	E764	HE77B	E77B	HE784	E784	HE793	E793
HE797	E797	HE79F	E79F	HE7A0	E7A0	HE7A7	E7A7	HE7AA	E7AA
HE7B9	E7B9	HE7BE	E7BE	HE7C1	E7C1	HE7C6	E7C6	HE7CE	E7CE
HE7EA	E7EA	HE7EE	E7EE	HE7FA	E7FA	HE806	E806	HE829	E829
HE82E	E82E	HE832	E832	HE84E	E84E	HE850	E850	HE852	E852
HE855	E855	HE874	E874	HE880	E880	HE88D	E88D	HE88F	E88F
HE89D	E89D	HE89E	E89E	HE8A4	E8A4	HE8C6	E8C6	HE8D4	E8D4
HE8D5	E8D5	HE8DA	E8DA	HE8DC	E8DC	HE8F0	E8F0	HE8FD	E8FD
HE903	E903	HE907	E907	HE911	E911	HE913	E913	HE918	E918
HE92D	E92D	HE932	E932	HE937	E937	HE93C	E93C	HE941	E941
HE948	E948	HE94B	E94B	HE97F	E97F	HE982	E982	HE987	E987
HE9B0	E9B0	HE9B5	E9B5	HE9B8	E9B8	HE9D4	E9D4	HE9E2	E9E2
HE9E3	E9E3	HEA0E	EA0E	HEA10	EA10	HEA1B	EA1B	HEA26	EA26
HEA2B	EA2B	HEA31	EA31	HEA36	EA36	HEA39	EA39	HEA4F	EA4F
HEA50	EA50	HEA55	EA55	HEA5E	EA5E	HEA60	EA60	HEA66	EA66
HEA69	EA69	HEA80	EA80	HEA96	EA96	HEAA3	EAA3	HEAA6	EAA6
HEAB4	EAB4	HEAD1	EAD1	HEAD5	EAD5	HEAE1	EAE1	HEAE6	EAE6
HEAF9	EAF9	HEB1E	EB1E	HEB21	EB21	HEB27	EB27	HEB2B	EB2B
HEB53	EB53	HEB55	EB55	HEB59	EB59	HEB63	EB63	HEB66	EB66
HEB68	EB68	HEB71	EB71	HEB72	EB72	HEB7A	EB7A	HEB82	EB82
HEB86	EB86	HEB88	EB88	HEB8F	EB8F	HEB90	EB90	HEB93	EB93
HEB9B	EB9B	HEBA0	EBA0	HEBAF	EBAF	HEBB2	EBB2	HEBB4	EBB4
HEBE9	EBE9	HEBEF	EBEF	HEBF2	EBF2	HEC06	EC06	HEC11	EC11
HEC12	EC12	HEC23	EC23	HEC40	EC40	HEC49	EC49	HEC4A	EC4A
HEC4E	EC4E	HEC5D	EC5D	HEC61	EC61	HEC64	EC64	HEC66	EC66
HEC85	EC85	HEC87	EC87	HEC8A	EC8A	HEC8C	EC8C	HEC98	EC98
HEC9E	EC9E	HECA0	ECA0	HECA9	ECA9	HECB2	ECB2	HECB9	ECB9
HECBE	ECBE	HECC1	ECC1	HECC8	ECC8	HECD5	ECD5	HECE8	ECE8
HECF7	ECF7	HED05	ED05	HED0A	ED0A	HED0F	ED0F	HED14	ED14
HED19	ED19	HED24	ED24	HED31	ED31	HED34	ED34	HED36	ED36
HED41	ED41	HED4F	ED4F	HED57	ED57	HED60	ED60	HED62	ED62
HED6D	ED6D	HED78	ED78	HED7F	ED7F	HED86	ED86	HED89	ED89
HED9E	ED9E	HED9F	ED9F	HEDAA	EDAA	HEDBB	EDBB	HEDBD	EDBD
HEDC1	EDC1	HEDE5	EDE5	HEDE7	EDE7	HEDEE	EDEE	HEE09	EE09

HEE19	EE19	HEE26	EE26	HEE36	EE36	HEE42	EE42	HEE57	EE57
HEE5A	EE5A	HEE5F	EE5F	HEE64	EE64	HEE69	EE69	HEE6A	EE6A
HEE6B	EE6B	HEE6C	EE6C	HEE8D	EE8D	HEE97	EE97	HEEA0	EEA0
HEEBA	EEBA	HEED0	EED0	HEEDA	EEDA	HEEDB	EEDB	HEEE0	EEE0
HEF09	EF09	HEF19	EF19	HEF24	EF24	HEF27	EF27	HEF37	EF37
HEF5C	EF5C	HEF72	EF72	HEF76	EF76	HEF85	EF85	HEF89	EF89
HEF96	EF96	HEFA5	EFA5	HEFA6	EFA6	HEFAA	EFAA	HEFAE	EFAE
HEFCC	EFCC	HEFE7	EFE7	HEFEA	EFEA	HEFF1	EFF1	HF023	F023
HF026	F026	HF033	F033	HF03A	F03A	HF062	F062	HF066	F066
HF06B	F06B	HF070	F070	HF075	F075	HF09E	F09E	HF0A6	F0A6
HF0B4	F0B4	HF0C7	F0C7	HF0CD	F0CD	HF0CE	F0CE	HF10A	F10A
HF10B	F10B	HF111	F111	HF122	F122	HF128	F128	HF152	F152
HF181	F181	HF195	F195	HF1B8	F1B8	HF1D5	F1D5	HF1DE	F1DE
HF1E5	F1E5	HF1EC	F1EC	HF206	F206	HF209	F209	HF218	F218
HF225	F225	HF232	F232	HF241	F241	HF24F	F24F	HF256	F256
HF262	F262	HF26D	F26D	HF26F	F26F	HF273	F273	HF277	F277
HF279	F279	HF27B	F27B	HF280	F280	HF286	F286	HF296	F296
HF299	F299	HF2A6	F2A6	HF2CB	F2CB	HF2E9	F2E9	HF318	F318
HF32E	F32E	HF331	F331	HF357	F357	HF365	F365	HF367	F367
HF371	F371	HF377	F377	HF388	F388	HF390	F390	HF399	F399
CXREAD	F39F	RD2	F3B1	RD3	F3BD	HF3D8	F3D8	HF3E2	F3E2
HF3EA	F3EA	HF3FE	F3FE	HF411	F411	HF441	F441	HF442	F442
HPLOT	F457	HF465	F465	HF46E	F46E	HF471	F471	HF476	F476
HF478	F478	HF47E	F47E	HF489	F489	HF48A	F48A	HF49C	F49C
HF49D	F49D	HF4B3	F4B3	HF4B4	F4B4	HF4C4	F4C4	HF4C8	F4C8
HF4CC	F4CC	HF4D3	F4D3	HF4EB	F4EB	HF4F6	F4F6	HF4FB	F4FB
HF4FD	F4FD	HF4FF	F4FF	HF501	F501	HF505	F505	HF507	F507
HF524	F524	HF52A	F52A	HF52C	F52C	HLIN	F53A	HF550	F550
HF568	F568	HF57C	F57C	HF580	F580	HF58B	F58B	HF59E	F59E
BITABLE	F5B2	HF5B9	F5B9	HF5BA	F5BA	HF5BB	F5BB	HF5F0	F5F0
HF5FE	F5FE	HF600	F600	HF605	F605	HF626	F626	HF630	F630
HF63D	F63D	HF648	F648	HF658	F658	HF661	F661	HF682	F682
HF68C	F68C	HF699	F699	HF6A4	F6A4	HF6B4	F6B4	HF6B9	F6B9
HF6CD	F6CD	HF6E6	F6E6	HF6E9	F6E9	HF6F5	F6F5	HF6F6	F6F6
HF6FE	F6FE	HF708	F708	HF70F	F70F	HF721	F721	HF727	F727
HF72D	F72D	HF741	F741	HF747	F747	HF766	F766	HF769	F769
HF76F	F76F	RDBYTE	F775	RDBYT2	F777	HF787	F787	HF78C	F78C
HF79A	F79A	HF79D	F79D	HF7A4	F7A4	HF7A6	F7A6	HF7AA	F7AA
HF7B4	F7B4	HF7C2	F7C2	HF7C3	F7C3	HF7CA	F7CA	HF7D0	F7D0
HF7D1	F7D1	TITLE	F7D9	TITLEN	000A	DELTITLE	001C	OFFTITLE	000E
HF7E7	F7E7	HF7EB	F7EB	HF7F3	F7F3	F8SPACE	F800	PLOT	F800
RTMASK	F80C	PLOT1	F80E	HLINE	F819	HLINE1	F81C	VLINER	F826
VLINER	F828	RTS1	F831	CLRSCR	F832	CLRTOP	F836	CLRSC2	F838
CLRSC3	F83C	GBASCALC	F847	GBCLAC	F856	NXTCOL	F85F	SETCOL	F864
SCRN	F871	SCRN2	F879	RTMSKZ	F87F	INSDS1	F882	INSDS2	F88E
IEVEN	F897	ERROR	F8A1	GETFMT	F8A5	TESTROM	F8B6	INSTDSP	F8D0
PRNTOP	F8D4	PRNTBL	F8DB	PRMN1	F8F5	PRMN2	F8F9	PRADR1	F910
PRADR2	F914	PRADR3	F926	PRADR4	F92A	PRADR5	F930	RELADR	F938
PRNTYX	F940	PRNTAX	F941	PRNTX	F944	PRBLNK	F948	PRBL2	F94A
PRBL3	F94C	PCADJ	F953	PCADJ2	F954	PCADJ3	F956	PCADJ4	F95C
RTS2	F961	FMT1	F962	MNEML	F9A6	MNEMR	F9EB	CHAR1	FA30
CHAR2	FA36	CXOFF	FA3C	CXRTN	FA3F	OLDIRQ	FA40	NEWBREAK	FA47
BREAK	FA4C	OLDBRK	FA59	RESET	FA62	SWEET16	FA72	SW16RTN	FA78
RESET1	FA7E	NEWMON	FA81	FIXSEV	FA9B	NOFIX	FAA3	PWRUP	FAA6
SETPG3	FAA9	SETPLP	FAAB	SLOOP	FABA	NXTBYT	FAC7	REGDSP	FAD7
REGDSP1	FADA	RDSP1	FAE4	PWRCON	FAFD	PWRCONLN	0005	DISKID	FB02
DISKIDLN	0006	RSETINIT	FB08	XLTBL	FB14	RTBL	FB19	RTBLN	0005
PREAD	FB1E	PREAD2	FB25	RTS2D	FB2E	INIT	FB2F	SETTXT	FB39
SETGR	FB40	SETWND	FB4B	TABV	FB5B	APPLE2	FB60	STITLE	FB65
SETPWRC	FB6F	VIDWAIT	FB78	KBDWAIT	FB88	NOWAIT	FB94	ESCOLD	FB97
ESCNOW	FB9B	ESCNEW	FBA5	ROMSIG	FBB3	GOTOROM	FBB4	SIGBYTE	FBC0

BASCALC	FBC1	FMT2	FBC7	BELL1	FBD9	BELL2	FBE4	RTS2B	FBEF
STORADV	FBF0	ADVANCE	FBF4	RTS3	FBFC	VIDOUT	FBFD	BS	FC10
UP	FC1A	VTAB	FC22	VTABZ	FC24	ESC1	FC2C	CLREOP	FC42
NEWVW	FC46	NEWVW1	FC4F	HOME	FC58	GOTOROM1	FC5A	STEPRTN2	FC5F
CR	FC62	LF	FC66	SCROLL	FC70	GOTOIRQ	FC74	IRQDONE2	FC7A
IRQNOSLT	FC8F	CHKINV	FC95	CHKINV1	FC99	CLREOL	FC9C	CLEOLZ	FC9E
WAIT	FCA8	WAIT2	FCA9	WAIT3	FCAA	NXTA4	FCB4	NXTA1	FCBA
RTS4B	FCC8	HEADR	FCC9	STEPRTN	FCCA	ERR2A	FCD2	FINDOP3	FCE3
NXTLINE	FCF0	UPMON	FCFD	UPRCASE	FD01	UPMON2	FD0B	RDKEY	FD0C
FDIO	FD10	RDKEY1	FD13	RDKEY2	FD18	KEYIN	FD1B	GOTOROM4	FD1D
RDESC	FD21	NEWRDKEY	FD28	ESC	FD2F	RDCHAR	FD35	PICKFIX	FD3D
NOTCR	FD47	NOTCR1	FD5F	CANCEL	FD62	GETLNZ	FD67	GETLN	FD6A
BCKSPC	FD71	NXTCHAR	FD75	ADDINP	FD84	CROUT	FD8E	PRA1	FD92
PRXY2	FD96	XAM8	FDA3	MOD8CHK	FDAD	XAM	FDB3	DATAOUT	FDB6
XAMPM	FDC6	ADD	FDD1	PRBYTE	FDDA	PRHEX	FDE3	PRHEXZ	FDE5
COUT	FDED	COUT1	FDF0	COUTZ	FDF6	COUTZ1	FDF7	BL1	FE00
BLANK	FE04	STOR	FE0B	STOR2	FE0F	NXTA3	FE11	RTS5	FE17
SETMODE	FE18	SETMDZ	FE1D	LT	FE20	LT2	FE22	MOVE	FE2C
VFY	FE36	VFYOK	FE58	LIST	FE5E	LIST2	FE63	A1PC	FE75
A1PCLP	FE78	A1PCRTS	FE7F	SETINV	FE80	SETNORM	FE84	SETIFLG	FE86
SETKBD	FE89	INPORT	FE8B	INPRT	FE8D	SETVID	FE93	OUTPORT	FE95
OUTPRT	FE97	IOPRT	FE9B	IOPRT1	FEA5	ZAPMEM	FEAE	XBASIC	FEB0
BASCONT	FEB3	GO	FEB6	REGZ	FEBF	TRACE	FEC2	STEPZ	FEC4
USR	FECA	CHRTBLX3	FECE	SEARCH	FED2	SEARCH1	FEDC	SEARCH2	FEE6
SEARCH3	FEEB	MINIASM	FEF1	CRMON	FEF6	CRMON1	FEF9	READ	FEFD
ZAPMEM2	FF05	ZAPRTS	FF0E	CHRTBLX2	FF0F	LOOKASC1	FF18	LOOKASC2	FF25
LOOKASC3	FF2A	PRERR	FF2D	BELL	FF3A	RESTORE	FF3F	RESTR1	FF44
SAVE	FF4A	SAV1	FF4C	IORTS	FF58	OLDRST	FF59	CHRTBLX1	FF5F
MON	FF65	MONZ	FF69	NXTITM	FF73	CHRSRCH	FF7A	DIG	FF8A
NXTBIT	FF90	NXTBAS	FF98	NXTBS2	FFA2	GETNUM	FFA7	NXTCHR	FFAD
TOSUB	FFBE	ZMODE	FFC7	CHRTBL	FFCC	SUBTBL	FFE3		

Symbols alphabetically sorted:

A1H	003D	A1L	003C	A1PC	FE75	A1PCLP	FE78	A1PCRTS	FE7F
A2H	003F	A2L	003E	A3H	0041	A3L	0040	A4H	0043
A4L	0042	A5L	0044	ACH	0051	ACL	0050	ADD	FDD1
ADDCMD	C76C	ADDINP	FD84	ADVANCE	FBF4	AHDLLEN	0005	ALTCHOFF	C00E
ALTCHON	C00F	AMPERRTN	03F5	ANN1OFF	C058	ANN2OFF	C05A	ANN3ON	C05D
ANN4ON	C05F	APPLE2	FB60	AREG	0045	ARGEXP	00A5	ARGMANT	00A6
ARGSGN	00AA	ARYTAB	006B	AUTORSET	03F2	AUXMOVE	C311	AUXZPOFF	C008
AUXZPON	C009	AVARLEN	0003	BAS2H	002B	BAS2L	002A	BASCALC	FBC1
BASCINIT	C803	BASCONT	FEB3	BASH	0029	BASIC	E000	BASIC2	E003
BASICENT	C317	BASICIN	C305	BASICINT	C300	BASICOUT	C307	BASL	0028
BCCMD	C7AE	BCKSPC	FD71	BELL	FF3A	BELL1	FBD9	BELL2	FBE4
BIORET	C8C5	BITABLE	F5B2	BL1	FE00	BLANK	FE04	BLTU	D393
BM1CMD	C7C9	BMCMD	C7B6	BNCCMD	C79D	BNM1CMD	C7D2	BNZCMD	C7C2
BPCMD	C7B1	BR2	C7A4	BRANCH	C5B9	BRCMD	C79C	BREAK	FA4C
BRKADR	03F0	BRTBL	C6E2	BRTS	C7AD	BS	FC10	BSCMD	C790
BSNSCMD	C70D	BSNSZ	C6D7	BZCMD	C7BB	C3HOOKS	C82A	C3IN	C832
C3ROMOFF	C00A	C3ROMON	C00B	C3SPACE	C300	CANCEL	FD62	CH	0024
CHAR	067B	CHAR1	FA30	CHAR2	FA36	CHKARRYS	E4C2	CHKINV	FC95
CHKINV1	FC99	CHKSUM	002E	CHKVARS	E48D	CHRGET	00B1	CHRGOT	00B7
CHRSRCH	FF7A	CHRTBL	FFCC	CHRTBLX1	FF5F	CHRTBLX2	FF0F	CHRTBLX3	FECE
CLEOLZ	FC9E	CLR2	CCD5	CLR40	CCA8	CLR80	CCBD	CLREOL	FC9C
CLREOP	FC42	CLRHAF	CCB0	CLRKEY	C010	CLRROM	CFFF	CLRSC2	F838
CLRSC3	F83C	CLRSCR	F832	CLRTOP	F836	COLOR	0030	COPYROM	CEF4
COPYVAR	E573	COUNTH	001D	COUT	FDED	COUT1	FDF0	COUTZ	FDF6
COUTZ1	FDF7	CPR2	C788	CPRCMD	C77C	CR	FC62	CRMON	FEF6
CRMON1	FEF9	CROUT	FD8E	CSETUP	C850	CSWH	0037	CSWL	0036

CTLADRH	CBB9	CTLADRL	CB9E	CTLCHAR	CAD6	CTLCHAR0	CAD2	CTLON	C8BD
CTLXFER	CB07	CTRLC	0083	CTRLS	0093	CTRLX	0098	CTRLYRTN	03F8
CURLIN	0075	CV	0025	CXEXIT	C208	CXEXIT2	C20E	CXKEYIN	C993
CXKEYIN2	C999	CXNEWVW	C870	CXNEWVW2	C874	CXOFF	FA3C	CXREAD	F39F
CXRESET	C2D9	CXROMOFF	C006	CXROMON	C007	CXRTN	FA3F	CXRTS3	CA8F
CXRTS4	CB06	CXRTS5	CB17	CXRTS6	CE43	CXRTS7	CEAC	CXSTEP	C508
CXVIDCK3	C87C	CXVIDCK4	C87E	CXWAIT	CB34	DARROW	008A	DATAOUT	FDB6
DATLIN	007B	DATPTR	007D	DCR2	C7FD	DCRCMD	C7F7	DECPTR	E58C
DELTITLE	001C	DIG	FF8A	DISKID	FB02	DISKIDLN	0006	DO40	CD2E
DOBASL	CA1F	DOCMD	C211	DOCXCMD	C100	DOMOVE	C376	DOXFER	C3C3
DSCTMP	009D	EL	0054	ERR	CF95	ERR2	CF97	ERR2A	FCD2
ERR3	CF53	ERR4	CFB0	ERRFLG	00D8	ERRLIN	00DA	ERRNUM	00DE
ERROR	F8A1	ERRPOS	00DC	ERRSTK	00DF	ESC	FD2F	ESC1	FC2C
ESCAPE	009B	ESCCHAR	C83B	ESCHRLN	0011	ESCNEW	FBA5	ESCNOW	FB9B
ESCOFF	CEC4	ESCOLD	FB97	ESCON	CEB1	ESCRET	CECD	ESCTABL	C96B
EVALEXPR	E105	F8SPACE	F800	FACMO	00A0	FACSIGN	00A2	FDIO	FD10
FINDOP	CF55	FINDOP2	CF57	FINDOP3	FCE3	FIRST	00F0	FIXSEV	FA9B
FMT1	F962	FMT2	FBC7	FORM2	C4C8	FORM3	C4E5	FORM4	C4E6
FORM5	C4E7	FORM6	C4F5	FORM7	C4FA	FORM8	CFED	FORM9	CFFC
FORMAT	002E	FORPNT	0085	FPRAND	00C9	FRESPEC	0071	FRETOP	006F
FULL40	CD6D	FULL80	CD71	GARBEXIT	E501	GBASCALC	F847	GBASH	0027
GBASL	0026	GBCLAC	F856	GC1IN	C064	GCTOGL	C070	GENTEMP	0087
GENTPTR	008C	GETFMT	F8A5	GETLN	FD6A	GETLNZ	FD67	GETNSP	C500
GETNUM	FFA7	GO	FEB6	GOODF8	0006	GOTOIRQ	FC74	GOTOROM	FBB4
GOTOROM1	FC5A	GOTOROM4	FD1D	GOTSPACE	CFB8	H2	002C	HCOLOR1	001C
HD000	D000	HD0B2	D0B2	HD260	D260	HD350	D350	HD358	D358
HD35D	D35D	HD365	D365	HD36A	D36A	HD37F	D37F	HD38B	D38B
HD392	D392	HD39A	D39A	HD3B7	D3B7	HD3C3	D3C3	HD3C7	D3C7
HD3CE	D3CE	HD3D6	D3D6	HD3E3	D3E3	HD3ED	D3ED	HD3F1	D3F1
HD3FC	D3FC	HD40F	D40F	HD410	D410	HD412	D412	HD413	D413
HD419	D419	HD41F	D41F	HD431	D431	HD43C	D43C	HD45C	D45C
HD49F	D49F	HD4A7	D4A7	HD4B5	D4B5	HD4D1	D4D1	HD4EA	D4EA
HD4F2	D4F2	HD4FE	D4FE	HD50F	D50F	HD511	D511	HD52C	D52C
HD52E	D52E	HD539	D539	HD541	D541	HD54C	D54C	HD553	D553
HD559	D559	HD56C	D56C	HD56D	D56D	HD578	D578	HD588	D588
HD590	D590	HD5A2	D5A2	HD5A7	D5A7	HD5A8	D5A8	HD5CB	D5CB
HD5CD	D5CD	HD5E0	D5E0	HD5E2	D5E2	HD5E9	D5E9	HD5F2	D5F2
HD5F9	D5F9	HD5FD	D5FD	HD604	D604	HD610	D610	HD61A	D61A
HD61E	D61E	HD635	D635	HD63E	D63E	HD647	D647	HD648	D648
HD649	D649	HD64B	D64B	HD665	D665	HD66A	D66A	HD66C	D66C
HD683	D683	HD696	D696	HD697	D697	HD6A5	D6A5	HD6B1	D6B1
HD6C4	D6C4	HD6CC	D6CC	HD6DA	D6DA	HD6F5	D6F5	HD6F7	D6F7
HD6FE	D6FE	HD702	D702	HD712	D712	HD724	D724	HD72C	D72C
HD731	D731	HD734	D734	HD746	D746	HD749	D749	HD750	D750
HD755	D755	HD75F	D75F	HD766	D766	HD777	D777	HD7AF	D7AF
HD7C3	D7C3	HD7D2	D7D2	HD7E5	D7E5	HD805	D805	HD81D	D81D
HD826	D826	HD828	D828	HD82A	D82A	HD83F	D83F	HD842	D842
HD846	D846	HD849	D849	HD853	D853	HD857	D857	HD858	D858
HD860	D860	HD863	D863	HD86C	D86C	HD86E	D86E	HD870	D870
HD871	D871	HD888	D888	HD88A	D88A	HD893	D893	HD896	D896
HD8A1	D8A1	HD8AF	D8AF	HD8C9	D8C9	HD8ED	D8ED	HD8F0	D8F0
HD901	D901	HD912	D912	HD91B	D91B	HD921	D921	HD935	D935
HD93E	D93E	HD955	D955	HD959	D959	HD96A	D96A	HD96B	D96B
HD97C	D97C	HD981	D981	HD984	D984	HD995	D995	HD998	D998
HD9A2	D9A2	HD9A3	D9A3	HD9A6	D9A6	HD9AE	D9AE	HD9B6	D9B6
HD9C5	D9C5	HD9C9	D9C9	HD9D8	D9D8	HD9DC	D9DC	HD9E1	D9E1
HD9E9	D9E9	HD9EC	D9EC	HD9F4	D9F4	HD9F8	D9F8	HDA00	DA00
HDA0B	DA0B	HDA0C	DA0C	HDA12	DA12	HDA40	DA40	HDA46	DA46
HDA63	DA63	HDA77	DA77	HDA7A	DA7A	HDA7B	DA7B	HDA8C	DA8C
HDA9A	DA9A	HDAA1	DAA1	HDAB7	DAB7	HDACF	DACF	HDAD5	DAD5
HDAD7	DAD7	HDAFB	DAFB	HDB00	DB00	HDB02	DB02	HDB03	DB03

HDB11	DB11	HDB19	DB19	HDB25	DB25	HDB2B	DB2B	HDB2C	DB2C
HDB2F	DB2F	HDB35	DB35	HDB3A	DB3A	HDB3D	DB3D	HDB44	DB44
HDB57	DB57	HDB5A	DB5A	HDB5C	DB5C	HDB64	DB64	HDB71	DB71
HDB7B	DB7B	HDB7F	DB7F	HDB83	DB83	HDB86	DB86	HDB87	DB87
HDB90	DB90	HDBA0	DBA0	HDBB2	DBB2	HDBC4	DBC4	HDBC7	DBC7
HDBDC	DBDC	HDBE2	DBE2	HDBE9	DBE9	HDBEB	DBEB	HDBF1	DBF1
HDC1F	DC1F	HDC27	DC27	HDC2B	DC2B	HDC3F	DC3F	HDC4B	DC4B
HDC4C	DC4C	HDC57	DC57	HDC63	DC63	HDC69	DC69	HDC72	DC72
HDC7E	DC7E	HDC99	DC99	HDCA0	DCA0	HDCB9	DCB9	HDCC6	DCC6
HDCD1	DCD1	HDCDE	DCDE	HDCDF	DCDF	HDCEF	DCEF	HDCF9	DCF9
HDCFF	DCFF	HDD02	DD02	HDD0D	DD0D	HDD0F	DD0F	HDD52	DD52
HDD55	DD55	HDD67	DD67	HDD6A	DD6A	HDD6C	DD6C	HDD6D	DD6D
HDD73	DD73	HDD74	DD74	HDD76	DD76	HDD78	DD78	HDD7B	DD7B
HDD81	DD81	HDD86	DD86	HDD95	DD95	HDD98	DD98	HDDB4	DDDB4
HDDC5	DDC5	HDDCD	DDCD	HDDD6	DDD6	HDDD7	DDD7	HDDE4	DDE4
HDDEE	DDEE	HDDEF6	DDF6	HDDEFD	DDFD	HDE0D	DE0D	HDE10	DE10
HDE15	DE15	HDE20	DE20	HDE35	DE35	HDE38	DE38	HDE3A	DE3A
HDE41	DE41	HDE43	DE43	HDE5D	DE5D	HDE60	DE60	HDE64	DE64
HDE69	DE69	HDE6C	DE6C	HDE81	DE81	HDE8A	DE8A	HDE90	DE90
HDE98	DE98	HDE9F	DE9F	HDEA4	DEA4	HDEAB	DEAB	HDEB2	DEB2
HDEB8	DEB8	HDEBB	DEBB	HDEBE	DEBE	HDEC0	DEC0	HDEC9	DEC9
HDECE	DECE	HDED0	DED0	HDED5	DED5	HDEE5	DEE5	HDEF6	DEF6
HDEF9	DEF9	HDF0C	DF0C	HDF3A	DF3A	HDF3F	DF3F	HDF4F	DF4F
HDF55	DF55	HDF5D	DF5D	HDF60	DF60	HDF65	DF65	HDF7D	DF7D
HDFA5	DFA5	HDFAA	DFAA	HDFB0	DFB0	HDFB5	DFB5	HDFC1	DFC1
HDFCA	DFCA	HDFFCD	DFCD	HDFD6	DFD6	HDFFD9	DFD9	HDFF3	DFE3
HDFF8	DFE8	HDFFA	DFEA	HDFF4	DFE4	HDFF7	DFE7	HE007	E007
HE011	E011	HE012	E012	HE01C	E01C	HE026	E026	HE036	E036
HE03D	E03D	HE046	E046	HE049	E049	HE04F	E04F	HE059	E059
HE05B	E05B	HE065	E065	HE073	E073	HE07D	E07D	HE086	E086
HE087	E087	HE09A	E09A	HE09C	E09C	HE0A2	E0A2	HE0B2	E0B2
HE0DE	E0DE	HE0E8	E0E8	HE0ED	E0ED	HE0EF	E0EF	HE0F9	E0F9
HE0FE	E0FE	HE102	E102	HE108	E108	HE10C	E10C	HE119	E119
HE11B	E11B	HE11E	E11E	HE12C	E12C	HE169	E169	HE16D	E16D
HE179	E179	HE188	E188	HE196	E196	HE199	E199	HE19B	E19B
HE19E	E19E	HE1AA	E1AA	HE1B8	E1B8	HE1C1	E1C1	HE1D5	E1D5
HE1DE	E1DE	HE1E7	E1E7	HE1F7	E1F7	HE21A	E21A	HE229	E229
HE22E	E22E	HE24B	E24B	HE253	E253	HE269	E269	HE26C	E26C
HE26F	E26F	HE270	E270	HE281	E281	HE292	E292	HE298	E298
HE2AC	E2AC	HE2AD	E2AD	HE2B6	E2B6	HE2C0	E2C0	HE2D9	E2D9
HE2DE	E2DE	HE2E5	E2E5	HE2F2	E2F2	HE2FF	E2FF	HE301	E301
HE306	E306	HE30E	E30E	HE313	E313	HE341	E341	HE354	E354
HE378	E378	HE3A9	E3A9	HE3AF	E3AF	HE3C5	E3C5	HE3D5	E3D5
HE3DD	E3DD	HE3E7	E3E7	HE3ED	E3ED	HE3F7	E3F7	HE404	E404
HE408	E408	HE409	E409	HE415	E415	HE41F	E41F	HE42A	E42A
HE432	E432	HE435	E435	HE452	E452	HE454	E454	HE45F	E45F
HE469	E469	HE474	E474	HE484	E484	HE597	E597	HE5B7	E5B7
HE5D4	E5D4	HE5E2	E5E2	HE5E6	E5E6	HE5EA	E5EA	HE5F3	E5F3
HE5FC	E5FC	HE5FD	E5FD	HE600	E600	HE604	E604	HE62F	E62F
HE630	E630	HE635	E635	HE645	E645	HE646	E646	HE65A	E65A
HE660	E660	HE666	E666	HE667	E667	HE668	E668	HE67F	E67F
HE686	E686	HE691	E691	HE6A2	E6A2	HE6B9	E6B9	HE6D6	E6D6
HE6DC	E6DC	HE6E5	E6E5	HE6F2	E6F2	HE6F5	E6F5	HE6F8	E6F8
HE6FB	E6FB	HE707	E707	HE70F	E70F	HE727	E727	HE73D	E73D
HE746	E746	HE74C	E74C	HE752	E752	HE764	E764	HE77B	E77B
HE784	E784	HE793	E793	HE797	E797	HE79F	E79F	HE7A0	E7A0
HE7A7	E7A7	HE7AA	E7AA	HE7B9	E7B9	HE7BE	E7BE	HE7C1	E7C1
HE7C6	E7C6	HE7CE	E7CE	HE7EA	E7EA	HE7EE	E7EE	HE7FA	E7FA
HE806	E806	HE829	E829	HE82E	E82E	HE832	E832	HE84E	E84E
HE850	E850	HE852	E852	HE855	E855	HE874	E874	HE880	E880
HE88D	E88D	HE88F	E88F	HE89D	E89D	HE89E	E89E	HE8A4	E8A4

HE8C6	E8C6	HE8D4	E8D4	HE8D5	E8D5	HE8DA	E8DA	HE8DC	E8DC
HE8F0	E8F0	HE8FD	E8FD	HE903	E903	HE907	E907	HE911	E911
HE913	E913	HE918	E918	HE92D	E92D	HE932	E932	HE937	E937
HE93C	E93C	HE941	E941	HE948	E948	HE94B	E94B	HE97F	E97F
HE982	E982	HE987	E987	HE9B0	E9B0	HE9B5	E9B5	HE9B8	E9B8
HE9D4	E9D4	HE9E2	E9E2	HE9E3	E9E3	HEA0E	EA0E	HEA10	EA10
HEA1B	EA1B	HEA26	EA26	HEA2B	EA2B	HEA31	EA31	HEA36	EA36
HEA39	EA39	HEA4F	EA4F	HEA50	EA50	HEA55	EA55	HEA5E	EA5E
HEA60	EA60	HEA66	EA66	HEA69	EA69	HEA80	EA80	HEA96	EA96
HEAA3	EAA3	HEAA6	EAA6	HEAB4	EAB4	HEAD1	EAD1	HEAD5	EAD5
HEADR	FCC9	HEAE1	EAE1	HEAE6	EAE6	HEAF9	EAF9	HEB1E	EB1E
HEB21	EB21	HEB27	EB27	HEB2B	EB2B	HEB53	EB53	HEB55	EB55
HEB59	EB59	HEB63	EB63	HEB66	EB66	HEB68	EB68	HEB71	EB71
HEB72	EB72	HEB7A	EB7A	HEB82	EB82	HEB86	EB86	HEB88	EB88
HEB8F	EB8F	HEB90	EB90	HEB93	EB93	HEB9B	EB9B	HEBA0	EBA0
HEBAF	EBAF	HEBB2	EBB2	HEBB4	EBB4	HEBE9	EBE9	HEBEF	EBEF
HEBF2	EBF2	HEC06	EC06	HEC11	EC11	HEC12	EC12	HEC23	EC23
HEC40	EC40	HEC49	EC49	HEC4A	EC4A	HEC4E	EC4E	HEC5D	EC5D
HEC61	EC61	HEC64	EC64	HEC66	EC66	HEC85	EC85	HEC87	EC87
HEC8A	EC8A	HEC8C	EC8C	HEC98	EC98	HEC9E	EC9E	HECA0	ECA0
HECA9	ECA9	HECB2	ECB2	HECB9	ECB9	HECBE	ECBE	HECC1	ECC1
HECC8	ECC8	HECD5	ECD5	HECE8	ECE8	HECF7	ECF7	HED05	ED05
HED0A	ED0A	HED0F	ED0F	HED14	ED14	HED19	ED19	HED24	ED24
HED31	ED31	HED34	ED34	HED36	ED36	HED41	ED41	HED4F	ED4F
HED57	ED57	HED60	ED60	HED62	ED62	HED6D	ED6D	HED78	ED78
HED7F	ED7F	HED86	ED86	HED89	ED89	HED9E	ED9E	HED9F	ED9F
HEDAA	EDAA	HEDBB	EDBB	HEDBD	EDBD	HEDC1	EDC1	HEDE5	EDE5
HEDE7	EDE7	HEDEE	EDEE	HEE09	EE09	HEE19	EE19	HEE26	EE26
HEE36	EE36	HEE42	EE42	HEE57	EE57	HEE5A	EE5A	HEE5F	EE5F
HEE64	EE64	HEE69	EE69	HEE6A	EE6A	HEE6B	EE6B	HEE6C	EE6C
HEE8D	EE8D	HEE97	EE97	HEEA0	EEA0	HEEBA	EEBA	HEED0	EED0
HEEDA	EEDA	HEEDB	EEDB	HEEE0	EEE0	HEF09	EF09	HEF19	EF19
HEF24	EF24	HEF27	EF27	HEF37	EF37	HEF5C	EF5C	HEF72	EF72
HEF76	EF76	HEF85	EF85	HEF89	EF89	HEF96	EF96	HEFA5	EFA5
HEFA6	EFA6	HEFAA	EFAA	HEFAE	EFAE	HEFCC	EFCC	HEFE7	EFE7
HEFEA	EFEA	HEFF1	EFF1	HF023	F023	HF026	F026	HF033	F033
HF03A	F03A	HF062	F062	HF066	F066	HF06B	F06B	HF070	F070
HF075	F075	HF09E	F09E	HF0A6	F0A6	HF0B4	F0B4	HF0C7	F0C7
HF0CD	F0CD	HF0CE	F0CE	HF10A	F10A	HF10B	F10B	HF111	F111
HF122	F122	HF128	F128	HF152	F152	HF181	F181	HF195	F195
HF1B8	F1B8	HF1D5	F1D5	HF1DE	F1DE	HF1E5	F1E5	HF1EC	F1EC
HF206	F206	HF209	F209	HF218	F218	HF225	F225	HF232	F232
HF241	F241	HF24F	F24F	HF256	F256	HF262	F262	HF26D	F26D
HF26F	F26F	HF273	F273	HF277	F277	HF279	F279	HF27B	F27B
HF280	F280	HF286	F286	HF296	F296	HF299	F299	HF2A6	F2A6
HF2CB	F2CB	HF2E9	F2E9	HF318	F318	HF32E	F32E	HF331	F331
HF357	F357	HF365	F365	HF367	F367	HF371	F371	HF377	F377
HF388	F388	HF390	F390	HF399	F399	HF3D8	F3D8	HF3E2	F3E2
HF3EA	F3EA	HF3FE	F3FE	HF411	F411	HF441	F441	HF442	F442
HF465	F465	HF46E	F46E	HF471	F471	HF476	F476	HF478	F478
HF47E	F47E	HF489	F489	HF48A	F48A	HF49C	F49C	HF49D	F49D
HF4B3	F4B3	HF4B4	F4B4	HF4C4	F4C4	HF4C8	F4C8	HF4CC	F4CC
HF4D3	F4D3	HF4EB	F4EB	HF4F6	F4F6	HF4FB	F4FB	HF4FD	F4FD
HF4FF	F4FF	HF501	F501	HF505	F505	HF507	F507	HF524	F524
HF52A	F52A	HF52C	F52C	HF550	F550	HF568	F568	HF57C	F57C
HF580	F580	HF58B	F58B	HF59E	F59E	HF5B9	F5B9	HF5BA	F5BA
HF5BB	F5BB	HF5F0	F5F0	HF5FE	F5FE	HF600	F600	HF605	F605
HF626	F626	HF630	F630	HF63D	F63D	HF648	F648	HF658	F658
HF661	F661	HF682	F682	HF68C	F68C	HF699	F699	HF6A4	F6A4
HF6B4	F6B4	HF6B9	F6B9	HF6CD	F6CD	HF6E6	F6E6	HF6E9	F6E9
HF6F5	F6F5	HF6F6	F6F6	HF6FE	F6FE	HF708	F708	HF70F	F70F

HF721	F721	HF727	F727	HF72D	F72D	HF741	F741	HF747	F747
HF766	F766	HF769	F769	HF76F	F76F	HF787	F787	HF78C	F78C
HF79A	F79A	HF79D	F79D	HF7A4	F7A4	HF7A6	F7A6	HF7AA	F7AA
HF7B4	F7B4	HF7C2	F7C2	HF7C3	F7C3	HF7CA	F7CA	HF7D0	F7D0
HF7D1	F7D1	HF7E7	F7E7	HF7EB	F7EB	HF7F3	F7F3	HIGHDS	0094
HIGHTR	0096	HIRESOFF	C056	HIRESON	C057	HLIN	F53A	HLINE	F819
HLINE1	F81C	HLINMOD	0001	HMASK	0030	HOME	FC58	HPAG	00E6
HPILOT	F457	HRCOLCNT	00EA	HRCOLOR	00E4	HRHZNDX	00E5	HRSHPTBL	00E8
HRXCOOR	00E0	HRYCOOR	00E2	IEVEN	F897	INDEX	005E	INIT	FB2F
INITBL	C5CD	INITBLEN	0008	INPORT	FE8B	INPRT	FE8D	INPUT	0200
INR2	C739	INRCMD	C733	INSDS1	F882	INSDS2	F88E	INSTDSP	F8D0
INVERT	CE26	INVFLG	0032	IOPRT	FE9B	IOPRT1	FEA5	IORTS	FF58
IOSPACE	C000	IRQADR	03FE	IRQDONE	C3F4	IRQDONE2	FC7A	IRQFIX	C47C
IRQNOSLT	FC8F	IRQRTN	C3FA	ISO	C1A0	JBASINIT	C347	JC8	C344
JPINIT	C34A	JPREAD	C350	JPSTAT	C35C	JPWRITE	C356	KBDOUT	C2EF
KBDTBL	C2EB	KBDWAIT	FB88	KEY	C000	KEYIN	FD1B	KSWH	0039
KSWL	0038	LARROW	0088	LASTIN	002F	LASTMUL	0062	LASTPT	0053
LASTVBL	0081	LD@CMD	C721	LDCMD	C70F	LDD@CMD	C73A	LEN	0094
LENGTH	002F	LF	FC66	LINNUM	0050	LIST	FE5E	LIST2	FE63
LMNEM	002C	LOC0	0000	LOC1	0001	LOOKASC1	FF18	LOOKASC2	FF25
LOOKASC3	FF2A	LOWTR	009B	LT	FE20	LT2	FE22	LWRMASK	00DF
M.1	0002	M.2	0004	M.4	0010	M.6	0040	M.CTL	0008
M.CTL2	0020	M.CURSOR	0010	M.GOXY	0008	M.MOUSE	0001	M.PAS1.0	0002
M.PASCAL	0080	M.VMODE	0004	M1	00F9	M2	00F5	MACSTAT	0044
MASK	002E	MEMSIZE	0073	MINIASM	FEF1	MIXEDOFF	C052	MIXEDON	C053
MNEML	F9A6	MNEMR	F9EB	MOD8CHK	FDAD	MODE	0031	MON	FF65
MONZ	FF69	MOUSEOFF	CD3D	MOUSEON	CD44	MOVE	FE2C	MOVVARs	E50C
MSBCLR	007F	MSBSET	0080	MSLOT	07F8	NBRNCH	C5C7	NEGONE	00FF
NEGTWO	00FE	NEWBREAK	FA47	NEWMON	FA81	NEWPCl	C5AC	NEWRDKEY	FD28
NEWVW	FC46	NEWVW1	FC4F	NEXTOP	CF8B	NMIRTN	03FB	NOFIX	FAA3
NOTCR	FD47	NOTCR1	FD5F	NOWAIT	FB94	NXTA1	FCBA	NXTA3	FE11
NXTA4	FCB4	NXTBAS	FF98	NXTBIT	FF90	NXTBS2	FFA2	NXTBYT	FAC7
NXTCHAR	FD75	NXTCHR	FFAD	NXTCOL	F85F	NXTITM	FF73	NXTLIN1	CFAB
NXTLINE	FCF0	NXTLINE2	CF9C	NXTM2	CFCA	NXTMN	CFBC	NXTVAR	E567
OFFTITLE	000E	OLDBASH	07FB	OLDBASL	077B	OLDBRK	FA59	OLDCH	047B
OLDIRQ	FA40	OLDLIN	0077	OLDRST	FF59	OPRND	0044	OPTBL	C6E3
ORMASK	00F3	OURCH	057B	OURCV	05FB	OUTPORT	FE95	OUTPRT	FE97
P2	0060	PAGE08	0800	PAGE0C	0C00	PAGE10	1000	PAGE1ON	C054
PAGE2ON	C055	PAGEBF	BF00	PAGEC0	C000	PAGEC1	C100	PAGEC8	C800
PAGED0	D000	PAGEF0	F000	PAGEFE	FE00	PAGESIZE	0100	PASINV	CE1F
PB1IN	C061	PB2IN	C062	PCADJ	F953	PCADJ2	F954	PCADJ3	F956
PCADJ4	F95C	PCH	003B	PCINC2	C58C	PCINC3	C58E	PCL	003A
PCUROFF	CB18	PCURON	CB0D	PG1TXLOC	05B0	PICK	CE44	PICKFIX	FD3D
PINIT1	C9B0	PLOT	F800	PLOT1	F80E	POP@3	C75E	POP@CMD	C753
POPD@CMD	C74C	PPINIT	C9B4	PPREAD	C9D6	PPWRITE	C9F0	PRA1	FD92
PRADR1	F910	PRADR2	F914	PRADR3	F926	PRADR4	F92A	PRADR5	F930
PRBL2	F94A	PRBL3	F94C	PRBLNK	F948	PRBYTE	FDDA	PREAD	FB1E
PREAD2	FB25	PREG	0048	PRERR	FF2D	PRGENd	00AF	PRGTAB	0067
PRHEX	FDE3	PRHEXZ	FDE5	PRMN1	F8F5	PRMN2	F8F9	PRNTAX	F941
PRNTBL	F8DB	PRNTOP	F8D4	PRNTX	F944	PRNTYX	F940	PROCESS	0095
PROCSPCL	C64E	PROCVAR	C600	PROMPT	0033	PRTS	CA2E	PRXY2	FD96
PSAVCUR	CB14	PSETUP	CED4	PWRCON	FAFD	PWRCONLN	0005	PWRITER	CA29
PWRSTATE	03F4	PWRUP	FAA6	PWRUPBYT	00A5	PXINIT	C800	PXREAD	C84D
PXWRITE	C9AA	QUIT	CD80	R0H	0001	R0L	0000	R12H	0019
R12L	0018	R14H	001D	R14L	001C	R15H	001F	R15L	001E
RAM1WE	C08B	RAM1WP	C088	RAM2WE	C083	RAM2WP	C080	RAMRDOFF	C002
RAMRDON	C003	RAMSWTBL	C4C1	RAMWROFF	C004	RAMWRON	C005	RARROW	0095
RD2	F3B1	RD2BIT	D8B7	RD3	F3BD	RDALTCH	C01E	RDAUXZP	C016
RDBANK2	C011	RDBIT	D8BA	RDBYT2	F777	RDBYTE	F775	RDC3ROM	C017
RDCHAR	FD35	RDCXROM	C015	RDESC	FD21	RDHIRES	C01D	RDKEY	FD0C
RDKEY1	FD13	RDKEY2	FD18	RDLCRAM	C012	RDMIXED	C01B	RDPAGE2	C01C

RDRAMRD	C013	RDRAMWR	C014	RDSP1	FAE4	RDSTR80	C018	RDTEXT	C01A
RDVID80	C01F	RDVRTBLK	C019	READ	FEFD	REGDSP	FAD7	REGDSP1	FADA
REGZ	FEBF	REL	CF3A	REL2	CF46	REL3	CF50	RELADR	F938
REMSTK	00F8	RESET	FA62	RESET1	FA7E	RESTORE	FF3F	RESTR1	FF44
RETURN	008D	RMNEM	002D	RNDH	004F	RNDL	004E	ROM2WE	C081
ROM2WP	C082	ROMSIG	FBB3	RSCMD	C70B	RSETINIT	FB08	RSNSCMD	C7E0
RSZ	C6C6	RTBL	FB19	RTBLN	0005	RTMASK	F80C	RTMSKZ	F87F
RTNCMD	C701	RTS1	F831	RTS2	F961	RTS2B	FBEF	RTS2D	FB2E
RTS3	FBFC	RTS4B	FCC8	RTS5	FE17	RUNFLAG	00D6	SAV1	FF4C
SAVE	FF4A	SCALE	00E7	SCRN	F871	SCRN2	F879	SCRN48	CDC4
SCRN84	CD91	SCRNRET	CDF8	SCROLL	FC70	SCROLLDN	CBD4	SCROLLUP	CBEB
SEARCH	FED2	SEARCH1	FEDC	SEARCH2	FEE6	SEARCH3	FEEB	SET2	C6C5
SETC8	C36D	SETCMD	C709	SETCOL	F864	SETCOUT1	CD64	SETGR	FB40
SETIFLG	FE86	SETINV	FE80	SETKBD	FE89	SETKEYIN	CD5B	SETMDZ	FE1D
SETMODE	FE18	SETNORM	FE84	SETPG3	FAA9	SETPLP	FAAB	SETPWRC	FB6F
SETTOP	CD31	SETTXT	FB39	SETVID	FE93	SETWND	FB4B	SETZ	C6B2
SHAPE	001A	SIGBYTE	FBC0	SIGN	002F	SJMPCMD	C7E9	SLOOP	FABA
SOUTCMD	C7DB	SPACE	00A0	SPCLFLAG	008F	SPDBYT	00F1	SPKR	C030
SPNT	0049	SRCPTR	007F	ST@2	C72D	ST@3	C731	ST@CMD	C72B
STACK	0100	STAX	C97C	STCMD	C718	STD@CMD	C743	STEPEXIT	C5B6
STEPRTN	FCCA	STEPRTN2	FC5F	STEPZ	FEC4	STITLE	FB65	STOR	FE0B
STOR2	FE0F	STORADV	FBF0	STORCHAR	CE38	STORIT	CE70	STP@CMD	C763
STR80OFF	C000	STR80ON	C001	STRATCH	0055	STREND	006D	STRNG1	00AB
STRNG2	00AD	SUBCMD	C77A	SUBTBL	FFE3	SVARLEN	0007	SW16	C670
SW16B	C679	SW16C	C67F	SW16D	C685	SW16RTN	FA78	SWEET16	FA72
SWTBLN	0006	TABV	FB5B	TAPEIN	C060	TAPEOUT	C020	TBLC	CA71
TBL	CA7D	TEMP1	0093	TEMP2	0098	TEMP3	008A	TEMPPT	0052
TESTCARD	CA90	TESTROM	F8B6	TEXTOFF	C050	TEXTON	C051	TEXTPG1	0400
TEXTPTR	0079	TITLE	F7D9	TITLEN	000A	TOBR	C6A2	TOBR2	C6A8
TOSUB	FFBE	TRACE	FEC2	TRYNEXT	CF6B	TSTROMCD	CA89	TXTPTR	00B8
UARROW	008B	UP	FC1A	UPMON	FCFD	UPMON2	FD0B	UPRCASE	FD01
USR	FECA	V2	002D	VARPNT	0083	VARTAB	0069	VFY	FE36
VFYOK	FE58	VID80OFF	C00C	VID80ON	C00D	VIDOUT	FBFD	VIDWAIT	FB78
VLINE	F828	VLINEZ	F826	VTAB	FC22	VTABZ	FC24	WAIT	FCA8
WAIT2	FCA9	WAIT3	FCAA	WNDBTM	0023	WNDLFT	0020	WNDTOP	0022
WWDWTH	0021	X2	00F4	XAM	FDB3	XAM8	FDA3	XAMPM	FDC6
XBASCALC	CABA	XBASCLC	C1B6	XBASIC	FEB0	XBELL	CB21	XBS	CB40
XCLEOLZ	C160	XCLREOL	C1F1	XCLREOLZ	C1F3	XCLREOP	C103	XCLREOP1	C107
XCOORD	06FB	XCR	CB51	XDC1	CCEA	XDC1A	CCEF	XDC2	CCFC
XEM	CB5F	XFER	C314	XFERADR	03ED	XFF	CC90	XFS	CB6B
XGETFMT	C1D5	XGETFMT2	C5D5	XGOMINI	C1E1	XGS	CC9A	XGSEOLZ	CC9D
XHOME	C119	XINPUT	C8E6	XIOPRT	C195	XIOPRT1	C199	XIOPRT2	C19D
XJMP	C5A3	XJMPAT	C5A4	XJMPX	C575	XJSR	C598	XKEYIN	C25B
XL	CBD8	XLTBL	FB14	XMODE	04FB	XNAK	CD4D	XNEWVW	C1CF
XPICKFIX	C1E8	XQ1	C567	XQ2	C569	XQINIT	C512	XRDESC	C1BD
XRDKEY	C1A9	XRDKEYX	CE14	XREG	0046	XRESET	C176	XRESETX	C2B5
XRTI	C584	XRTS	C588	XSCRL1	C129	XSCRL2	C13F	XSCRL3	C148
XSCROLL	C123	XSETWND	C152	XSETWNDX	C2A5	XSI	CB8F	XSO	CB84
XSUB	CC96	XTEMP1	077B	XTEMP2	07FB	XUS	CB79	XVT	CC74
XVTAB	C203	XVTAB0	C14D	XVTAB0Z	C14F	XVTAB2	CDFE	XVTABZ	CE03
YCLEOLZ	C16B	YCLREOL	C168	YCLREOP	C170	YGETFMT	C1D5	YGOMINI	C1E1
YHOME	C17C	YIOPRT	C18A	YPICKFIX	C1E8	YRDKEY	C179	YREG	0047
YREGTBLX	C243	YREGTBLY	C24F	YRESET	C176	YSAV	0034	YSAV1	0035
YSCROLL	C165	YSETWND	C173	ZAPMEM	FEAE	ZAPMEM2	FF05	ZAPRTS	FF0E
ZERO	0000	ZMODE	FFC7	ZPG02	0002	ZPG03	0003	ZPG04	0004
ZPG05	0005	ZPG0A	000A	ZPG0B	000B	ZPG0C	000C	ZPG0D	000D
ZPG0E	000E	ZPG0F	000F	ZPG10	0010	ZPG11	0011	ZPG12	0012
ZPG13	0013	ZPG14	0014	ZPG15	0015	ZPG16	0016	ZPG80	0080
ZPG8F	008F	ZPG90	0090	ZPG91	0091	ZPG92	0092	ZPGA3	00A3
ZPGA4	00A4	ZPGD0	00D0	ZPGD1	00D1	ZPGD2	00D2	ZPGD3	00D3
ZPGD4	00D4	ZPGD5	00D5	ZPGF2	00F2	ZPGFF	00FF		

Symbols numerically sorted:

ZERO	0000	ROL	0000	LOC0	0000	R0H	0001	M.MOUSE	0001
LOC1	0001	HLINMOD	0001	ZPG02	0002	M.PAS1.0	0002	M.1	0002
ZPG03	0003	AVARLEN	0003	ZPG04	0004	M.VMODE	0004	M.2	0004
ZPG05	0005	RTBLN	0005	PWRCONLN	0005	AHDRLEN	0005	SWTBLEN	0006
GOODF8	0006	DISKIDLN	0006	SVARLEN	0007	M.GOXY	0008	M.CTL	0008
INITBLEN	0008	ZPG0A	000A	TITLEN	000A	ZPG0B	000B	ZPG0C	000C
ZPG0D	000D	ZPG0E	000E	OFFTITLE	000E	ZPG0F	000F	ZPG10	0010
M.CURSOR	0010	M.4	0010	ZPG11	0011	ESCHRLEN	0011	ZPG12	0012
ZPG13	0013	ZPG14	0014	ZPG15	0015	ZPG16	0016	R12L	0018
R12H	0019	SHAPE	001A	R14L	001C	HCOLOR1	001C	DELTITLE	001C
R14H	001D	COUNTH	001D	R15L	001E	R15H	001F	WNDLFT	0020
M.CTL2	0020	WNDWDTH	0021	WNDTOP	0022	WNCBTM	0023	CH	0024
CV	0025	GBASL	0026	GBASH	0027	BASL	0028	BASH	0029
BAS2L	002A	BAS2H	002B	LMNEM	002C	H2	002C	V2	002D
RMNEM	002D	MASK	002E	FORMAT	002E	CHKSUM	002E	SIGN	002F
LENGTH	002F	LASTIN	002F	HMASK	0030	COLOR	0030	MODE	0031
INVFLG	0032	PROMPT	0033	YSAV	0034	YSAV1	0035	CSWL	0036
CSWH	0037	KSWL	0038	KSWH	0039	PCL	003A	PCH	003B
A1L	003C	A1H	003D	A2L	003E	A2H	003F	M.6	0040
A3L	0040	A3H	0041	A4L	0042	A4H	0043	OPRND	0044
MACSTAT	0044	A5L	0044	AREG	0045	XREG	0046	YREG	0047
PREG	0048	SPNT	0049	RNDL	004E	RNDH	004F	LINNUM	0050
ACL	0050	ACH	0051	TEMPPT	0052	LASTPT	0053	EL	0054
STRATCH	0055	INDEX	005E	P2	0060	LASTMUL	0062	PRGTAB	0067
VARTAB	0069	ARYTAB	006B	STREND	006D	FRETOP	006F	FRESPC	0071
MEMSIZE	0073	CURLIN	0075	OLDLIN	0077	TEXTPTR	0079	DATLIN	007B
DATPTR	007D	SRCPTR	007F	MSBCLR	007F	ZPG80	0080	MSBSET	0080
M.PASCAL	0080	LASTVBL	0081	VARPNT	0083	CTRLC	0083	FORPNT	0085
GENTEMP	0087	LARROW	0088	TEMP3	008A	DARROW	008A	UARROW	008B
GENTPTR	008C	RETURN	008D	ZPG8F	008F	SPCLFLAG	008F	ZPG90	0090
ZPG91	0091	ZPG92	0092	TEMP1	0093	CTRLS	0093	LEN	0094
HIGHDS	0094	RARROW	0095	PROCESS	0095	HIGHTR	0096	TEMP2	0098
CTRLX	0098	LOWTR	009B	ESCAPE	009B	DSCTMP	009D	SPACE	00A0
FACMO	00A0	FACSIGN	00A2	ZPGA3	00A3	ZPGA4	00A4	PWRUPBYT	00A5
ARGEXP	00A5	ARGMANT	00A6	ARGSGN	00AA	STRNG1	00AB	STRNG2	00AD
PRGEND	00AF	CHRGET	00B1	CHRGOT	00B7	TXTPTR	00B8	FPRAND	00C9
ZPGD0	00D0	ZPGD1	00D1	ZPGD2	00D2	ZPGD3	00D3	ZPGD4	00D4
ZPGD5	00D5	RUNFLAG	00D6	ERRFLG	00D8	ERRLIN	00DA	ERRPOS	00DC
ERRNUM	00DE	LWRMASK	00DF	ERRSTK	00DF	HRXCOOR	00E0	HRXCOOR	00E2
HRCOLOR	00E4	HRHZNDX	00E5	HPAG	00E6	SCALE	00E7	HRSHPTBL	00E8
HRCOLCNT	00EA	FIRST	00F0	SPDBYT	00F1	ZPGF2	00F2	ORMASK	00F3
X2	00F4	M2	00F5	REMSTK	00F8	M1	00F9	NEGTWO	00FE
ZPGFF	00FF	NEGONE	00FF	STACK	0100	PAGESIZE	0100	INPUT	0200
XFERADR	03ED	BRKADR	03F0	AUTORSET	03F2	PWRSTATE	03F4	AMPERRTN	03F5
CTRLYRTN	03F8	NMIRTN	03FB	IRQADR	03FE	TEXTPG1	0400	OLDCH	047B
XMODE	04FB	OURCH	057B	PG1TXLOC	05B0	OURCV	05FB	CHAR	067B
XCOORD	06FB	XTEMP1	077B	OLDBASL	077B	MSLOT	07F8	XTEMP2	07FB
OLDBASH	07FB	PAGE08	0800	PAGE0C	0C00	PAGE10	1000	PAGEBF	BF00
STR80OFF	C000	PAGEC0	C000	KEY	C000	IOSPACE	C000	STR80ON	C001
RAMRDOFF	C002	RAMRDON	C003	RAMWROFF	C004	RAMWRON	C005	CXROMOFF	C006
CXROMON	C007	AUXZPOFF	C008	AUXZPON	C009	C3ROMOFF	C00A	C3ROMON	C00B
VID80OFF	C00C	VID80ON	C00D	ALTCHOFF	C00E	ALTCHON	C00F	CLRKEY	C010
RDBANK2	C011	RDLCRAM	C012	RDRAMRD	C013	RDRAMWR	C014	RDCXROM	C015
RDAUXZP	C016	RDC3ROM	C017	RDSTR80	C018	RDVRTBLK	C019	RDTEXT	C01A
RDMIXED	C01B	RDPAGE2	C01C	RDHIRES	C01D	RDALTCH	C01E	RDVID80	C01F
TAPEOUT	C020	SPKR	C030	TEXTOFF	C050	TEXTON	C051	MIXEDOFF	C052
MIXEDON	C053	PAGE1ON	C054	PAGE2ON	C055	HIRESOFF	C056	HIRESON	C057

ANN1OFF	C058	ANN2OFF	C05A	ANN3ON	C05D	ANN4ON	C05F	TAPEIN	C060
PB1IN	C061	PB2IN	C062	GC1IN	C064	GCTOGL	C070	RAM2WP	C080
ROM2WE	C081	ROM2WP	C082	RAM2WE	C083	RAM1WP	C088	RAM1WE	C08B
PAGEC1	C100	DOCXCMD	C100	XCLREOP	C103	XCLREOP1	C107	XHOME	C119
XSCROLL	C123	XSCRL1	C129	XSCRL2	C13F	XSCRL3	C148	XVTAB0	C14D
XVTAB0Z	C14F	XSETWND	C152	XCLEOLZ	C160	YSCROLL	C165	YCLREOL	C168
YCLEOLZ	C16B	YCLREOP	C170	YSETWND	C173	YRESET	C176	XRESET	C176
YRDKEY	C179	YHOME	C17C	YIOPRT	C18A	XIOPRT	C195	XIOPRT1	C199
XIOPRT2	C19D	ISO	C1A0	XRDKEY	C1A9	XBASCLC	C1B6	XRDESC	C1BD
XNEWVW	C1CF	YGETFMT	C1D5	XGETFMT	C1D5	YGOMINI	C1E1	XGOMINI	C1E1
YPICKFIX	C1E8	XPICKFIX	C1E8	XCLREOL	C1F1	XCLREOLZ	C1F3	XVTAB	C203
CXEXIT	C208	CXEXIT2	C20E	DOCMD	C211	YREGTBLX	C243	YREGTBLY	C24F
XKEYIN	C25B	XSETWNDX	C2A5	XRESETX	C2B5	CXRESET	C2D9	KBDTBL	C2EB
KBDOUT	C2EF	C3SPACE	C300	BASICINT	C300	BASICIN	C305	BASICOUT	C307
AUXMOVE	C311	XFER	C314	BASICENT	C317	JC8	C344	JBASINIT	C347
JPINIT	C34A	JPREAD	C350	JPWRITE	C356	JPSTAT	C35C	SETC8	C36D
DOMOVE	C376	DOXFER	C3C3	IRQDONE	C3F4	IRQRTN	C3FA	IRQFIX	C47C
RAMSWTBL	C4C1	FORM2	C4C8	FORM3	C4E5	FORM4	C4E6	FORM5	C4E7
FORM6	C4F5	FORM7	C4FA	GETNSP	C500	CXSTEP	C508	XQINIT	C512
XQ1	C567	XQ2	C569	XJMPX	C575	XRTI	C584	XRTS	C588
PCINC2	C58C	PCINC3	C58E	XJSR	C598	XJMP	C5A3	XJMPAT	C5A4
NEWPCL	C5AC	STEPEXIT	C5B6	BRANCH	C5B9	NBRNCH	C5C7	INITBL	C5CD
XGETFMT2	C5D5	PROCVAR	C600	PROCSPCL	C64E	SW16	C670	SW16B	C679
SW16C	C67F	SW16D	C685	TOBR	C6A2	TOBR2	C6A8	SETZ	C6B2
SET2	C6C5	RSZ	C6C6	BSNSZ	C6D7	BRTBL	C6E2	OPTBL	C6E3
RTNCMD	C701	SETCMD	C709	RSCMD	C70B	BSNSCMD	C70D	LDCMD	C70F
STCMD	C718	LD@CMD	C721	ST@CMD	C72B	ST@2	C72D	ST@3	C731
INRCMD	C733	INR2	C739	LDD@CMD	C73A	STD@CMD	C743	POPD@CMD	C74C
POP@CMD	C753	POP@3	C75E	STP@CMD	C763	ADDCMD	C76C	SUBCMD	C77A
CPRCMD	C77C	CPR2	C788	BSCMD	C790	BRCMD	C79C	BNCCMD	C79D
BR2	C7A4	BRTS	C7AD	BCCMD	C7AE	BPCMD	C7B1	BMCMD	C7B6
BZCMD	C7BB	BNZCMD	C7C2	BM1CMD	C7C9	BNM1CMD	C7D2	SOUTCMD	C7DB
RSNSCMD	C7E0	SJMPCMD	C7E9	DCRCMD	C7F7	DCR2	C7FD	PXINIT	C800
PAGEC8	C800	BASCINIT	C803	C3HOOKS	C82A	C3IN	C832	ESCCHAR	C83B
PXREAD	C84D	CSETUP	C850	CXNEWVW	C870	CXNEWVW2	C874	CXVIDCK3	C87C
CXVIDCK4	C87E	CTLON	C8BD	BIORET	C8C5	XINPUT	C8E6	ESCTABL	C96B
STAUX	C97C	CXKEYIN	C993	CXKEYIN2	C999	PXWRITE	C9AA	PINIT1	C9B0
PPINIT	C9B4	PPREAD	C9D6	PPWRITE	C9F0	DOBASL	CA1F	PWRITER	CA29
PRTS	CA2E	TBLC	CA71	TBLL	CA7D	TSTROMCD	CA89	CXRTS3	CA8F
TESTCARD	CA90	XBASCALC	CABA	CTLCHAR0	CAD2	CTLCHAR	CAD6	CXRTS4	CB06
CTLXFER	CB07	PCURON	CB0D	PSAVCUR	CB14	CXRTS5	CB17	PCUROFF	CB18
XBELL	CB21	CXWAIT	CB34	XBS	CB40	XCR	CB51	XEM	CB5F
XFS	CB6B	XUS	CB79	XSO	CB84	XSI	CB8F	CTLADR	CB9E
CTLADR	CBB9	SCROLLDN	CBD4	XLF	CBD8	SCROLLUP	CBEB	XVT	CC74
XFF	CC90	XSUB	CC96	XGS	CC9A	XGSEOLZ	CC9D	CLR40	CCA8
CLRHAF	CCB0	CLR80	CCBD	CLR2	CCD5	XDC1	CCEA	XDC1A	CCEF
XDC2	CCFC	DO40	CD2E	SETTOP	CD31	MOUSEOFF	CD3D	MOUSEON	CD44
XNAK	CD4D	SETKEYIN	CD5B	SETCOUT1	CD64	FULL40	CD6D	FULL80	CD71
QUIT	CD80	SCRN84	CD91	SCRN48	CDC4	SCRNRET	CDF8	XVTAB2	CDFE
XVTABZ	CE03	XRDKEYX	CE14	PASINV	CE1F	INVERT	CE26	STORCHAR	CE38
CXRTS6	CE43	PICK	CE44	STORIT	CE70	CXRTS7	CEAC	ESCON	CEB1
ESCOFF	CEC4	ESCRET	CECD	PSETUP	CED4	COPYROM	CEF4	REL	CF3A
REL2	CF46	REL3	CF50	ERR3	CF53	FINDOP	CF55	FINDOP2	CF57
TRYNEXT	CF6B	NEXTOP	CF8B	ERR	CF95	ERR2	CF97	NXTLINE2	CF9C
NXTLIN1	CFAB	ERR4	CFB0	GOTSPACE	CFB8	NXTMN	CFBC	NXTM2	CFCA
FORM8	CFED	FORM9	CFFC	CLRROM	CFFF	PAGED0	D000	HD000	D000
HD0B2	D0B2	HD260	D260	HD350	D350	HD358	D358	HD35D	D35D
HD365	D365	HD36A	D36A	HD37F	D37F	HD38B	D38B	HD392	D392
BLTU	D393	HD39A	D39A	HD3B7	D3B7	HD3C3	D3C3	HD3C7	D3C7
HD3CE	D3CE	HD3D6	D3D6	HD3E3	D3E3	HD3ED	D3ED	HD3F1	D3F1
HD3FC	D3FC	HD40F	D40F	HD410	D410	HD412	D412	HD413	D413

HD419	D419	HD41F	D41F	HD431	D431	HD43C	D43C	HD45C	D45C
HD49F	D49F	HD4A7	D4A7	HD4B5	D4B5	HD4D1	D4D1	HD4EA	D4EA
HD4F2	D4F2	HD4FE	D4FE	HD50F	D50F	HD511	D511	HD52C	D52C
HD52E	D52E	HD539	D539	HD541	D541	HD54C	D54C	HD553	D553
HD559	D559	HD56C	D56C	HD56D	D56D	HD578	D578	HD588	D588
HD590	D590	HD5A2	D5A2	HD5A7	D5A7	HD5A8	D5A8	HD5CB	D5CB
HD5CD	D5CD	HD5E0	D5E0	HD5E2	D5E2	HD5E9	D5E9	HD5F2	D5F2
HD5F9	D5F9	HD5FD	D5FD	HD604	D604	HD610	D610	HD61A	D61A
HD61E	D61E	HD635	D635	HD63E	D63E	HD647	D647	HD648	D648
HD649	D649	HD64B	D64B	HD665	D665	HD66A	D66A	HD66C	D66C
HD683	D683	HD696	D696	HD697	D697	HD6A5	D6A5	HD6B1	D6B1
HD6C4	D6C4	HD6CC	D6CC	HD6DA	D6DA	HD6F5	D6F5	HD6F7	D6F7
HD6FE	D6FE	HD702	D702	HD712	D712	HD724	D724	HD72C	D72C
HD731	D731	HD734	D734	HD746	D746	HD749	D749	HD750	D750
HD755	D755	HD75F	D75F	HD766	D766	HD777	D777	HD7AF	D7AF
HD7C3	D7C3	HD7D2	D7D2	HD7E5	D7E5	HD805	D805	HD81D	D81D
HD826	D826	HD828	D828	HD82A	D82A	HD83F	D83F	HD842	D842
HD846	D846	HD849	D849	HD853	D853	HD857	D857	HD858	D858
HD860	D860	HD863	D863	HD86C	D86C	HD86E	D86E	HD870	D870
HD871	D871	HD888	D888	HD88A	D88A	HD893	D893	HD896	D896
HD8A1	D8A1	HD8AF	D8AF	RD2BIT	D8B7	RDBIT	D8BA	HD8C9	D8C9
HD8ED	D8ED	HD8F0	D8F0	HD901	D901	HD912	D912	HD91B	D91B
HD921	D921	HD935	D935	HD93E	D93E	HD955	D955	HD959	D959
HD96A	D96A	HD96B	D96B	HD97C	D97C	HD981	D981	HD984	D984
HD995	D995	HD998	D998	HD9A2	D9A2	HD9A3	D9A3	HD9A6	D9A6
HD9AE	D9AE	HD9B6	D9B6	HD9C5	D9C5	HD9C9	D9C9	HD9D8	D9D8
HD9DC	D9DC	HD9E1	D9E1	HD9E9	D9E9	HD9EC	D9EC	HD9F4	D9F4
HD9F8	D9F8	HDA00	DA00	HDA0B	DA0B	HDA0C	DA0C	HDA12	DA12
HDA40	DA40	HDA46	DA46	HDA63	DA63	HDA77	DA77	HDA7A	DA7A
HDA7B	DA7B	HDA8C	DA8C	HDA9A	DA9A	HDAA1	DAA1	HDAB7	DAB7
HDACF	DACF	HDAD5	DAD5	HDAD7	DAD7	HDAFB	DAFB	HDB00	DB00
HDB02	DB02	HDB03	DB03	HDB11	DB11	HDB19	DB19	HDB25	DB25
HDB2B	DB2B	HDB2C	DB2C	HDB2F	DB2F	HDB35	DB35	HDB3A	DB3A
HDB3D	DB3D	HDB44	DB44	HDB57	DB57	HDB5A	DB5A	HDB5C	DB5C
HDB64	DB64	HDB71	DB71	HDB7B	DB7B	HDB7F	DB7F	HDB83	DB83
HDB86	DB86	HDB87	DB87	HDB90	DB90	HDBA0	DBA0	HDBB2	DBB2
HDBC4	DBC4	HDBC7	DBC7	HDBDC	DBDC	HDBE2	DBE2	HDBE9	DBE9
HDBEB	DBEB	HDBF1	DBF1	HDC1F	DC1F	HDC27	DC27	HDC2B	DC2B
HDC3F	DC3F	HDC4B	DC4B	HDC4C	DC4C	HDC57	DC57	HDC63	DC63
HDC69	DC69	HDC72	DC72	HDC7E	DC7E	HDC99	DC99	HDCA0	DCA0
HDCB9	DCB9	HDCC6	DCC6	HDCD1	DCD1	HDCDE	DCDE	HDCDF	DCDF
HDCEF	DCEF	HDCF9	DCF9	HDCFF	DCFF	HDD02	DD02	HDD0D	DD0D
HDD0F	DD0F	HDD52	DD52	HDD55	DD55	HDD67	DD67	HDD6A	DD6A
HDD6C	DD6C	HDD6D	DD6D	HDD73	DD73	HDD74	DD74	HDD76	DD76
HDD78	DD78	HDD7B	DD7B	HDD81	DD81	HDD86	DD86	HDD95	DD95
HDD98	DD98	HDDB4	DDB4	HDDC5	DDC5	HDDCD	DDCD	HDDD6	DDD6
HDDD7	DDD7	HDDE4	DDE4	HDDEE	DDEE	HDDF6	DDF6	HDDFD	DDFD
HDE0D	DE0D	HDE10	DE10	HDE15	DE15	HDE20	DE20	HDE35	DE35
HDE38	DE38	HDE3A	DE3A	HDE41	DE41	HDE43	DE43	HDE5D	DE5D
HDE60	DE60	HDE64	DE64	HDE69	DE69	HDE6C	DE6C	HDE81	DE81
HDE8A	DE8A	HDE90	DE90	HDE98	DE98	HDE9F	DE9F	HDEA4	DEA4
HDEAB	DEAB	HDEB2	DEB2	HDEB8	DEB8	HDEBB	DEBB	HDEBE	DEBE
HDEC0	DEC0	HDEC9	DEC9	HDECE	DECE	HDED0	DED0	HDED5	DED5
HDEE5	DEE5	HDEF6	DEF6	HDEF9	DEF9	HDF0C	DF0C	HDF3A	DF3A
HDF3F	DF3F	HDF4F	DF4F	HDF55	DF55	HDF5D	DF5D	HDF60	DF60
HDF65	DF65	HDF7D	DF7D	HDFA5	DFA5	HDFAA	DFAA	HDFB0	DFB0
HDFB5	DFB5	HDFC1	DFC1	HDFCA	DFCA	HDFFD	DFCD	HDFFD	DFD6
HDFFD	DFD9	HDFFD	DFD9	HDFFD	DFD9	HDFFD	DFD9	HDFFD	DFD9
HDFF7	DFF7	BASIC	E000	BASIC2	E003	HE007	E007	HE011	E011
HE012	E012	HE01C	E01C	HE026	E026	HE036	E036	HE03D	E03D
HE046	E046	HE049	E049	HE04F	E04F	HE059	E059	HE05B	E05B

HE065	E065	HE073	E073	HE07D	E07D	HE086	E086	HE087	E087
HE09A	E09A	HE09C	E09C	HE0A2	E0A2	HE0B2	E0B2	HE0DE	E0DE
HE0E8	E0E8	HE0ED	E0ED	HE0EF	E0EF	HE0F9	E0F9	HE0FE	E0FE
HE102	E102	EVALEXPR	E105	HE108	E108	HE10C	E10C	HE119	E119
HE11B	E11B	HE11E	E11E	HE12C	E12C	HE169	E169	HE16D	E16D
HE179	E179	HE188	E188	HE196	E196	HE199	E199	HE19B	E19B
HE19E	E19E	HE1AA	E1AA	HE1B8	E1B8	HE1C1	E1C1	HE1D5	E1D5
HE1DE	E1DE	HE1E7	E1E7	HE1F7	E1F7	HE21A	E21A	HE229	E229
HE22E	E22E	HE24B	E24B	HE253	E253	HE269	E269	HE26C	E26C
HE26F	E26F	HE270	E270	HE281	E281	HE292	E292	HE298	E298
HE2AC	E2AC	HE2AD	E2AD	HE2B6	E2B6	HE2C0	E2C0	HE2D9	E2D9
HE2DE	E2DE	HE2E5	E2E5	HE2F2	E2F2	HE2FF	E2FF	HE301	E301
HE306	E306	HE30E	E30E	HE313	E313	HE341	E341	HE354	E354
HE378	E378	HE3A9	E3A9	HE3AF	E3AF	HE3C5	E3C5	HE3D5	E3D5
HE3DD	E3DD	HE3E7	E3E7	HE3ED	E3ED	HE3F7	E3F7	HE404	E404
HE408	E408	HE409	E409	HE415	E415	HE41F	E41F	HE42A	E42A
HE432	E432	HE435	E435	HE452	E452	HE454	E454	HE45F	E45F
HE469	E469	HE474	E474	HE484	E484	CHKVARS	E48D	CHKARRYS	E4C2
GARBEXIT	E501	MOVVARS	E50C	NXTVAR	E567	COPYVAR	E573	DECPTR	E58C
HE597	E597	HE5B7	E5B7	HE5D4	E5D4	HE5E2	E5E2	HE5E6	E5E6
HE5EA	E5EA	HE5F3	E5F3	HE5FC	E5FC	HE5FD	E5FD	HE600	E600
HE604	E604	HE62F	E62F	HE630	E630	HE635	E635	HE645	E645
HE646	E646	HE65A	E65A	HE660	E660	HE666	E666	HE667	E667
HE668	E668	HE67F	E67F	HE686	E686	HE691	E691	HE6A2	E6A2
HE6B9	E6B9	HE6D6	E6D6	HE6DC	E6DC	HE6E5	E6E5	HE6F2	E6F2
HE6F5	E6F5	HE6F8	E6F8	HE6FB	E6FB	HE707	E707	HE70F	E70F
HE727	E727	HE73D	E73D	HE746	E746	HE74C	E74C	HE752	E752
HE764	E764	HE77B	E77B	HE784	E784	HE793	E793	HE797	E797
HE79F	E79F	HE7A0	E7A0	HE7A7	E7A7	HE7AA	E7AA	HE7B9	E7B9
HE7BE	E7BE	HE7C1	E7C1	HE7C6	E7C6	HE7CE	E7CE	HE7EA	E7EA
HE7EE	E7EE	HE7FA	E7FA	HE806	E806	HE829	E829	HE82E	E82E
HE832	E832	HE84E	E84E	HE850	E850	HE852	E852	HE855	E855
HE874	E874	HE880	E880	HE88D	E88D	HE88F	E88F	HE89D	E89D
HE89E	E89E	HE8A4	E8A4	HE8C6	E8C6	HE8D4	E8D4	HE8D5	E8D5
HE8DA	E8DA	HE8DC	E8DC	HE8F0	E8F0	HE8FD	E8FD	HE903	E903
HE907	E907	HE911	E911	HE913	E913	HE918	E918	HE92D	E92D
HE932	E932	HE937	E937	HE93C	E93C	HE941	E941	HE948	E948
HE94B	E94B	HE97F	E97F	HE982	E982	HE987	E987	HE9B0	E9B0
HE9B5	E9B5	HE9B8	E9B8	HE9D4	E9D4	HE9E2	E9E2	HE9E3	E9E3
HEA0E	EA0E	HEA10	EA10	HEA1B	EA1B	HEA26	EA26	HEA2B	EA2B
HEA31	EA31	HEA36	EA36	HEA39	EA39	HEA4F	EA4F	HEA50	EA50
HEA55	EA55	HEA5E	EA5E	HEA60	EA60	HEA66	EA66	HEA69	EA69
HEA80	EA80	HEA96	EA96	HEAA3	EAA3	HEAA6	EAA6	HEAB4	EAB4
HEAD1	EAD1	HEAD5	EAD5	HEAE1	EAE1	HEAE6	EAE6	HEAF9	EAf9
HEB1E	EB1E	HEB21	EB21	HEB27	EB27	HEB2B	EB2B	HEB53	EB53
HEB55	EB55	HEB59	EB59	HEB63	EB63	HEB66	EB66	HEB68	EB68
HEB71	EB71	HEB72	EB72	HEB7A	EB7A	HEB82	EB82	HEB86	EB86
HEB88	EB88	HEB8F	EB8F	HEB90	EB90	HEB93	EB93	HEB9B	EB9B
HEBA0	EBA0	HEBAF	EBAF	HEBB2	EBB2	HEBB4	EBB4	HEBE9	EBE9
HEBEF	EBEF	HEBF2	EBF2	HEC06	EC06	HEC11	EC11	HEC12	EC12
HEC23	EC23	HEC40	EC40	HEC49	EC49	HEC4A	EC4A	HEC4E	EC4E
HEC5D	EC5D	HEC61	EC61	HEC64	EC64	HEC66	EC66	HEC85	EC85
HEC87	EC87	HEC8A	EC8A	HEC8C	EC8C	HEC98	EC98	HEC9E	EC9E
HECA0	ECA0	HECA9	ECA9	HECB2	ECB2	HECB9	ECB9	HECBE	ECBE
HECC1	ECC1	HECC8	ECC8	HECD5	ECD5	HECE8	ECE8	HECF7	ECF7
HED05	ED05	HED0A	ED0A	HED0F	ED0F	HED14	ED14	HED19	ED19
HED24	ED24	HED31	ED31	HED34	ED34	HED36	ED36	HED41	ED41
HED4F	ED4F	HED57	ED57	HED60	ED60	HED62	ED62	HED6D	ED6D
HED78	ED78	HED7F	ED7F	HED86	ED86	HED89	ED89	HED9E	ED9E
HED9F	ED9F	HEDAA	EDAA	HEDBB	EDBB	HEDBD	EDBD	HEDC1	EDC1
HEDE5	EDE5	HEDE7	EDE7	HEDEE	EDEE	HEE09	EE09	HEE19	EE19

HEE26	EE26	HEE36	EE36	HEE42	EE42	HEE57	EE57	HEE5A	EE5A
HEE5F	EE5F	HEE64	EE64	HEE69	EE69	HEE6A	EE6A	HEE6B	EE6B
HEE6C	EE6C	HEE8D	EE8D	HEE97	EE97	HEEA0	EEA0	HEEBA	EEBA
HEED0	EED0	HEEDA	EEDA	HEEDB	EEDB	HEEE0	EEE0	HEF09	EF09
HEF19	EF19	HEF24	EF24	HEF27	EF27	HEF37	EF37	HEF5C	EF5C
HEF72	EF72	HEF76	EF76	HEF85	EF85	HEF89	EF89	HEF96	EF96
HEFA5	EFA5	HEFA6	EFA6	HEFAA	EFAA	HEFAE	EFAE	HEFCC	EFCC
HEFE7	EFE7	HEFEA	EFEA	HEFF1	EFF1	PAGEF0	F000	HF023	F023
HF026	F026	HF033	F033	HF03A	F03A	HF062	F062	HF066	F066
HF06B	F06B	HF070	F070	HF075	F075	HF09E	F09E	HF0A6	F0A6
HF0B4	F0B4	HF0C7	F0C7	HF0CD	F0CD	HF0CE	F0CE	HF10A	F10A
HF10B	F10B	HF111	F111	HF122	F122	HF128	F128	HF152	F152
HF181	F181	HF195	F195	HF1B8	F1B8	HF1D5	F1D5	HF1DE	F1DE
HF1E5	F1E5	HF1EC	F1EC	HF206	F206	HF209	F209	HF218	F218
HF225	F225	HF232	F232	HF241	F241	HF24F	F24F	HF256	F256
HF262	F262	HF26D	F26D	HF26F	F26F	HF273	F273	HF277	F277
HF279	F279	HF27B	F27B	HF280	F280	HF286	F286	HF296	F296
HF299	F299	HF2A6	F2A6	HF2CB	F2CB	HF2E9	F2E9	HF318	F318
HF32E	F32E	HF331	F331	HF357	F357	HF365	F365	HF367	F367
HF371	F371	HF377	F377	HF388	F388	HF390	F390	HF399	F399
CXREAD	F39F	RD2	F3B1	RD3	F3BD	HF3D8	F3D8	HF3E2	F3E2
HF3EA	F3EA	HF3FE	F3FE	HF411	F411	HF441	F441	HF442	F442
HPLOT	F457	HF465	F465	HF46E	F46E	HF471	F471	HF476	F476
HF478	F478	HF47E	F47E	HF489	F489	HF48A	F48A	HF49C	F49C
HF49D	F49D	HF4B3	F4B3	HF4B4	F4B4	HF4C4	F4C4	HF4C8	F4C8
HF4CC	F4CC	HF4D3	F4D3	HF4EB	F4EB	HF4F6	F4F6	HF4FB	F4FB
HF4FD	F4FD	HF4FF	F4FF	HF501	F501	HF505	F505	HF507	F507
HF524	F524	HF52A	F52A	HF52C	F52C	HLIN	F53A	HF550	F550
HF568	F568	HF57C	F57C	HF580	F580	HF58B	F58B	HF59E	F59E
BITABLE	F5B2	HF5B9	F5B9	HF5BA	F5BA	HF5BB	F5BB	HF5F0	F5F0
HF5FE	F5FE	HF600	F600	HF605	F605	HF626	F626	HF630	F630
HF63D	F63D	HF648	F648	HF658	F658	HF661	F661	HF682	F682
HF68C	F68C	HF699	F699	HF6A4	F6A4	HF6B4	F6B4	HF6B9	F6B9
HF6CD	F6CD	HF6E6	F6E6	HF6E9	F6E9	HF6F5	F6F5	HF6F6	F6F6
HF6FE	F6FE	HF708	F708	HF70F	F70F	HF721	F721	HF727	F727
HF72D	F72D	HF741	F741	HF747	F747	HF766	F766	HF769	F769
HF76F	F76F	RDBYTE	F775	RDBYT2	F777	HF787	F787	HF78C	F78C
HF79A	F79A	HF79D	F79D	HF7A4	F7A4	HF7A6	F7A6	HF7AA	F7AA
HF7B4	F7B4	HF7C2	F7C2	HF7C3	F7C3	HF7CA	F7CA	HF7D0	F7D0
HF7D1	F7D1	TITLE	F7D9	HF7E7	F7E7	HF7EB	F7EB	HF7F3	F7F3
PLOT	F800	F8SPACE	F800	RTMASK	F80C	PLOT1	F80E	HLINE	F819
HLINE1	F81C	VLINER	F826	VLINER	F828	RTS1	F831	CLRSCR	F832
CLRTOP	F836	CLRSC2	F838	CLRSC3	F83C	GBASCALC	F847	GBCLAC	F856
NXTCOL	F85F	SETCOL	F864	SCRN	F871	SCRN2	F879	RTMSKZ	F87F
INSDS1	F882	INSDS2	F88E	IEVEN	F897	ERROR	F8A1	GETFMT	F8A5
TESTROM	F8B6	INSTDSP	F8D0	PRNTOP	F8D4	PRNTBL	F8DB	PRMN1	F8F5
PRMN2	F8F9	PRADR1	F910	PRADR2	F914	PRADR3	F926	PRADR4	F92A
PRADR5	F930	RELADR	F938	PRNTYX	F940	PRNTAX	F941	PRNTX	F944
PRBLNK	F948	PRBL2	F94A	PRBL3	F94C	PCADJ	F953	PCADJ2	F954
PCADJ3	F956	PCADJ4	F95C	RTS2	F961	FMT1	F962	MNEML	F9A6
MNEMR	F9EB	CHAR1	FA30	CHAR2	FA36	CXOFF	FA3C	CXRTN	FA3F
OLDIRQ	FA40	NEWBREAK	FA47	BREAK	FA4C	OLDBRK	FA59	RESET	FA62
SWEET16	FA72	SW16RTN	FA78	RESET1	FA7E	NEWMON	FA81	FIXSEV	FA9B
NOFIX	FAA3	PWRUP	FAA6	SETPG3	FAA9	SETPLP	FAAB	SLOOP	FABA
NXTBYT	FAC7	REGDSP	FAD7	REGDSP1	FADA	RDSP1	FAE4	PWRCON	FAFD
DISKID	FB02	RSETINIT	FB08	XLTBL	FB14	RTBL	FB19	PREAD	FB1E
PREAD2	FB25	RTS2D	FB2E	INIT	FB2F	SETTXT	FB39	SETGR	FB40
SETWND	FB4B	TABV	FB5B	APPLE2	FB60	STITLE	FB65	SETPWRC	FB6F
VIDWAIT	FB78	KBDWAIT	FB88	NOWAIT	FB94	ESCOLD	FB97	ESCNOW	FB9B
ESCNEW	FBA5	ROMSIG	FBB3	GOTOROM	FBB4	SIGBYTE	FBC0	BASCALC	FBC1
FMT2	FBC7	BELL1	FBD9	BELL2	FBE4	RTS2B	FBEF	STORADV	FBF0

ADVANCE	FBF4	RTS3	FBFC	VIDOUT	FBFD	BS	FC10	UP	FC1A
VTAB	FC22	VTABZ	FC24	ESC1	FC2C	CLREOP	FC42	NEWVW	FC46
NEWVW1	FC4F	HOME	FC58	GOTOROM1	FC5A	STEPRTN2	FC5F	CR	FC62
LF	FC66	SCROLL	FC70	GOTOIRQ	FC74	IRQDONE2	FC7A	IRQNOSLT	FC8F
CHKINV	FC95	CHKINV1	FC99	CLREOL	FC9C	CLEOLZ	FC9E	WAIT	FCA8
WAIT2	FCA9	WAIT3	FCAA	NXTA4	FCB4	NXTA1	FCBA	RTS4B	FCC8
HEADR	FCC9	STEPRTN	FCCA	ERR2A	FCD2	FINDOP3	FCE3	NXTLINE	FCF0
UPMON	FCFD	UPRCASE	FD01	UPMON2	FD0B	RDKEY	FD0C	FDIO	FD10
RDKEY1	FD13	RDKEY2	FD18	KEYIN	FD1B	GOTOROM4	FD1D	RDESC	FD21
NEWRDKEY	FD28	ESC	FD2F	RDCHAR	FD35	PICKFIX	FD3D	NOTCR	FD47
NOTCR1	FD5F	CANCEL	FD62	GETLNZ	FD67	GETLN	FD6A	BCKSPC	FD71
NXTCHAR	FD75	ADDINP	FD84	CROUT	FD8E	PRA1	FD92	PRXY2	FD96
XAM8	FDA3	MOD8CHK	FDAD	XAM	FDB3	DATAOUT	FDB6	XAMPM	FDC6
ADD	FDD1	PRBYTE	FDDA	PRHEX	FDE3	PRHEXZ	FDE5	COUT	FDED
COUT1	FDF0	COUTZ	FDF6	COUTZ1	FDF7	PAGEFE	FE00	BL1	FE00
BLANK	FE04	STOR	FE0B	STOR2	FE0F	NXTA3	FE11	RTS5	FE17
SETMODE	FE18	SETMDZ	FE1D	LT	FE20	LT2	FE22	MOVE	FE2C
VFY	FE36	VFYOK	FE58	LIST	FE5E	LIST2	FE63	A1PC	FE75
A1PCLP	FE78	A1PCRTS	FE7F	SETINV	FE80	SETNORM	FE84	SETIFLG	FE86
SETKBD	FE89	INPORT	FE8B	INPRT	FE8D	SETVID	FE93	OUTPORT	FE95
OUTPRT	FE97	IOPRT	FE9B	IOPRT1	FEA5	ZAPMEM	FEAE	XBASIC	FEB0
BASCONT	FEB3	GO	FEB6	REGZ	FEBF	TRACE	FEC2	STEPZ	FEC4
USR	FECA	CHRTBLX3	FECE	SEARCH	FED2	SEARCH1	FEDC	SEARCH2	FEE6
SEARCH3	FEEB	MINIASM	FEF1	CRMON	FEF6	CRMON1	FEF9	READ	FEFD
ZAPMEM2	FF05	ZAPRTS	FF0E	CHRTBLX2	FF0F	LOOKASC1	FF18	LOOKASC2	FF25
LOOKASC3	FF2A	PRERR	FF2D	BELL	FF3A	RESTORE	FF3F	RESTR1	FF44
SAVE	FF4A	SAV1	FF4C	IORTS	FF58	OLDRST	FF59	CHRTBLX1	FF5F
MON	FF65	MONZ	FF69	NXTITM	FF73	CHRSRCH	FF7A	DIG	FF8A
NXTBIT	FF90	NXTBAS	FF98	NXTBS2	FFA2	GETNUM	FFA7	NXTCHR	FFAD
TOSUB	FFBE	ZMODE	FFC7	CHRTBL	FFCC	SUBTBL	FFE3		