

```

;
; =====
;                               LIVEWIRE
;                               =====
;
; =====
;   WRITTEN BY: TOM HUDSON
;   A.N.A.L.O.G. COMPUTING #12
;   =====
;
; -----
;   PAGE ZERO USAGE
;   -----
;

```

```

0000 = 0080          ORG      $80

0080 = 0001          LO       DS      1
0081 = 0001          HI       DS      1
0082 = 0001          PLOTX   DS      1      ;PLOT X VALUE
0083 = 0001          PLOTY   DS      1      ;PLOT Y VALUE
0084 = 0001          COLOR   DS      1      ;PLOT COLOR
0085 = 0001          DRAWX   DS      1      ;DRAWTO X
0086 = 0001          DRAWY   DS      1      ;DRAWTO Y
0087 = 0001          ACCX    DS      1      ;X ACCUM.
0088 = 0001          ACCY    DS      1      ;Y ACCUM.
0089 = 0001          DELTAX  DS      1      ;DRAW WORK AREA
008A = 0001          DELTAY  DS      1      ;DRAW WORK AREA
008B = 0001          INCX    DS      1      ;DRAW X INCREMENT
008C = 0001          INCY    DS      1      ;DRAW Y INCREMENT
008D = 0001          COUNTR  DS      1      ;DRAWTO COUNTER
008E = 0001          ENDPT   DS      1      ;DRAW ENDPOINT
008F = 0001          HOLD    DS      1      ;WORK AREA
0090 = 0001          XWORK   DS      1
0091 = 0001          YWORK   DS      1
0092 = 0001          GRID    DS      1      ;GRID # WORK
0093 = 0001          OFFSET  DS      1      ;GRID OFFSET
0094 = 0001          PMTIME  DS      1      ;PLAYER MOVE TIMER
0095 = 0001          PLRGRD  DS      1      ;PLAYER GRID#
0096 = 0001          PLRY    DS      1      ;PLAYER Y POS.
0097 = 0001          GRIDNO  DS      1      ;GRID #
0098 = 0001          LAST    DS      1      ;GRID...
0099 = 0001          NEXT    DS      1      ;DIVIDE...
009A = 0001          STEP    DS      1      ;WORK...
009B = 0001          DEST    DS      1      ;AREAS
009C = 0001          VBXHLD  DS      1      ;X HOLD
009D = 0001          PFTIME  DS      1      ;PLAYER FIRE TIMER
009E = 0001          ENDVAL  DS      1      ;WORK AREA
009F = 0001          MISNUM  DS      1      ;MISSILE #
00A0 = 0001          PRFLIP  DS      1      ;PROJ. FLIP FLAG
00A1 = 0001          PRADVT  DS      1      ;PROJ. MOVE TIMER
00A2 = 0001          PRADV1  DS      1      ;PROJ. TIMER
00A3 = 0001          TIMER   DS      1      ;GENERAL TIMER
00A4 = 0001          INTRFG  DS      1      ;INTRO FLAG
00A5 = 0001          BCDLVL  DS      1      ;LEVEL #
00A6 = 0001          SHCOLR  DS      1      ;CHAR. COLOR
00A7 = 0001          SHOBYT  DS      1      ;CHAR. BYTE POS.
00A8 = 0001          YOFFSET  DS      1      ;PLOT Y OFFSET
00A9 = 0001          OBJTIM1 DS      1      ;OBJECT MOVE TIMER

```

```

00AA = 0001      OBJNUM  DS      1      ;OBJECT #
00AB = 0001      SHAPIX  DS      1      ;OBJ. SHAPE INDEX
00AC = 0001      LENGTH  DS      1      ;OBJ. LENGTH
00AD = 0001      XI      DS      1      ;OBJ. X INCREMENT
00AE = 0001      YI      DS      1      ;OBJ. Y INCREMENT
00AF = 0001      SHAPCT  DS      1      ;OBJ. SHAPE CNT.
00B0 = 0001      HLDGRD  DS      1      ;OBJ. GRID WORK
00B1 = 0001      PAUFLG  DS      1      ;PAUSE FLAG
00B2 = 0001      ZAP     DS      1      ;ZAP FLAG
00B3 = 0001      SAVEX   DS      1      ;WORK AREA
00B4 = 0001      SAVEY   DS      1      ;WORK AREA
00B5 = 0001      FLASHY  DS      1      ;OBJ. FLASH POS.
00B6 = 0001      FLTIME  DS      1      ;FLASH TIME
00B7 = 0001      SP1IX   DS      1      ;PLAYER...
00B8 = 0001      SP2IX   DS      1      ;SHAPE...
00B9 = 0001      SP3IX   DS      1      ;INDEX...
00BA = 0001      SPIX    DS      1      ;AREAS
00BB = 0001      PLTBYT  DS      1      ;PLYR. IMAGE BYTE
00BC = 0001      PSCNT   DS      1      ;PLYR. SHAPE COUNT
00BD = 0001      KILPLR  DS      1      ;KILL PLYR FLAG
00BE = 0001      PAVAIL  DS      1      ;# PROJ. AVAILABLE
00BF = 0001      TRANTM  DS      1      ;TRANSIENT TIMER
00C0 = 0001      DESTLO  DS      1      ;DESTINATION...
00C1 = 0001      DESTHI  DS      1      ;ADDRESS
00C2 = 0001      SHFLIP  DS      1      ;SHORT FLIP FLAG
00C3 = 0001      DESTNM  DS      1      ;SHORT PLYR #
00C4 = 0001      CPYST   DS      1      ;SHORT IMAGE START
00C5 = 0001      DMAC1   DS      1      ;DMA CTRL WORK
00C6 = 0001      GRAC1   DS      1      ;GRAPHICS CTRL WK.
00C7 = 0001      GRIDIX  DS      1      ;GRID INDEX
00C8 = 0001      LIVES   DS      1      ;LIVES LEFT
00C9 = 0001      GRDADJ  DS      1      ;GRID...
00CA = 0001      GRDWK   DS      1      ;DRAW...
00CB = 0001      GRDWK2  DS      1      ;WORK...
00CC = 0001      GRDNUM  DS      1      ;AREAS
00CD = 0001      OBJSPD  DS      1      ;OBJ. SPEED
00CE = 0001      JOYPAD  DS      1      ;STICK/PADDLE
00CF = 0001      CPYCNT  DS      1      ;SHORT COPY CNT.
00D0 = 0001      BONUS   DS      1      ;BONUS VALUE
00D1 = 0001      FIRSOU  DS      1      ;FIRE SOUND COUNT
00D2 = 0001      OBDSOU  DS      1      ;OBJ. DEATH SOUND
00D3 = 0001      MOVSOU  DS      1      ;PLYR MOVE SOUND
00D4 = 0004      PRYHLD  DS      4      ;PROJ. Y HOLDS
00D8 = 0003      SCORE   DS      3      ;SCORE
00DB = 0003      SCOADD  DS      3      ;SCORE ADD VALUE
00DE = 0001      MISCAD  DS      1      ;MISC. SCORE ADD
00DF = 0005      NUMOBJ  DS      5      ;OBJECTS LEFT
00E4 = 0001      DIFF    DS      1      ;DIFFICULTY ADJUST
00E5 = 0006      OBJPRS  DS      6      ;OBJ PRESENT FLAGS

```

```

; -----
; MISCELLANEOUS MEMORY
; -----

```

```

= 0000      PMAREA   =      $0000      ;P/M AREA
= 0300      MISSLS   =      PMAREA+768
= 0400      PL0      =      PMAREA+1024

```

```

= 0500      PL1      =          PMAREA+1280
= 0600      PL2      =          PMAREA+1536
= 0700      PL3      =          PMAREA+1792
= 0800      DISP     =          $0800      ;DISPLAY

;          -----
;          SYSTEM EQUATES
;          -----

= 0200      VDSLST   =          $200      ;DLI VECTOR
= D40A      WSYNC    =          $D40A     ;WAIT/SYNC
= 027C      PTRIG0   =          $27C      ;PADDLE TRIG.
= 0270      POT0     =          $270      ;PADDLE 0
= 02FC      KEY      =          $2FC      ;KEYBOARD
= D01F      CONSOL   =          $D01F     ;CONSOLE BUTTONS
= D407      PMBASE   =          $D407     ;P/M BASE ADDR
= D20A      RANDOM   =          $D20A     ;RANDOM #
= E45C      SETVBV   =          $E45C     ;VBLANK SET
= E462      XITVBV   =          $E462     ;VBLANK EXIT
= 02C8      COLBK    =          $2C8      ;COLORS
= 02C4      COLPF0   =          $2C4
= 02C5      COLPF1   =          $2C5
= 02C6      COLPF2   =          $2C6
= 02C7      COLPF3   =          $2C7
= D201      AUDC1    =          $D201     ;AUDIO CONTROL
= D203      AUDC2    =          $D203
= D205      AUDC3    =          $D205
= D207      AUDC4    =          $D207
= D200      AUDF1    =          $D200     ;AUDIO FREQUENCY
= D202      AUDF2    =          $D202
= D204      AUDF3    =          $D204
= D206      AUDF4    =          $D206
= D208      AUDCTL   =          $D208     ;MAIN AUDIO CTRL.
= 026F      PRIOR    =          $026F     ;PRIORITY
= 004D      ATTRAC   =          $4D       ;ATTRACT MODE
= 022F      DMACTL   =          $22F     ;DMA CONTROL
= 0230      DLISTL   =          $230     ;DISP. LIST
= D01D      GRACTL   =          $D01D     ;GRAPHICS CTRL.
= D40E      NMIEN    =          $D40E     ;INTERRUPT ENABLE
= 02C0      COLPM0   =          $2C0     ;PLAYER COLORS
= 02C1      COLPM1   =          $2C1
= 02C2      COLPM2   =          $2C2
= 02C3      COLPM3   =          $2C3
= D000      HPOSP0   =          $D000     ;PLAYER POSITIONS
= D001      HPOSP1   =          $D001
= D002      HPOSP2   =          $D002
= D003      HPOSP3   =          $D003
= D004      HPOSM0   =          $D004     ;MISSILE POSITIONS
= D01E      HITCLR   =          $D01E     ;COLLISION CLEAR
= D00C      P0PL     =          $D00C     ;PL0 TO PLAYER COLL.
= 0278      STICK    =          $278     ;JOYSTICK
= 0284      STRIG    =          $284     ;STICK TRIGGER

00EB = 2000      ORG      $2000

;          -----
;          MAIN GAME DISPLAY LIST

```

```

; -----
2000 70F0704E  DLIST  DB      $70,$F0,$70,$4E
2004 0008      DW      DISP
2006 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
200E 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2016 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
201E 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2026 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
202E 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2036 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
203E 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2045 4E         DB      $4E
2046 0010      DW      DISP+$800
2048 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2050 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2058 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2060 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2068 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2070 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2078 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2080 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2088 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2090 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
2098 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
20A0 0E0E0E0E0E  DB      $E,$E,$E,$E,$E,$E,$E,$E
20A7 8000      DB      $80,$00
20A9 47         DB      $47
20AA 0321      DW      INFOLN
20AC 41         DB      $41
20AD 0020      DW      DLIST

```

```

; -----
; TITLE SCREEN DISPLAY LIST
; -----

```

```

20AF 7070707070  TITLDL  DB      $70,$70,$70,$70,$70,$70
20B5 7047      DB      $70,$47
20B7 6321      DW      LASTSC
20B9 707046    DB      $70,$70,$46
20BC 1321      DW      MAGMSG
20BE 7047      DB      $70,$47
20C0 2321      DW      TITLE
20C2 3046      DB      $30,$46
20C4 3321      DW      AUTHOR
20C6 70703046  DB      $70,$70,$30,$46
20CA 4321      CONTRL  DW      JOYMSG
20CC 41         DB      $41
20CD AF20      DW      TITLDL

```

```

; -----
; DISPLAY LIST INTERRUPTS
; -----

```

```

20CF 48         DLI1   PHA          ;SAVE ACCUM
20D0 A5C6      LDA      GRAC1     ;GET GR. CTRL
20D2 8D0AD4   STA      WSYNC     ;WAIT FOR SYNC

```

```

20D5 8D1DD0      STA      GRACTL    ;STORE IT
20D8 A5C5         LDA      DMAC1    ;GET AND SAVE
20DA 8D00D4      STA      $D400    ;DMA CTRL
20DD A9E9         LDA      #DLI2&255 ;POINT...
20DF 8D0002      STA      VDSLST   ;TO...
20E2 A920         LDA      #DLI2/255 ;NEXT...
20E4 8D0102      STA      VDSLST+1 ;DLI!
20E7 68          PLA          ;GET ACCUM
20E8 40          RTI          ;AND EXIT!

```

```

20E9 48          DLI2      PHA          ;SAVE ACCUM
20EA A90A         LDA      #$0A     ;GET WHITE
20EC 8D0AD4      STA      WSYNC    ;WAIT FOR SYNC
20EF 8D16D0      STA      $D016    ;PUT IN COLOR 0
20F2 A974         LDA      #$74     ;PUT BLUE...
20F4 8D17D0      STA      $D017    ;IN COLOR 1
20F7 A928         LDA      #$28     ;PUT ORANGE...
20F9 8D18D0      STA      $D018    ;IN COLOR 2
20FC A93D         LDA      #$3D     ;SET UP...
20FE 8D00D4      STA      $D400    ;DMA CTRL
2101 68          PLA          ;GET ACCUM.
2102 40          RTI          ;AND EXIT

```

```

; -----
; SCREEN MESSAGES
; -----

```

```

2103 0000000000 INFOLN  DB      0,0,0,0,0,0,0,0
210B 00006C766C DB      0,0,$6C,$76,$6C,0,0,0
2113 212E212C2F MAGMSG  DB      $21,$2E,$21,$2C,$2F,$27
2119 00232F2D30 DB      0,$23,$2F,$2D,$30,$35
211F 34292E27     DB      $34,$29,$2E,$27
2123 000000006C TITLE   DB      0,0,0,0,$6C,$69,$76,$65
212B 7769726500 DB      $77,$69,$72,$65,0,0,0,0
2133 00A2B90000 AUTHOR  DB      0,$A2,$B9,0,0,$B4,$AF
213A AD00A8B5A4   DB      $AD,0,$A8,$B5,$A4,$B3
2140 AFAE00        DB      $AF,$AE,0
2143 00000000EA JOYMSG  DB      0,0,0,0,$EA,$EF,$F9,$F3
214B F4E9E3EB00   DB      $F4,$E9,$E3,$EB,0,0,0,0
2153 0000000000 PADMSG  DB      0,0,0,0,0,$F0,$E1,$E4
215B E4ECE50000   DB      $E4,$EC,$E5,0,0,0,0,0
2163 0000000000 LASTSC  DB      0,0,0,0,0,0,0,0
216B 0000000000 DB      0,0,0,0,0,0,0,0

```

```

; -----
; PROG START
; -----

```

```

2173 D8          LIVE    CLD          ;
2174 2065E4      JSR      $E455    ;INIT SOUND
2177 A900         LDA      #0       ;CLEAR PAGE 0
2179 A27F         LDX      #127      ;
217B 9580        CPAGE0   STA      $80,X
217D CA         DEX
217E 10FB ^217B BPL      CPAGE0
2180 A901         LDA      #1       ;INIT...
2182 85A5        STA      BCDLYL   ;LEVEL #

```

```

2184 85A4          STA      INTRFG ;SET INTRO FLAG
2186 A943          LDA      #JOYMSG&255 ;DEFAULT...
2188 8DCA20        STA      CONTRL ;CONTROL...
218B A921          LDA      #JOYMSG/256 ;IS...
218D 8DCB20        STA      CONTRL+1 ;STICK!
2190 A900          LDA      #0 ;INIT...
2192 8D2F02        STA      DMACTL ;DMA
2195 8D0ED4        STA      NMIEIN ;INTERRUPTS
2198 8D08D2        STA      AUDCTL ;AUDIO
219B 8D1ED0        STA      HITCLR ;COLLISION
219E 8DC802        STA      COLBK ;BACKGND COLOR
21A1 A203          LDX      #3 ;CLEAR SHORTS
21A3 9D582E        CLRSHO STA      SHORTF,X
21A6 CA          DEX
21A7 10FA ^21A3   BPL      CLRSHO
21A9 A205          LDX      #5 ;ZERO OBJECT...
21AB 9D682E        CLRDED STA      OBDEAD,X ;CLR DEAD TABLE
21AE CA          DEX
21AF 10FA ^21AB   BPL      CLRDED
21B1 A202          LDX      #2 ;ZERO SCORE
21B3 95D8          CLRSCO STA      SCORE,X
21B5 95DB          STA      SCOADD,X
21B7 CA          DEX
21B8 10F9 ^21B3   BPL      CLRSCO
21BA A207          LDX      #7
21BC 9D0C2E        CLRPRJ STA      PROJAC,X ;CLEAR PROJ.
21BF CA          DEX
21C0 10FA ^21BC   BPL      CLRPRJ
21C2 A205          LDX      #5
21C4 BD0321        MOVSCO LDA      INFOLN,X ;COPY SCORE...
21C7 9D6821        STA      LASTSC+5,X ;TO LAST...
21CA CA          DEX ;SCORE LINE
21CB 10F7 ^21C4   BPL      MOVSCO
21CD A91D          LDA      #29 ;SET ALL...
21CF A205          LDX      #5 ;OBJECTS TO...
21D1 9D862E        INIOBS STA      OBJSEG,X ;SEGMENT # 29
21D4 CA          DEX
21D5 10FA ^21D1   BPL      INIOBS
21D7 208D25        JSR      SHOSCO ;SHOW SCORE
21DA 208A25        JSR      SNDOFF ;NO SOUNDS
21DD A906          LDA      #6 ;6 PROJECTILES
21DF 85BE          STA      PAVAIL ;AVAILABLE
21E1 A902          LDA      #2 ;SET...
21E3 85D0          STA      BONUS ;BONUS=20000
21E5 85C8          STA      LIVES ;2 EXTRA LIVES
21E7 202C25        JSR      SHOLIV ;SHOW LIVES LEFT
21EA A905          LDA      #5 ;SET UP...
21EC 85B8          STA      SP2IX ;PLAYER...
21EE A90A          LDA      #10 ;SHAPE...
21F0 85B9          STA      SP3IX ;INDEXES
21F2 A9AF          LDA      #TITLDL&255 ;POINT TO...
21F4 8D3002        STA      DLISTL ;TITLE...
21F7 A920          LDA      #TITLDL/256 ;DISPLAY...
21F9 8D3102        STA      DLISTL+1 ;LIST
21FC A0EB          LDY      #VBI&255 ;POINT TO...
21FE A228          LDX      #VBI/256 ;VERTICAL...
2200 A907          LDA      #7 ;BLANK...

```

```

2202 205CE4      JSR      SETVBV ;INTERRUPT
2205 A900         LDA      #PMAREA/256 ;SET UP P/M...
2207 8D07D4      STA      PMBASE ;BASE ADDRESS
220A 208B2C      JSR      PMCLR ;CLEAR P/M
220D A974         LDA      #$74 ;PUT BLUE...
220F 8DC402      STA      COLPF0 ;IN COLOR 0
2212 A9C4         LDA      #$C4 ;PUT GREEN...
2214 8DC502      STA      COLPF1 ;IN COLOR 1
2217 A90A         LDA      #$0A ;PUT WHITE...
2219 8DC602      STA      COLPF2 ;IN COLOR 2
221C A934         LDA      #$34 ;PUT RED...
221E 8DC702      STA      COLPF3 ;IN COLOR 3
2221 A93D         LDA      #$3D ;SET UP...
2223 8D2F02      STA      DMACTL ;DMA,
2226 A903         LDA      #3 ;GRAPHICS,
2228 8D1DD0      STA      GRACTL ;AND
222B A9C0         LDA      #$C0 ;INTERRUPT...
222D 8D0ED4      STA      NMIEN ;ENABLE
2230 A911         LDA      #$11 ;SET P/M...
2232 8D6F02      STA      PRIOR ;PRIORITY
2235 A90F         LDA      #$0F ;PUT WHITE...
2237 8DC102      STA      COLPM1 ;IN PLAYER 1,
223A 8DC202      STA      COLPM2 ;PLAYER 2
223D 8DC302      STA      COLPM3 ;AND 3
2240 A916         LDA      #$16 ;PUT YELLOW...
2242 8DC002      STA      COLPM0 ;IN PLAYER 0

```

```

; -----
; INTRO SCREEN
; -----

```

```

2245 AD1FD0      INTRO LDA      CONSOL ;START KEY...
2248 2901         AND      #1 ;PRESSED?
224A D00A ^2256   BNE     CKSEL ;NO!
224C AD1FD0      GOCKEK LDA      CONSOL ;START KEY...
224F 2901         AND      #1 ;RELEASED?
2251 F0F9 ^224C   BEQ     GOCKEK ;NO, WAIT.
2253 4C7B22      JMP     DIGIN ;GO DIG IN!!
2256 AD1FD0      CKSEL  LDA      CONSOL ;SELECT KEY...
2259 2902         AND      #2 ;PRESSED?
225B D0E8 ^2245   BNE     INTRO ;NAW, LOOP BACK.
225D A5CE         LDA      JOYPAD ;TOGGLE...
225F 18          CLC      ;STICK/PADDLE...
2260 6901         ADC      #1 ;INDICATOR...
2262 2901         AND      #1
2264 85CE         STA      JOYPAD
2266 AA          TAX
2267 BD912F      LDA      JPLO,X ;AND SHOW...
226A 8DCA20      STA      CONTRL ;CONTROLLER...
226D BD932F      LDA      JPHI,X ;MESSAGE...
2270 8DCB20      STA      CONTRL+1 ;ON SCREEN!
2273 A91E         LDA      #30 ;30 JIFFY...
2275 208326      JSR      WAIT ;WAIT!
2278 4C4522      JMP     INTRO ;AND LOOP.

```

```

; -----
; HERE'S WHERE PROGRAM STARTS

```

```

;
;-----
227B A900      DIGIN   LDA     #DLIST&255      ;POINT TO...
227D 8D3002   STA     DLISTL      ;GAME...
2280 A920      LDA     #DLIST/256    ;DISPLAY...
2282 8D3102   STA     DLISTL+1    ;LIST
2285 A900      LDA     #0          ;NO LONGER IN...
2287 85A4      STA     INTRFG     ;INTRO
2289 A901      FOREVR  LDA     #1          ;WE WANT...
228B 8584      STA     COLOR     ;COLOR 1
228D 85B2      STA     ZAP       ;RESET ZAP.
228F 20A12C   JSR     CLRSC      ;CLEAR SCREEN
2292 A5C7      LDA     GRIDIX     ;GET GRID#
2294 2907      AND     #7          ;FIND WHICH...
2296 AA       TAX          ;GRID SHAPE...
2297 BDB42D   LDA     GRDTBL,X     ;TO DRAW...
229A 85CC      STA     GRDNUM     ;AND STORE
229C 203826   JSR     SHOLVL     ;SHOW LEVEL#
229F 209B26   JSR     DRGRID     ;DRAW GRID!
22A2 A5B1      CONWT   LDA     PAUFLG     ;WE PAUSED?
22A4 D0FC ^22A2 BNE     CONWT     ;YUP, LOOP.
22A6 A5BD      LDA     KILPLR     ;PLAYER DEAD?
22A8 F003 ^22AD BEQ     PLIVE     ;NOPE!
22AA 20AF25   JSR     DECLIV    ;ONE LESS LIFE!
22AD 854D      PLIVE   STA     ATTRAC     ;CANCEL ATTRACT!
22AF A5B6      LDA     FLTIME     ;FLASH GOING?
22B1 D003 ^22B6 BNE     NOFEND    ;YES! STORE...
22B3 8D01D0   STA     HPOSP1     ;FLASH POSITION!
22B6 A5A9      NOFEND  LDA     OBJTIM1    ;OBJECTS MOVING?
22B8 D075 ^232F BNE     NOOHAN    ;NOT YET!
22BA A5CD      LDA     OBJSPD     ;RESET MOVE...
22BC 85A9      STA     OBJTIM1    ;TIMER
;
;-----
; COPY OBJECT KILL TABLE
;-----
22BE A205      COPDED  LDX     #5          ;THIS SECTION
22C0 BD682E   LDA     OBDEAD,X     ;COPIES THE
22C3 9D6E2E   STA     OBDED2,X     ;OBJECT KILL
22C6 A900      LDA     #0          ;TABLE WHICH IS
22C8 9D682E   STA     OBDEAD,X     ;SET UP BY THE
22CB CA       DEX          ;PROJECTILE
22CC 10F2 ^22C0 BPL     COPDED     ;HANDLER

22CE A5DE      LDA     MISCAD     ;MISC. SCORE?
22D0 F009 ^22DB BEQ     NOMSCO     ;NO!
22D2 85DC      STA     SCOADD+1    ;SET SCORE ADD...
22D4 205A25   JSR     ADDSCO     ;AND ADD IT!
22D7 A900      LDA     #0          ;THEN RESET THE
22D9 85DE      STA     MISCAD     ;ADD VALUE.
22DB A205      NOMSCO  LDX     #5          ;THIS SECTION
22DD A900      LDA     #0          ;TALLIES ALL
22DF 15E5      CKOBLV  ORA     OBJPRS,X  ;OBJECTS THAT
22E1 CA       DEX          ;ARE ALIVE
22E2 10FB ^22DF BPL     CKOBLV
22E4 A204      LDX     #4          ;NOW TALLY

```



```

22E6 15DF      CKOBWT  ORA      NUMOBJ,X      ;ALL OBJECTS
22E8 CA        DEX      ;THAT ARE NOT
22E9 10FB ^22E6 BPL      CKOBWT ;ON GRID YET
22EB C900     CMP      #0       ;ANY OBJECTS?
22ED F04D ^233C BEQ      LVLEND ;NO, END OF LEVEL!

22EF A205      LDX      #5       ;IS OBJECT
22F1 B5E5      GENNOL LDA      OBJPRS,X ;PRESENT?
22F3 D031 ^2326 BNE      NXTOGN ;YES, TRY NEXT.
22F5 AD0AD2    TRYTYP LDA      RANDOM ;LET'S TRY TO
22F8 2907     AND      #7       ;START UP A
22FA C905     CMP      #5       ;NEW OBJECT
22FC B0F7 ^22F5 BCS      TRYTYP ;GET A TYPE
22FE A8        TAY      ;ANY OF THAT
22FF B9DF00    LDA      NUMOBJ,Y ;TYPE WAITING?
2302 F022 ^2326 BEQ      NXTOGN ;NO, TRY NEXT
2304 38       SEC      ;DECREMENT #
2305 E901     SBC      #1       ;OF OBJECTS
2307 99DF00    STA      NUMOBJ,Y ;WAITING.
230A 98       TYA      ;THEN SET
230B 9D742E    STA      OBJTYP,X ;OBJECT TYPE.
230E AD0AD2    NEWGRD LDA      RANDOM ;GET A RANDOM
2311 290F     AND      #0F      ;SUB-GRID
2313 C90F     CMP      #15      ;NUMBER
2315 F0F7 ^230E BEQ      NEWGRD
2317 9D802E    STA      OBJGRD,X ;AND SAVE IT
231A A91E     LDA      #30      ;PUT OBJECT AT
231C 9D862E    STA      OBJSEG,X ;FAR END OF GRID
231F A901     LDA      #1       ;SET UP...
2321 9D7A2E    STA      OBJINC,X ;OBJ. INCREMENT
2324 95E5     STA      OBJPRS,X ;OBJECT PRESENT
2326 CA      NXTOGN DEX      ;LOOP BACK TO DO
2327 10C8 ^22F1 BPL      GENNOL ;NEXT OBJECT

2329 205B23    JSR      OBJHAN ;HANDLE OBJECTS
232C 202C25    JSR      SHOHAN ;HANDLE SHORTS

232F AD1FD0     NOOHAN LDA      CONSOL ;ANY CONSOLE
2332 C907     CMP      #7       ;KEYS PRESSED?
2334 F003 ^2339 BEQ      JCONWT ;NOPE!
2336 4C7321    JMP      LIVE ;YES, RESTART GAME
2339 4CA222    JCONWT  JMP      CONWT ;INDIRECT JUMP
233C A5C7     LVLEND  LDA      GRIDIX ;ARE WE ON
233E C93F     CMP      #63      ;GRID #63?
2340 F016 ^2358 BEQ      NOGRDI ;YES, DON'T INC!
2342 18       CLC      ;INCREMENT
2343 6901     ADC      #1       ;GRID #
2345 85C7     STA      GRIDIX ;AND SAVE IT.
2347 2907     AND      #7       ;ADD 2 TO
2349 D004 ^234F BNE      NODIFI ;DIFFICULTY IF
234B E6E4     INC      DIFF ;ON A MULTIPLE
234D E6E4     INC      DIFF ;OF 8 GRIDS.
234F F8       NODIFI SED      ;INCREMENT
2350 A5A5     LDA      BCDLVL ;BCD LEVEL #
2352 18       CLC      ;INCREMENT
2353 6901     ADC      #1       ;BCD LEVEL #
2355 85A5     STA      BCDLVL

```

```

2357 D8          CLD          ;NOW GO TO
2358 4C8922      NOGRDI     JMP          FOREVR   ;DRAW NEW GRID.

;          -----
;          OBJECT HANDLER
;          -----

235B A5AA          OBJJHAN   LDA          OBJNUM   ;INCREMENT
235D 18          CLC          ;OBJECT #
235E 6901          ADC          #1
2360 C906          CMP          #6          ;DONE?
2362 D005 ^2369   BNE          STONUM   ;NO, CONTINUE.
2364 A9FF          LDA          #$FF       ;RESET
2366 85AA          STA          OBJNUM   ;OBJECT #
2368 60          RTS          ;AND EXIT.
2369 85AA          STONUM   STA          OBJNUM   ;SAVE OBJ #
236B A5AA          OBHLP1   LDX          OBJNUM   ;GET OBJ #
236D B5E5          LDA          OBJPRS,X    ;OBJ PRESENT?
236F F0EA ^235B   BEQ          OBJJHAN   ;NO!
2371 BD862E      OBLIVE    LDA          OBJSEG,X    ;WITHIN 2 UNITS
2374 C902          CMP          #2          ;OF RIM?
2376 9039 ^23B1   BCC          NOOBFI   ;YES, DON'T FIRE
2378 AD0AD2      LDA          RANDOM   ;RANDOM CHANCE
237B 290F          AND          #$0F       ;OF SHOOTING
237D D032 ^23B1   BNE          NOOBFI   ;DON'T SHOOT
237F AD0C2E      LDA          PROJAC   ;PROJ. 0 ACTIVE?
2382 D004 ^2388   BNE          TRYPR1   ;YES, IGNORE!
2384 A000          LDY          #0          ;FORCE BRANCH
2386 F007 ^238F   BEQ          STOBFI   ;TO STORE IT
2388 AD0D2E      TRYPR1   LDA          PROJAC+1   ;PROJ. 1 ACTIVE?
238B D024 ^23B1   BNE          NOOBFI   ;YES, NO FIRE
238D A001          LDY          #1          ;SET INDEX
238F BD862E      STOBFI   LDA          OBJSEG,X    ;INITIALIZE
2392 4A          LSR          A          ;PROJECTILE
2393 992C2E      STA          PROJSG,Y    ;SEGMENT #
2396 BD802E      LDA          OBJGRD,X    ;AND
2399 991C2E      STA          PROGRD,Y    ;SUB-GRID #
239C 0A          ASL          A          ;MULTIPLY
239D 0A          ASL          A          ;BY
239E 0A          ASL          A          ;16
239F 0A          ASL          A          ;AND
23A0 99242E      STA          PROJGN,Y    ;SAVE INDEX!
23A3 A9FF          LDA          #$FF       ;SET INCREMENT
23A5 99142E      STA          PROJNC,Y    ;(<TOWARD RIM)
23A8 A915          LDA          #21        ;START THE
23AA 85D1          STA          FIRSOU   ;FIRE SOUND
23AC A901          LDA          #1          ;AND
23AE 990C2E      STA          PROJAC,Y    ;PROJECTILE
23B1 A900          NOOBFI   LDA          #0          ;SET COLOR 0
23B3 8584          STA          COLOR   ;TO ERASE OBJECT
23B5 207924      JSR          DRWOBJ   ;AND ERASE IT
23B8 A5AA          LDX          OBJNUM
23BA BD6E2E      LDA          OBDED2,X    ;OBJ DEAD?
23BD F01A ^23D9   BEQ          NOOKIL   ;YES! START
23BF 205526      JSR          FLASH   ;DEATH FLASH
23C2 A5AA          LDX          OBJNUM
23C4 BC742E      LDY          OBJTYP,X    ;GET OBJECT TYPE

```

```

23C7 B94E2E      LDA      POINT1,Y      ;GET POINTS
23CA 85DC        STA      SCOADD+1      ;AND READY
23CC B9532E      LDA      POINT2,Y      ;THE SCORE
23CF 85DD        STA      SCOADD+2      ;ADD VALUE
23D1 205A25      JSR      ADDSCO        ;ADD TO SCORE!
23D4 A5AA         LDX      OBJNUM
23D6 4C2724      JMP      KILOBJ        ;THEN KILL OBJ.
23D9 BD862E      NOOKIL LDA      OBJSEG,X      ;INCREMENT
23DC 38          SEC
23DD FD7A2E      SBC      OBJINC,X      ;SEGMENT
23E0 9D862E      STA      OBJSEG,X      ;POSITION
23E3 3042 ^2427  BMI      KILOBJ        ;PAST RIM!
23E5 C91E        CMP      #30          ;TYPE 3 PAST END?
23E7 D004 ^23ED  BNE      NOTOT3       ;NOPE!
23E9 E6E1        INC      NUMOBJ+2      ;START TYPE 2
23EB D03A ^2427  BNE      KILOBJ        ;FORCE BRANCH
23ED C90A        NOTOT3 CMP      #10          ;AT TYPE 3 TURN?
23EF D00C ^23FD  BNE      OBHLP2       ;NO!
23F1 BD742E      LDA      OBJTYP,X      ;IS IT
23F4 C903        CMP      #3           ;TYPE 3?
23F6 D005 ^23FD  BNE      OBHLP2       ;NO!
23F8 A9FF        LDA      #$FF         ;REVERSE OBJECT
23FA 9D7A2E      STA      OBJINC,X      ;INCREMENT
23FD BD742E      OBHLP2 LDA      OBJTYP,X      ;IS OBJECT
2400 C902        CMP      #2           ;TYPE 2?
2402 D014 ^2418  BNE      SETHUE       ;NO, SET COLOR
2404 AD0AD2      LDA      RANDOM       ;GET RANDOM
2407 2901        AND      #1           ;DIRECTION
2409 A8          TAY
240A BD802E      LDA      OBJGRD,X      ;AND
240D 18          CLC
240E 792731      ADC      ADDSB1,Y      ;SUBTRACT 1
2411 C90F        CMP      #15          ;PAST LIMIT?
2413 B003 ^2418  BCS      SETHUE       ;YES!
2415 9D802E      STA      OBJGRD,X      ;SAVE NEW POS.
2418 BD742E      SETHUE LDA      OBJTYP,X      ;GET OBJ. TYPE
241B AA         TAX
241C BD8C2E      LDA      OBJHUE,X      ;COLOR #
241F 8584        STA      COLOR        ;SAVE IT
2421 207924      JSR      DRWOBJ       ;AND DRAW OBJECT!
2424 4C5B23      JMP      OBJHAN       ;DO NEXT ONE

2427 A900        KILOBJ LDA      #0           ;OBJECT IS NO
2429 95E5        STA      OBJPRS,X      ;LONGER ALIVE
242B A915        LDA      #21          ;SET UP
242D 85D2        STA      OBDSOU       ;DEATH SOUND
242F BD862E      LDA      OBJSEG,X      ;CHECK
2432 1042 ^2476  BPL      JOBHAN       ;FOR A
2434 BD802E      LDA      OBJGRD,X      ;COLLISION
2437 C595        CMP      PLRGRD       ;WITH PLAYER
2439 D006 ^2441  BNE      CKSHOR       ;NO HIT
243B A901        LDA      #1           ;HIT,
243D 85BD        STA      KILPLR       ;KILL PLAYER!
243F D035 ^2476  BNE      JOBHAN       ;NEXT OBJECT
2441 BD742E      CKSHOR LDA      OBJTYP,X      ;OBJECT
2444 C901        CMP      #1           ;TYPE 1?
2446 D02E ^2476  BNE      JOBHAN       ;NOPE!

```

```

2448 A003          LDY      #3          ;TRY SHORT:
244A B9582E        TRYSHO  LDA      SHORTF,Y      ;SHORT AVAILABLE?
244D F005 ^2454   BEQ      INISHO   ;YUP!
244F 88           DEY      ;KEEP...
2450 10F8 ^244A   BPL      TRYSHO   ;TRYING!
2452 3022 ^2476   BMI      JOBHAN   ;NO SHORT AVAIL!
2454 BD802E        INISHO  LDA      OBJGRD,X      ;MULTIPLY THE
2457 0A           ASL      A          ;OBJECT'S
2458 0A           ASL      A          ;SUB-GRID #
2459 0A           ASL      A          ;BY 16...
245A 0A           ASL      A
245B 18           CLC
245C 6908         ADC      #8          ;AND ADD 8 FOR
245E 995C2E        STA      SHORTX,Y      ;THE SHORT INDEX
2461 A901          LDA      #1          ;SHORT IS
2463 99582E        STA      SHORTF,Y      ;ALIVE!
2466 AD0AD2        LDA      RANDOM      ;RANDOMIZE...
2469 2901          AND      #1          ;SHORT...
246B 99602E        STA      SHORTD,Y      ;DIRECTION
246E AD0AD2        LDA      RANDOM      ;AND THAT...
2471 293F          AND      #3F         ;DIRECTION'S...
2473 99642E        STA      SHORTT,Y      ;TIME!
2476 4C5B23        JOBHAN JMP      OBJJHAN   ;NEXT OBJECT

2479 A6AA          DRWOBJ LDX      OBJNUM     ;GET OBJECT #
247B BD802E        LDA      OBJGRD,X      ;GET SUB-GRID #
247E 0A           ASL      A          ;MULTIPLY
247F 0A           ASL      A          ;BY 16...
2480 0A           ASL      A
2481 0A           ASL      A
2482 85B0          STA      HLDGRD     ;AND SAVE.
2484 BD862E        LDA      OBJSEG,X      ;DIVIDE
2487 4A           LSR      A          ;SEGMENT BY 2
2488 B015 ^249F    BCS      ODDSEG     ;PROCESS ODD #
248A 18           CLC              ;IT'S EVEN, ADD
248B 65B0          ADC      HLDGRD     ;GRID INDEX
248D A8           TAY              ;PUT IN Y REG.
248E B9A031        LDA      SEGX,Y      ;GET OBJECT'S
2491 8582          STA      PLOTX      ;X POSITION
2493 85B3          STA      SAVEX      ;AND SAVE
2495 B9A032        LDA      SEGY,Y      ;GET OBJECT'S
2498 8583          STA      PLOTY      ;Y POSITION
249A 85B4          STA      SAVEY      ;AND SAVE
249C 4CBB24        JMP      ODDSKP     ;SKIP ODD ROUTINE
249F 18           ODDSEG  CLC              ;IT'S ODD, ADD
24A0 65B0          ADC      HLDGRD     ;GRID INDEX
24A2 A8           TAY              ;PUT IN Y REG.
24A3 B9A031        LDA      SEGX,Y      ;GET OBJECT'S
24A6 18           CLC              ;X POS, ADD
24A7 79A131        ADC      SEGX+1,Y      ;NEXT X POS.
24AA 6A           ROR      A          ;GET AVERAGE
24AB 8582          STA      PLOTX      ;PUT IN PLOT X
24AD 85B3          STA      SAVEX      ;AND SAVE
24AF B9A032        LDA      SEGY,Y      ;GET OBJECT'S
24B2 18           CLC              ;Y POS, ADD
24B3 79A132        ADC      SEGY+1,Y      ;NEXT Y POS.
24B6 6A           ROR      A          ;GET AVERAGE

```

```

24B7 8583          STA      PLOTY      ;PUT IN PLOT Y
24B9 85B4          STA      SAVEY      ;AND SAVE
24BB A91E          ODDSKP LDA      #30         ;NOW CALCULATE
24BD 38            SEC              ;THE OBJECT'S
24BE FD862E       SBC      OBJSEG,X    ;SIZE BASED ON
24C1 4A            LSR              ;ITS POSITION
24C2 29FE         AND      #$FE      ;ON THE GRID
24C4 0A            ASL              A
24C5 0A            ASL              A
24C6 A8            TAY              ;PUT INDEX IN Y
24C7 A200         LDX      #0          ;NOW COPY PART
24C9 B9012F       COPYSZ LDA      SIZTBL,Y    ;OF THE SIZE
24CC 9D912E       STA      SIZWK,X    ;TABLE TO A
24CF C8            INY              ;SIZE WORK AREA
24D0 E8            INX              ;THIS TABLE HOLDS
24D1 E008         CPX      #8          ;8 SIZE VALUES
24D3 D0F4 ^24C9  BNE      COPYSZ    ;BASED ON DIST.
24D5 A5AA         LDX      OBJNUM     ;GET OBJECT #
24D7 BD742E       LDA      OBJTYP,X  ;AND ITS TYPE
24DA 0A            ASL              A          ;AND MULTIPLY
24DB 0A            ASL              A          ;BY 8 FOR AN
24DC 0A            ASL              A          ;INDEX INTO
24DD 85AB         STA      SHAPIX   ;THE SHAPE TABLE
24DF A908         LDA      #8          ;MAX 8 LINES IN
24E1 85AF         STA      SHAPCT   ;EACH OBJECT
24E3 A5AB         DOBLP  LDX      SHAPIX   ;GET LINE#
24E5 BDB12E       LDA      OBJDIR,X  ;& ITS DIRECTION
24E8 A8            TAY              ;A NEGATIVE #
24E9 3040 ^252B  BMI      ENDOBJ    ;INDICATES END
24EB B9992E       LDA      PXINC,Y  ;GET X INCREMENT
24EE 85AD         STA      XI          ;OF LINE,
24F0 B9A12E       LDA      PYINC,Y  ;Y INCREMENT
24F3 85AE         STA      YI          ;OF LINE,
24F5 BDD92E       LDA      OBJLEN,X  ;ABSOLUTE LENGTH
24F8 A8            TAY              ;OF LINE THEN
24F9 B9912E       LDA      SIZWK,Y  ;SCALED LENGTH
24FC 85AC         STA      LENGTH   ;AND STORE!
24FE A582         PLOT0B LDA      PLOTX     ;THIS SECTION
2500 18            CLC              ;ADJUSTS THE
2501 65AD         ADC      XI          ;X AND Y PLOT
2503 8582         STA      PLOTX     ;VALUES...
2505 A583         LDA      PLOTY
2507 18            CLC
2508 65AE         ADC      YI
250A 8583         STA      PLOTY
250C A5AB         LDA      SHAPIX   ;DON'T PLOT
250E F003 ^2513  BEQ      NOPLT1    ;FIRST LINE!
2510 20BC2C       JSR      PLOTCL    ;PLOT POINT
2513 A583         NOPLT1 LDA      PLOTY    ;INCREMENT Y
2515 18            CLC              ;AGAIN TO ADJUST
2516 65AE         ADC      YI          ;FOR GR. 7+
2518 8583         STA      PLOTY    ;ASPECT RATIO
251A A5AB         LDA      SHAPIX   ;DON'T PLOT
251C F003 ^2521  BEQ      NOPLT2    ;FIRST LINE
251E 20BC2C       JSR      PLOTCL    ;PLOT POINT
2521 C5AC         NOPLT2 DEC      LENGTH   ;END OF LINE?
2523 10D9 ^24FE   BPL      PLOT0B    ;NOPE!

```

```

2525 E6AB          INC      SHAPIX ;NEXT LINE
2527 C6AF          DEC      SHAPCT ;LAST LINE?
2529 D0B8 ^24E3    BNE     DOBLP  ;NOT YET!
252B 60           ENDOBJ  RTS      ;ALL DONE!

;
; -----
; SHORT HANDLER
; -----

252C A203          SHOHAN  LDX     #3      ;MAX. 4 SHORTS
252E BD582E       SHHANL  LDA     SHORTF,X ;SHORT ALIVE?
2531 F023 ^2556    BEQ     HANNXS ;NO, DO NEXT
2533 BC602E       LDY     SHORTD,X ;GET SHORT DIR.
2536 BD5C2E       LDA     SHORTX,X ;GET X POS.
2539 18          CLC      ;AND ADJUST
253A 792531      ADC     ADDSUB,Y ;POSITION
253D C9F0          CMP     #240   ;ON GRID?
253F B008 ^2549    BCS     RESSHD ;NO! DON'T MOVE
2541 9D5C2E       STA     SHORTX,X ;OK, SAVE POS.
2544 DE642E       DEC     SHORTT,X ;DIRECTION CHANGE?
2547 100D ^2556    BPL     HANNXS ;NO!
2549 AD0AD2       RESSHD  LDA     RANDOM ;GET A RANDOM
254C 293F         AND     #3F     ;DIRECTION TIME
254E 9D642E       STA     SHORTT,X ;0-63 & SAVE
2551 2901         AND     #1      ;RANDOM DIRECTION
2553 9D602E       STA     SHORTD,X ;0-1 & SAVE
2556 CA          HANNXS  DEX     ;MORE SHORTS?
2557 10D5 ^252E    BPL     SHHANL ;YUP!
2559 60           RTS      ;ALL DONE!

;
; -----
; ADD TO SCORE
; -----

255A A000          ADDSCO  LDY     #0      ;GET ZERO
255C F8           SED     ;SET DECIMAL MODE
255D A5DA          LDA     SCORE+2 ;THIS SECTION
255F 18          CLC      ;INCREMENTS
2560 65DD          ADC     SCOADD+2 ;THE 3-DIGIT
2562 85DA          STA     SCORE+2 ;SCORE USING
2564 84DD          STY     SCOADD+2 ;THE 3-DIGIT
2566 A5D9          LDA     SCORE+1 ;SCORE ADD
2568 65DC          ADC     SCOADD+1 ;AREA, THEN
256A 85D9          STA     SCORE+1 ;ZEROS OUT
256C 84DC          STY     SCOADD+1 ;THE
256E A5D8          LDA     SCORE ;SCORE ADD
2570 65DB          ADC     SCOADD ;AREA USING
2572 85D8          STA     SCORE ;THE
2574 84DB          STY     SCOADD ;Y REGISTER.
2576 D8          CLD     ;CLR DECIMAL MODE
2577 208D25       JSR     SHOSCO ;SHOW SCORE
257A A5D8          LDA     SCORE ;IS SCORE AT
257C C5D0          CMP     BONUS  ;BONUS LEVEL?
257E D00C ^258C    BNE     NOBONS ;SORRY!
2580 20A325       JSR     INCLIV ;BONUS, ADD LIFE!
2583 F8           SED     ;SET DECIMAL
2584 A5D0          LDA     BONUS ;GET OLD BONUS

```

```

2586 18          CLC          ;ADD 20000
2587 6902        ADC          #2      ;TO IT
2589 D8          CLD          ;CLR DECIMAL
258A 85D0        STA          BONUS   ;AND SAVE BONUS
258C 60          NOBONS      RTS      ;FINIS!

;
; -----
; SHOW SCORE
; -----

258D A910        SHOSCO     LDA          #$10     ;SET UP COLOR
258F 85A6        STA          SHCOLR  ;BYTE FOR SHOW
2591 A200        LDX          #0      ;ZERO X
2593 A000        LDY          #0      ;& Y REGS
2595 B9D800      SSCOLP     LDA          SCORE,Y  ;GET SCORE BYTE
2598 204025      JSR          SHOBCD  ;SHOW IT
259B E8          INX          ;INCREMENT SHOW
259C E8          INX          ;POS. BY 2
259D C8          INY          ;NEXT SCORE BYTE
259E C003        CPY          #3      ;DONE?
25A0 D0F3 ^2595 BNE          SSCOLP  ;NOT YET!
25A2 60          RTS          ;ALL DONE!

;
; -----
; INCREMENT LIVES
; -----

25A3 A5C8        INCLIV     LDA          LIVES   ;DO WE HAVE
25A5 C905        CMP          #5      ;5 LIVES NOW?
25A7 F005 ^25AE BEQ          NOMOLV   ;YUP, NO INC!
25A9 E5C8        INC          LIVES   ;ONE MORE LIFE
25AB 202C25      JSR          SHOLIV  ;SHOW IT
25AE 60          NOMOLV     RTS      ;AND EXIT!

;
; -----
; DECREMENT LIVES
; -----

25AF 208A25      DECLIV     JSR          SNDOFF  ;NO SOUND

;
; -----
; WAIT FOR PROJECTILES TO END
; -----

25B2 A207        WAITPD     LDX          #7      ;8 PROJECTILES
25B4 A900        LDA          #0      ;ZERO TALLY
25B6 1D0C2E      CKPRLV     ORA          PROJAC,X  ;CHECK ALL
25B9 CA          DEX          ;PROJECTILES
25BA D0FA ^25B6 BNE          CKPRLV  ;FOR ACTIVITY
25BC C900        CMP          #0      ;ANY ACTIVE?
25BE D0F2 ^25B2 BNE          WAITPD   ;YES! WAIT MORE!

;
; -----
; STOP SHORTS
; -----

25C0 A203        LDX          #3      ;4 SHORTS (0-3)

```

```

25C2 9D582E      STPSHO STA      SHORTF,X      ;TURN OFF
25C5 CA         DEX          ;ALL OF 'EM
25C6 10FA ^25C2 BPL         STPSHO      ;LOOP UNTIL DONE
;
; -----
; PUT OBJECTS AT END OF GRID
; -----
25C8 A900         LDA         #0           ;ERASE
25CA 8584         STA         COLOR      ;COLOR
25CC A905         LDA         #5           ;ERASE ALL 6
25CE 85AA         STA         OBJNUM     ;OBJECTS
25D0 207924      ERSOBJ JSR         DRWOBJ     ;ERASE IT!
25D3 A6AA         LDX         OBJNUM     ;GET OBJECT #
25D5 A91E         LDA         #30        ;PLACE AT
25D7 9D862E      STA         OBJSEG,X    ;SEG #30
25DA A901         LDA         #1           ;SET UP MOVE
25DC 9D7A2E      STA         OBJINC,X   ;INCREMENT
25DF AD0AD2      RNDDBG LDA         RANDOM     ;GET RANDOM
25E2 290F         AND         #$0F       ;SUB-GRID #
25E4 C90F         CMP         #$0F       ;0-14
25E6 F0F7 ^25DF   BEQ         RNDDBG
25E8 9D802E      STA         OBJGRD,X
25EB C6AA         DEC         OBJNUM     ;MORE OBJECTS?
25ED 10E1 ^25D0 BPL         ERSOBJ     ;YEAH, DO 'EM
25EF A90F         LDA         #$0F       ;SHOW PLAYER
25F1 8DC002      STA         COLPM0     ;DEATH HERE
25F4 8D01D2      STA         AUDC1     ;START SOUND
25F7 AD0AD2      MOREWT LDA         RANDOM     ;SET RANDOM
25FA 291F         AND         #$1F       ;DEATH SOUND
25FC 8D00D2      STA         AUDF1     ;FREQUENCY
25FF A906         LDA         #6         ;WAIT 0.1 SEC
2601 208326      JSR         WAIT
2604 CEC002      DEC         COLPM0     ;DEC BRIGHTNESS
2607 ADC002      LDA         COLPM0     ;NOW SET
260A 8D01D2      STA         AUDC1     ;DEATH VOLUME
260D D0E8 ^25F7   BNE         MOREWT    ;MORE WAIT
260F A5C8         LDA         LIVES      ;MORE LIVES?
2611 F014 ^2627   BEQ         DEAD      ;NO MORE LIFE!
2613 C6C8         DEC         LIVES     ;ONE LESS LIFE
2615 202C26      JSR         SHOLIV    ;SHOW IT
2618 A93C         LDA         #60        ;WAIT 1 SEC
261A 208326      JSR         WAIT
261D A900         LDA         #0         ;RESET PLAYER
261F 85BD         STA         KILPLR    ;KILL FLAG
2621 A916         LDA         #$16      ;AND
2623 8DC002      STA         COLPM0     ;PLAYER COLOR
2626 60          RTS          ;AND EXIT!
2627 68          DEAD  PLA         ;ALL DEAD, PULL
2628 68          PLA         ;RETURN ADDR.
2629 4C7321      JMP         LIVE      ;AND RESTART GAME
;
; -----
; SHOW LIVES
; -----
262C A990         SHOLIV LDA         #$90      ;SELECT DISPLAY

```



```

262E 85A6          STA      SHCOLR ;COLOR
2630 A5C8          LDA      LIVES  ;GET LIVES
2632 A207          LDX      #7      ;7TH CHAR ON LINE
2634 204026       JSR      SHOBCD ;SHOW IT!
2637 60            RTS              ;AND EXIT

```

```

; -----
; SHOW LEVEL
; -----

```

```

2638 A050          SHOLVL  LDY      #$50 ;SELECT DISPLAY
263A 84A6          STY      SHCOLR ;COLOR
263C A5A5          LDA      BCDLVL ;GET LEVEL#
263E A20E          LDX      #14    ;14TH CHAR

```

```

; -----
; BCD CHAR DISPLAY
; -----

```

```

2640 85A7          SHOBCD  STA      SHOBYT ;SAVE CHARACTER
2642 290F          AND      #$0F   ;GET NUM 1
2644 05A6          ORA      SHCOLR ;ADD COLOR
2646 9D0421       STA      INFOLN+1,X ;SHOW IT
2649 A5A7          LDA      SHOBYT ;GET CHAR.
264B 4A            LSR      A       ;SHIFT RIGHT
264C 4A            LSR      A       ;TO GET
264D 4A            LSR      A       ;NUM 2
264E 4A            LSR      A
264F 05A6          ORA      SHCOLR ;ADD COLOR
2651 9D0321       STA      INFOLN,X ;SHOW IT
2654 60            RTS              ;AND EXIT!

```

```

; -----
; FLASH OBJECT WHEN DEAD
; -----

```

```

2655 A4B5          FLASH  LDY      FLASHY ;GET Y POS.
2657 A900          LDA      #0      ;GET READY TO
2659 A20E          LDX      #14    ;CLEAR OLD FLASH
265B 990005       CLFLSH  STA      PL1,Y ;ZERO OUT EACH
265E C8            INY              ;BYTE OF FLASH
265F CA            DEX              ;DONE YET?
2660 D0F9 ^265B   BNE      CLFLSH ;NO, LOOP.
2662 A5B3          LDA      SAVEX  ;GET OBJECT'S
2664 18            CLC              ;X POS. AND
2665 693D          ADC      #61    ;ADD 61 FOR
2667 8D01D0       STA      HPOSP1 ;FLASH HORIZ.
266A A5B4          LDA      SAVEY  ;GET Y POS AND
266C 18            CLC              ;ADD 26 FOR
266D 691A          ADC      #26    ;FLASH VERT.
266F A8            TAY              ;POSITION
2670 84B5          STY      FLASHY ;AND SAVE
2672 A20D          LDX      #13    ;FLASH = 14 BYTES
2674 BD402E       SEFLSH  LDA      FLBYTE,X ;GET IMAGE
2677 990005       STA      PL1,Y ;PUT IN PLAYER 1
267A C8            INY              ;NEXT P/M BYTE
267B CA            DEX              ;NEXT IMAGE BYTE

```

```

267C 10F6 ^2674      BPL      SEFLSH ;LOOP.
267E A901             LDA      #1      ;SET FLASH
2680 85B6             STA      FLTIME ;DURATION
2682 60               RTS      ;ALL DONE!

;
; -----
; TIME DELAY
; -----

2683 85A3             WAIT    STA      TIMER ;SET TIMER
2685 A5A3             WAITLP LDA      TIMER ;TIMER = 0?
2687 D0FC ^2685      BNE      WAITLP ;NOPE!
2689 60               RTS      ;TIMER FINISHED!

;
; -----
; TURN SOUNDS OFF
; -----

268A A900             SNDOFF  LDA      #0      ;ZERO OUT:
268C 85D1             STA      FIRSOU ;FIRE SOUND
268E 85D2             STA      OBDSOU ;OBJ DEATH SOUND
2690 85D3             STA      MOVSOU ;PLYR MOVE SOUND
2692 A207             LDX      #7      ;ZERO ALL:
2694 9D00D2          SNDOF2  STA      AUDF1,X ;AUDIO REGISTERS
2697 CA             DEX
2698 10FA ^2694      BPL      SNDOF2
269A 60               RTS      ;AND EXIT

;
; -----
; DRAW GRID
; -----

269B A901             DRGRID  LDA      #1      ;TELL INTERRUPT
269D 85A4             STA      INTRFG ;IT'S INTRO
269F 208A25          JSR      SNDOFF ;TURN OFF SOUND
26A2 A920             LDA      #$20   ;TURN OFF TOP
26A4 85C5             STA      DMAC1  ;OF SCREEN BY
26A6 A900             LDA      #0      ;SHUTTING OFF
26A8 85C6             STA      GRAC1  ;DMA & GRAPHICS
26AA A203             LDX      #3      ;TURN OFF SHORTS
26AC 9D582E          CLSHRT  STA      SHORTE,X
26AF CA             DEX
26B0 10FA ^26AC      BPL      CLSHRT
26B2 A207             LDX      #7      ;TURN OFF
26B4 9D0C2E          CLPRJC  STA      PROJAC,X ;ALL PROJECTILES
26B7 CA             DEX
26B8 10FA ^26B4      BPL      CLPRJC
26BA 208B2C          JSR      PMCLR  ;CLEAR P/M AREA
26BD 8593             STA      OFFSET ;ZERO OFFSET
26BF A906             LDA      #6      ;SET 6 PROJECT.
26C1 85BE             STA      PAVAIL ;AVAILABLE
26C3 A5C7             LDA      GRIDIX ;GET GRID #
26C5 4A             LSR      A      ;DIVIDE
26C6 4A             LSR      A      ;BY
26C7 4A             LSR      A      ;8
26C8 AA             TAX      ;LOAD APPROPRIATE
26C9 BDBC2D          LDA      C0TBL,X ;GRID COLOR

```

```

26CC 8DC402      STA      COLPF0
26CF BDC42D      LDA      C1TBL,X ;OBJECT COLOR 1
26D2 8DC502      STA      COLPF1
26D5 BDC62D      LDA      C2TBL,X ;OBJECT COLOR 2
26D8 8DC602      STA      COLPF2
26DB BDA92E      LDA      OBSTBL,X ;OBJECT SPEED
26DE 85CD        STA      OBJSPD
26E0 A5C7         LDA      GRIDIX ;GET GRID
26E2 2907        AND      #7 ;SHAPE INDEX
26E4 AA          TAX      ;LOAD:
26E5 BDD42D      LDA      OBCNT0,X ;TYPE 0
26E8 85DF        STA      NUMOBJ ;OBJECT COUNT
26EA BDDC2D      LDA      OBCNT1,X ;TYPE 1
26ED 85E0        STA      NUMOBJ+1 ;OBJECT COUNT
26EF BDE42D      LDA      OBCNT2,X ;TYPE 2
26F2 85E1        STA      NUMOBJ+2 ;OBJECT COUNT
26F4 BDEC2D      LDA      OBCNT3,X ;TYPE 3
26F7 85E2        STA      NUMOBJ+3 ;OBJECT COUNT
26F9 BDF42D      LDA      OBCNT4,X ;TYPE 4
26FC 85E3        STA      NUMOBJ+4 ;OBJECT COUNT
26FE A204         LDX      #4 ;ADJUST ALL
2700 B5DF          DIFFAD LDA      NUMOBJ,X ;OBJECT COUNTS
2702 18          CLC      ;BY ADDING
2703 65E4        ADC      DIFF ;DIFFICULTY
2705 95DF        STA      NUMOBJ,X ;AND SAVE
2707 CA          DEX
2708 10F6 ^2700 BPL      DIFFAD
270A A5CC         LDA      GRDNUM ;GET GRID #
270C 0A          ASL      A ;MULTIPLY
270D 0A          ASL      A ;BY 16
270E 0A          ASL      A
270F 0A          ASL      A
2710 85C9        STA      GRDADJ ;SAVE
2712 85CA        STA      GRDWK ;SAVE
2714 AA          TAX      ;SET X INDEX
2715 A910        LDA      #16 ;LOAD 16 BYTES
2717 85CB        STA      GRDWK2
2719 BD952F      GRDLIN LDA      CX,X ;GET CLOSE X
271C 8582        STA      PLOTX
271E BDF52F      LDA      CY,X ;GET CLOSE Y
2721 8583        STA      PLOTY
2723 BD5530      LDA      FX,X ;GET FAR X
2726 8585        STA      DRAWX
2728 BDB530      LDA      FY,X ;GET FAR Y
272B 8586        STA      DRAWY
272D ADC402      LDA      COLPF0 ;INVISIBLE?
2730 F006 ^2738 BEQ      NOGRD1 ;YES, DON'T DRAW
2732 20BC2C      JSR      PLOTCL ;PLOT CLOSE POINT
2735 201F2D      JSR      DRAW ;DRAW TO FAR
2738 C5CB          NOGRD1 DEC      GRDWK2 ;CONTINUE DRAWING
273A F007 ^2743 BEQ      GRDBO1 ;UNTIL ALL 16
273C E5CA        INC      GRDWK ;LINES ARE DONE
273E A5CA        LDX      GRDWK
2740 4C1927      JMP      GRDLIN
2743 A5C9          GRDBO1 LDX      GRDADJ ;NOW DRAW 15
2745 85CA        STX      GRDWK ;CLOSE GRID
2747 A90F        LDA      #15 ;BORDER LINES

```

```

2749 850B          STA      GRDWK2
274B BD952F        GRDBL1  LDA      CX,X      ;GET CLOSE X
274E 8582          STA      PLOTX
2750 BDF52F        LDA      CY,X      ;GET CLOSE Y
2753 8583          STA      PLOTY
2755 BD962F        LDA      CX+1,X    ;NEXT CLOSE X
2758 8585          STA      DRAWX
275A 18            CLC
275B 6582          ADC      PLOTX    ;BETWEEN THEM
275D 6A            ROR      A
275E 8590          STA      XWORK    ;AND SAVE IT!
2760 BDF62F        LDA      CY+1,X    ;NEXT CLOSE Y
2763 8586          STA      DRAWY
2765 18            CLC
2766 6583          ADC      PLOTY    ;BETWEEN THEM
2768 6A            ROR      A
2769 8591          STA      YWORK    ;AND SAVE IT!
276B A90F          LDA      #15      ;SET UP A WORK
276D 38            SEC
276E E50B          SBC      GRDWK2   ;THE POINTS
2770 8592          STA      GRID     ;BETWEEN LINES
2772 20BE28        JSR     GRIDSV    ;AND SAVE THEM
2775 ADC402          LDA      COLPF0   ;INVISIBLE GRID?
2778 F006 ^2780    BEQ     NOGRD2   ;YES, DON'T DRAW
277A 20BC2C        JSR     PLOTCL   ;PLOT CLOSE POINT1
277D 201F2D        JSR     DRAW     ;DRAW TO POINT 2
2780 C50B          NOGRD2  DEC      GRDWK2   ;MORE LINES?
2782 F007 ^278B    BEQ     GRDB02   ;NO!
2784 E50A          INC      GRDWK   ;INCREMENT TO
2786 A50A          LDX     GRDWK   ;NEXT LINE
2788 4C4B27        JMP     GRDBL1   ;AND LOOP
278B A509          GRDB02  LDX     GRDADJ   ;NOW DRAW 15
278D 860A          STX     GRDWK   ;FAR GRID
278F A90F          LDA      #15     ;BORDER LINES
2791 850B          STA      GRDWK2
2793 8593          STA      OFFSET  ;AND SET OFFSET
2795 BD5530        GRDBL2  LDA      FX,X      ;GET FAR X
2798 8582          STA      PLOTX
279A BDB530        LDA      FY,X      ;GET FAR Y
279D 8583          STA      PLOTY
279F BD5630        LDA      FX+1,X   ;NEXT FAR X
27A2 8585          STA      DRAWX
27A4 18            CLC
27A5 6582          ADC      PLOTX    ;MIDPOINT
27A7 6A            ROR      A
27A8 8590          STA      XWORK    ;AND SAVE IT!
27AA BDB630        LDA      FY+1,X   ;NEXT FAR Y
27AD 8586          STA      DRAWY
27AF 18            CLC
27B0 6583          ADC      PLOTY    ;MIDPOINT
27B2 6A            ROR      A
27B3 8591          STA      YWORK    ;AND SAVE IT!
27B5 A90F          LDA      #15     ;USE THE SAME
27B7 38            SEC
27B8 E50B          SBC      GRDWK2   ;TO HOLD THE
27BA 8592          STA      GRID     ;MIDPOINTS
27BC 20BE28        JSR     GRIDSV    ;AND SAVE THEM

```

```

27BF ADC402          LDA      COLPF0   ;INVISIBLE GRID?
27C2 F006 ^27CA     BEQ      NOGRD3   ;YES, DON'T DRAW
27C4 20BC2C         JSR      PLOTCL   ;PLOT FAR POINT 1
27C7 201F2D         JSR      DRAW      ;DRAW TO POINT 2
27CA C5CB          NOGRD3 DEC      GRDWK2   ;MORE LINES?
27CC F007 ^27D5     BEQ      GENCOO   ;NO!
27CE E5CA          INC      GRDWK    ;INCREMENT TO
27D0 A5CA          LDX      GRDWK    ;NEXT LINE
27D2 4C9527         JMP      GRDBL2   ;AND LOOP

;
; -----
;
; NOW GENERATE COORDINATE TABLE
;
; THIS SECTION BUILDS THE SEGX,
; SEGY, RIMX AND RIMY TABLES.
; THE SEGX&Y TABLES ARE POINTS
; UP AND DOWN THE GRID FOR PRO-
; JECTILES AND OBJECTS. THE
; RIMX&Y TABLES ARE FOR THE
; POSITIONING OF SHORTS.
;
; -----
;
27D5 A900          GENCOO LDA      #0
27D7 8597          STA      GRIDNO
27D9 AA          DIVCTL TAX
27DA BDA031        LDA      SEGX,X   ;SET UP SEGWK
27DD 8D8F31        STA      SEGWK    ;WITH END
27E0 BDAF31        LDA      SEGX+15,X ;COORDINATES
27E3 8D9F31        STA      SEGWK+16
27E6 207728        JSR      DIVIDE   ;DIVIDE SEGWK
27E9 A597          LDX      GRIDNO
27EB A000          LDY      #0
27ED B98F31        COPY1  LDA      SEGWK,Y   ;COPY SEGWK
27F0 9DA031        STA      SEGX,X   ;TABLE TO SEGX
27F3 E8            INX
27F4 C8            INY
27F5 C010          CPY      #16
27F7 D0F4 ^27ED    BNE      COPY1
; NOW THE Y COORDS
27F9 A597          LDX      GRIDNO
27FB BDA032        LDA      SEGY,X   ;SET UP SEGWK
27FE 8D8F31        STA      SEGWK    ;WITH END
2801 BDAF32        LDA      SEGY+15,X ;COORDINATES
2804 8D9F31        STA      SEGWK+16
2807 207728        JSR      DIVIDE   ;DIVIDE SEGWK
280A A597          LDX      GRIDNO
280C A000          LDY      #0
280E B98F31        COPY2  LDA      SEGWK,Y   ;COPY SEGWK
2811 9DA032        STA      SEGY,X   ;TABLE TO SEGY
2814 E8            INX
2815 C8            INY
2816 C010          CPY      #16
2818 D0F4 ^280E    BNE      COPY2

;
; -----
;
; NOW GENERATE RIM COORDINATES
;
; -----

```

```

281A A597          LDX      GRIDNO
281C BDA033        LDA      RIMX,X  ;SET UP SEGWK
281F 8D8F31        STA      SEGWK   ;WITH END
2822 BDAF33        LDA      RIMX+15,X  ;COORDINATES
2825 8D9F31        STA      SEGWK+15
2828 207728        JSR      DIVIDE  ;DIVIDE SEGWK
282B A597          LDX      GRIDNO
282D A000          LDY      #0
282F B98F31        COPY3   LDA      SEGWK,Y  ;COPY SEGWK
2832 9DA033        STA      RIMX,X  ;TABLE TO RIMX
2835 E8             INX
2836 C8             INY
2837 C010          CPY      #15
2839 D0F4 ^282F    BNE      COPY3
;NOW THE RIM Y COORDS
283B A597          LDX      GRIDNO
283D BDA034        LDA      RIMY,X  ;SET UP SEGWK
2840 8D8F31        STA      SEGWK   ;WITH END
2843 BDAF34        LDA      RIMY+15,X  ;COORDINATES
2846 8D9F31        STA      SEGWK+15
2849 207728        JSR      DIVIDE  ;DIVIDE SEGWK
284C A597          LDX      GRIDNO
284E A000          LDY      #0
2850 B98F31        COPY4   LDA      SEGWK,Y  ;COPY SEGWK
2853 9DA034        STA      RIMY,X  ;TABLE TO RIMY
2856 E8             INX
2857 C8             INY
2858 C010          CPY      #15
285A D0F4 ^2850    BNE      COPY4
285C A597          LDA      GRIDNO  ;DO ALL 15
285E 18            CLC      ;GRID LINES
285F 6910          ADC      #15
2861 8597          STA      GRIDNO
2863 C9F0          CMP      #240  ;ALL DONE?
2865 F003 ^286A    BEQ      ENDDVC  ;YOU BET!
2867 4CD927        JMP      DIVCTL  ;LOOP BACK!
286A A93D          ENDDVC  LDA      #$3D  ;RESTART
286C 85C5          STA      DMAC1  ;THE DISPLAY
286E A903          LDA      #$03  ;AFTER GRID
2870 85C6          STA      GRAC1  ;IS DRAWN
2872 A900          LDA      #0    ;NO MORE
2874 85A4          STA      INTRFG  ;INTRO STATUS
2876 60            RTS      ;FINIS!

```

```

;
;-----
; DIVIDE SEGWK TABLE
;
; THIS ROUTINE EXAMINES THE FIRST
; AND LAST BYTES IN THE SEGWK
; TABLE AND FILLS THE BYTES IN
; BETWEEN WITH AN EVEN TRANSITION
; FROM ONE ENDPOINT TO THE OTHER
;-----
;

```

```

2877 A910          DIVIDE  LDA      #15
2879 859A          STA      STEP

```

```

287B 8599          STA     NEXT
287D 4A           LSR     A
287E 859B          STA     DEST
2880 A900          DIVLP2 LDA     #0
2882 8598          STA     LAST
2884 A598          DIVLP1 LDX     LAST
2886 BD8F31        LDA     SEGWK,X
2889 A599          LDX     NEXT
288B 18           CLC
288C 7D8F31        ADC     SEGWK,X
288F 6A           ROR     A
2890 A59B          LDX     DEST
2892 9D8F31        STA     SEGWK,X
2895 A598          LDA     LAST
2897 18           CLC
2898 659A          ADC     STEP
289A 8598          STA     LAST
289C 659A          ADC     STEP
289E C911          CMP     #17
28A0 B00C ^28AE    BCS     NOSTEP
28A2 8599          STA     NEXT
28A4 A59B          LDA     DEST
28A6 18           CLC
28A7 659A          ADC     STEP
28A9 859B          STA     DEST
28AB 4C8428        JMP     DIVLP1
28AE A59A          NOSTEP LDA     STEP
28B0 4A           LSR     A
28B1 859A          STA     STEP
28B3 8599          STA     NEXT
28B5 4A           LSR     A
28B6 F005 ^28BD    BEQ     ENDDIV
28B8 859B          STA     DEST
28BA 4C8028        JMP     DIVLP2
28BD 60           ENDDIV RTS

```

```

; -----
; GRID COORDINATE SAVE
; -----

```

```

28BE A592          GRIDSV LDA     GRID
28C0 0A          ASL     A ;*2
28C1 0A          ASL     A ;*4
28C2 0A          ASL     A ;*8
28C3 0A          ASL     A ;*16
28C4 18          CLC ;ADD THE
28C5 6593        ADC     OFFSET ;OFFSET VALUE
28C7 AA          TAX ;SAVE IN INDEX
28C8 A590        LDA     XWORK ;GET X WORK
28CA 9DA031      STA     SEGX,X ;AND SAVE
28CD A591        LDA     YWORK ;GET Y WORK
28CF 9DA032      STA     SEGY,X ;AND SAVE
28D2 A593        LDA     OFFSET ;DON'T CONTINUE
28D4 D014 ^28EA  BNE     SAVEND ;IF OFFSET >0
28D6 A582        LDA     PLOTX ;GET PLOTX
28D8 9DA033      STA     RIMX,X ;AND SAVE
28DB A583        LDA     PLOTY ;GET PLOTY

```

```

28DD 9DA034      STA      RIMY,X      ;AND SAVE
28E0 A585        LDA      DRAWX      ;GET DRAWX
28E2 9DAF33      STA      RIMX+15,X   ;AND SAVE
28E5 A586        LDA      DRAWY      ;GET DRAWY
28E7 9DAF34      STA      RIMY+15,X   ;AND SAVE
28EA 60          SAVEND  RTS      ;ALL DONE!

;
; -----
; VERTICAL BLANK ROUTINE
; -----
;

28EB A9CF        VBI      LDA      #DLI1&255      ;POINT TO
28ED 8D0002      STA      VDSLST     ;FIRST
28F0 A920        LDA      #DLI1/255     ;DISPLAY LIST
28F2 8D0102      STA      VDSLST+1     ;INTERRUPT
28F5 D8          CLD          ;CLR DECIMAL MODE
28F6 A5A9        LDA      OBTIM1     ;THIS SECTION
28F8 F002 ^28FC  BEQ      NOOBTD     ;PROCESSES
28FA C6A9        DEC      OBTIM1     ;ALL TIMERS
28FC A5A3        NOOBTD  LDA      TIMER
28FE F002 ^2902  BEQ      NOTIMR
2900 C6A3        DEC      TIMER
2902 A5B6        NOTIMR  LDA      FLTIME
2904 F002 ^2908  BEQ      NOFTIM
2906 C6B6        DEC      FLTIME
2908 A5BD        NOFTIM  LDA      KILPLR     ;PLAYER DEAD?
290A F003 ^290F  BEQ      CHKINT     ;NO, CONTINUE!
290C 4C002B      JMP      VBCONT     ;SKIP PLAYER STUFF
290F A5A4        CHKINT  LDA      INTRFG     ;IN INTRO?
2911 F003 ^2916  BEQ      NOTINT     ;NO, CONTINUE!
2913 4C62E4      JMP      XITVBV     ;EXIT IF INTRO
2916 ADFC02      NOTINT  LDA      KEY        ;GET KEYBOARD
2919 C91C        CMP      #$1C      ;PAUSE (ESC)?
291B D009 ^2926  BNE      CKZAP     ;NO, CHECK ZAP
291D A5B1        LDA      PAUFLG     ;GET PAUSE FLAG
291F 49FF        EOR      #$FF      ;AND FLIP
2921 85B1        STA      PAUFLG     ;AND STORE
2923 4C5229      JMP      ENDKEY     ;DONE W/KEY
2926 C921        CKZAP  CMP      #$21      ;SPACE BAR?
2928 D028 ^2952  BNE      ENDKEY     ;NAW, DONE W/KEY
292A A5B2        LDA      ZAP        ;USED ZAP YET?
292C F024 ^2952  BEQ      ENDKEY     ;YES, NO ZAP
292E C6B2        DEC      ZAP        ;ZAP NOW USED
2930 A205        LDX      #5        ;TIME TO KILL
2932 A901        LDA      #1        ;ALL OBJECTS
2934 9D682E      ZAPOBJ  STA      OBDEAD,X
2937 CA          DEX
2938 10FA ^2934  BPL      ZAPOBJ
293A A203        LDX      #3        ;AND KILL
293C BD582E      ZAPSHO  LDA      SHORTF,X     ;ALL SHORTS
293F F00E ^294F  BEQ      NOSKIL
2941 A5DE        LDA      MISCAD     ;ALSO SET
2943 F8          SED          ;MISCELLANEOUS
2944 18          CLC          ;SCORE ADD
2945 6904        ADC      #4        ;FOR 400 POINTS
2947 85DE        STA      MISCAD     ;FOR EACH SHORT
2949 D8          CLD

```



```

294A A900          LDA      #0          ;KILL
294C 9D582E        STA      SHORTF,X      ;SHORT
294F CA           NOSKIL  DEX
2950 10EA ^293C    BPL      ZAPSHO
2952 A900          ENDKEY  LDA      #0          ;CLEAR
2954 8DFC02        STA      KEY           ;KEYPRESS.
2957 A5B1          LDA      PAUFLG        ;PAUSED?
2959 F011 ^296C    BEQ     NOPAU         ;NO, CONTINUE
295B A900          LDA      #0          ;TURN OFF
295D 8D01D2        STA      AUDC1        ;ALL SOUNDS
295E 8D03D2        STA      AUDC2        ;DURING
2963 8D05D2        STA      AUDC3        ;THE
2966 8D07D2        STA      AUDC4        ;PAUSE
2969 4C62E4        JMP     XITVBV        ;THEN EXIT
296C A5D1          NOPAU  LDA      FIRSOU        ;FIRE SOUND ON?
296E F010 ^2980    BEQ     NOFSND        ;NO!
2970 C6D1          DEC     FIRSOU        ;DEC COUNTER
2972 A5D1          LDX     FIRSOU        ;PUT IN INDEX
2974 BD3E31        LDA      FIRFRQ,X      ;GET FREQUENCY
2977 8D02D2        STA      AUDF2
297A BD2931        LDA      FIRCTL,X     ;GET CONTROL
297D 8D03D2        STA      AUDC2
2980 A5D2          NOFSND LDA      OBDSOU        ;OBJ DEATH SOUND?
2982 F010 ^2994    BEQ     NOOSND        ;NO!
2984 C6D2          DEC     OBDSOU        ;DEC COUNTER
2986 A5D2          LDX     OBDSOU        ;PUT IN INDEX
2988 BD6831        LDA      OBDFRQ,X     ;GET FREQUENCY
298B 8D04D2        STA      AUDF3
298E BD5331        LDA      OBDCtrl,X   ;GET CONTROL
2991 8D05D2        STA      AUDC3
2994 A5D3          NOOSND LDA      MOVSOU        ;MOVE SOUND?
2996 F010 ^29A8    BEQ     CYCCOL        ;NO!
2998 C6D3          DEC     MOVSOU        ;DEC COUNTER
299A A5D3          LDX     MOVSOU        ;PUT IN INDEX
299C BD8631        LDA      MOVFRQ,X     ;GET FREQUENCY
299F 8D06D2        STA      AUDF4
29A2 BD7D31        LDA      MOVCTL,X   ;GET CONTROL
29A5 8D07D2        STA      AUDC4
29A8 ADC202        CYCCOL  LDA      COLPM2        ;CYCLE
29AB 18            CLC
29AC 6910          ADC     #16          ;COLOR
29AE 8DC202        STA      COLPM2        ;SAVE IN P/M 2
29B1 8DC302        STA      COLPM3        ;AND IN P/M 3
29B4 29FC          AND     #$FC          ;ALSO PUT IN
29B6 8DC702        STA      COLPF3        ;PF3 FOR MISSILES
29B9 C6BF          DEC     TRANTM        ;TRANSIENT TIME
29BB D017 ^29D4    BNE     NOTRAN        ;NO CHANGE
29BD AD902E        LDA      OBJHUE+4     ;FLIP
29C0 D004 ^29C6    BNE     TRAN1         ;TRANSIENT
29C2 A902          LDA      #2          ;HUE
29C4 D002 ^29C8    BNE     STOTRN        ;TO EITHER
29C6 A900          TRAN1  LDA      #0          ;0 OR 2
29C8 8D902E        STOTRN STA      OBJHUE+4
29CB AD0AD2        LDA      RANDOM
29CE 091F          ORA     #$1F          ;RESET
29D0 293F          AND     #$3F          ;THE
29D2 85BF          STA      TRANTM        ;TRANSIENT TIME

```

```

29D4 E5BC      NOTRAN  INC     PSCNT    ;INC PLYR TIMER
29D6 A5BC      LDA     PSCNT    ;READY TO
29D8 C903      CMP     #3       ;CHANGE SHAPE?
29DA D00A ^29E6 BNE     NOPSIN   ;NOT YET!
29DC A900      LDA     #0       ;BETTER RESET
29DE 85BC      STA     PSCNT    ;INDEX
29E0 E5B7      INC     SP1IX    ;AND INCREMENT
29E2 E5B8      INC     SP2IX    ;ALL SHAPE
29E4 E5B9      INC     SP3IX    ;INDEXES!
29E6 A59D      NOPSIN  LDA     PFTIME   ;SEE IF WE'RE
29E8 F005 ^29EF BEQ     FIRE     ;READY TO CHECK
29EA C59D      DEC     PFTIME   ;IF PLAYER IS
29EC 4C312A   JMP     CHKPMV   ;SHOOTING
29EF A904      FIRE    LDA     #4     ;RESET FIRE
29F1 859D      STA     PFTIME   ;TIMER
29F3 A5CE      LDA     JOYPAD   ;USING STICK?
29F5 F006 ^29FD BEQ     RDSTRG   ;YES!
29F7 AD7C02   LDA     PTRIG0   ;GET PADL TRIGGER
29FA 4C002A   JMP     CMPTRG   ;CHECK IT
29FD AD8402   RDSTRG  LDA     STRIG  ;GET STICK TRIGGER
2A00 D02F ^2A31 CMPTRG  BNE     CHKPMV   ;NOT FIRING!
2A02 A5BE      LDA     PAVAIL   ;ANY PROJ AVAIL?
2A04 F02B ^2A31 BEQ     CHKPMV   ;NO!
2A06 A207      LDX     #7       ;FIND AN
2A08 BD0C2E   PRSCAN  LDA     PROJAC,X ;AVAILABLE
2A0B F003 ^2A10 BEQ     GOTPRN   ;PROJECTILE
2A0D CA      DEX
2A0E D0F8 ^2A08 BNE     PRSCAN
2A10 C5BE      GOTPRN  DEC     PAVAIL   ;1 LESS AVAILABLE
2A12 A901      LDA     #1       ;IT'S NOW
2A14 9D0C2E   STA     PROJAC,X ;ACTIVE
2A17 A915      LDA     #21      ;START UP
2A19 85D1      STA     FIRSOU   ;FIRE SOUND
2A1B A900      LDA     #0       ;INITIALIZE
2A1D 9D2C2E   STA     PROJSG,X ;SEGMENT # TO 0
2A20 A595      LDA     PLRGRD   ;SET UP
2A22 9D1C2E   STA     PROGRD,X ;PROJ GRID#
2A25 0A      ASL     A        ;AND
2A26 0A      ASL     A        ;MULTIPLY
2A27 0A      ASL     A        ;BY 16
2A28 0A      ASL     A
2A29 9D242E   STA     PROJGN,X ;FOR INDEX
2A2C A901      LDA     #1       ;INITIALIZE
2A2E 9D142E   STA     PROJNC,X ;PROJ INCREMENT
2A31 A5CE      CHKPMV  LDA     JOYPAD   ;USING STICK?
2A33 F00F ^2A44 BEQ     GOSTIK   ;YES!
2A35 AD7002   LDA     POT0     ;GET PADDLE
2A38 4A      LSR     A        ;DIVIDE BY
2A39 4A      LSR     A        ;16 TO GET
2A3A 4A      LSR     A        ;USABLE VALUE
2A3B 4A      LSR     A
2A3C C90F      CMP     #15      ;> 14?
2A3E 3022 ^2A62 BMI     STOPOS   ;NO, GO STORE
2A40 A90E      LDA     #14      ;MAX. IS 14
2A42 D01E ^2A62 BNE     STOPOS   ;AND GO STORE
2A44 A594      GOSTIK  LDA     PMTIME   ;READY FOR STICK?
2A46 F005 ^2A4D BEQ     RDSTIK   ;YES!

```

```

2A48 C694          DEC      PMTIME    ;DEC TIMER
2A4A 4C002B      JVBC     JMP      VBCONT    ;JMP TO CONTINUE
2A4D A902          RDSTIK  LDA      #2        ;RESET STICK TIMER
2A4F 8594          STA      PMTIME    ;TO 2 JIFFIES
2A51 AE7802      LDX     STICK     ;GET STICK
2A54 A595          LDA     PLRGRD    ;GET PLYR GRID #
2A56 18           CLC      ;ADD THE
2A57 7DFC2D      ADC     STKADD,X  ;DIRECTION INC
2A5A 3004 ^2A60   BMI     SAMPOS    ;IF <0 REJECT
2A5C C90F          CMP     #15       ;IF <15...
2A5E D002 ^2A62   BNE     STOPOS    ;USE IT!
2A60 A595          SAMPOS LDA     PLRGRD    ;GET GRID#
2A62 C595          STOPOS CMP     PLRGRD    ;SAME AS LAST?
2A64 F006 ^2A6C   BEQ     NOPSTO    ;YES, DON'T STORE
2A66 A209          LDX     #9        ;START UP
2A68 86D3          STX     MOVSOU    ;MOVE SOUND
2A6A 8595          STA     PLRGRD    ;SAVE GRID#
2A6C 0A          NOPSTO ASL     A      ;MULTIPLY
2A6D 0A          ASL     A      ;BY 16 FOR
2A6E 0A          ASL     A      ;POSITION
2A6F 0A          ASL     A      ;INDEX
2A70 AA          TAX
2A71 AD0CD0      LDA     P0PL
2A74 290C          AND     #$0C      ;HIT P2/P3?
2A76 F007 ^2A7F   BEQ     NOHSHO    ;NO!
2A78 A901          LDA     #1        ;OOPS! HIT SHORT!
2A7A 85BD          STA     KILPLR    ;KILL PLAYER
2A7C 4C852C      JMP     VBEND     ;AND EXIT VBLANK
2A7F BDA031      NOHSHO LDA     SEGX,X  ;GET PLAYER'S
2A82 18           CLC      ;X POSITION AND
2A83 693D          ADC     #61       ;ADJUST FOR P/M
2A85 8D00D0      STA     HPOSP0    ;AND SAVE
2A88 A496          LDY     PLYR     ;HOLD OLD Y POS
2A8A BDA032      LDA     SEGY,X  ;GET NEW Y POS
2A8D 18           CLC      ;ADJUST FOR P/M
2A8E 6920          ADC     #32       ;BY ADDING 32
2A90 8596          STA     PLYR     ;SET Y POS
2A92 A900          LDA     #0        ;CLEAR OUT
2A94 A20F          LDX     #15       ;OLD PLAYER
2A96 99F803      CLRPS  STA     PL0-8,Y ;IMAGE
2A99 C8           INY
2A9A CA          DEX
2A9B 10F9 ^2A96   BPL     CLRPS
2A9D A90F          LDA     #15       ;NOW COPY
2A9F 85BA          STA     SPIX     ;16-BYTE
2AA1 A900          SPLoop LDA     #0        ;PLAYER IMAGE
2AA3 85BB          STA     PLTBYT   ;TO PLAYER 0
2AA5 A5B7          LDA     SP1IX
2AA7 290F          AND     #15
2AA9 AA          TAX
2AAA A5BA          LDA     SPIX
2AAC DD712F      CMP     SPTBL,X
2AAF 900B ^2ABC   BCC     NOSP1
2AB1 DD812F      CMP     EPTBL,X
2AB4 B006 ^2ABC   BCS     NOSP1
2AB6 AA          TAX
2AB7 BD412F      LDA     PN1,X  ;GET IMAGE 1

```

```

2ABA 85BB          STA      PLTBYT  ;AND SAVE
2ABC A5B8          LDA      SP2IX
2ABE 290F          AND      #15
2AC0 AA           TAX
2AC1 A5BA          LDA      SPIX
2AC3 DD712F        CMP      SPTBL,X
2AC6 900D ^2AD5   BCC     NOSP2
2AC8 DD812F        CMP      EPTBL,X
2ACB B008 ^2AD5   BCS     NOSP2
2ACD AA           TAX
2ACE BD512F        LDA      PN2,X
2AD1 05BB          ORA      PLTBYT  ;ADD IMAGE 2
2AD3 85BB          STA      PLTBYT  ;AND SAVE
2AD5 A5B9          LDA      SP3IX
2AD7 290F          AND      #15
2AD9 AA           TAX
2ADA A5BA          LDA      SPIX
2ADC DD712F        CMP      SPTBL,X
2ADF 900D ^2AEE   BCC     NOSP3
2AE1 DD812F        CMP      EPTBL,X
2AE4 B008 ^2AEE   BCS     NOSP3
2AE6 AA           TAX
2AE7 BD612F        LDA      PN3,X
2AEA 05BB          ORA      PLTBYT  ;ADD IMAGE 3
2AEC 85BB          STA      PLTBYT  ;AND SAVE
2AEE A596          LDA      PLY
2AF0 18           CLC
2AF1 65BA          ADC      SPIX
2AF3 38           SEC
2AF4 E908          SBC     #8
2AF6 A8           TAY
2AF7 A5BB          LDA      PLTBYT  ;GET IMAGE BYTE
2AF9 990004        STA      PL0,Y   ;PUT IN P/M AREA
2AFC C6BA          DEC     SPIX    ;MORE IMAGE?
2AFE 10A1 ^2AA1    BPL     SPLOOP  ;YES!
2B00 A5A2          LDA      PRADV1 ;ADVANCE PROJ?
2B02 F005 ^2B09   BEQ     SETPRA ;YES!
2B04 C6A2          DEC     PRADV1 ;NO, DEC TIMER
2B06 4C0F2B        JMP     FLIPIT  ;GO FLIP DISPLAY
2B09 E5A1          SETPRA INC     PRADVT
2B0B A901          LDA      #1     ;SET ADVANCE
2B0D 85A2          STA      PRADV1 ;TIMER
;
; -----
; THIS SECTION FLIP-FLOPS THE 4
; MISSILES IN ORDER TO ALLOW THE
; DISPLAY OF 8 PROJECTILES. AS
; A RESULT, SOME FLICKER CAN BE
; OBSERVED.
; -----
;
2B0F E5A0          FLIPIT INC     PRFLIP ;INC FLIP INDEX
2B11 A5A0          LDA      PRFLIP ;GET INDEX
2B13 2901          AND     #1     ;MAKE 0/1
2B15 A8           TAY     ;SAVE IN Y
2B16 B9362E        LDA      PREND,Y ;GET # OF LAST
2B19 859E          STA      ENDVAL ;PROJECTILE

```

```

2B1B BE342E      LDX      PRSTRT,Y      ;GET # OF FIRST
2B1E 859C      STX      VBXHLD      ;PROJECTILE
2B20 A903      LDA      #3          ;START W/MISSILE
2B22 859F      STA      MISNUM      ;NUMBER 3
2B24 BD0C2E      PROJLP  LDA      PROJAC,X      ;IS PROJ. ACTIVE?
2B27 D003 ^2B2C BNE      GOTPRJ      ;YOU BET.
2B29 4CE32B      JMP      CKPEND      ;TRY ANOTHER
2B2C A59F      GOTPRJ  LDX      MISNUM      ;GET MISSILE #
2B2E B4D4      LDY      PRYHLD,X      ;GET LAST POSITION
2B30 B9FF02      LDA      MISSLS-1,Y  ;ERASE OLD
2B33 3D3C2E      AND      MISLOF,X      ;PROJECTILE
2B36 99FF02      STA      MISSLS-1,Y  ;IMAGE
2B39 B90003      LDA      MISSLS,Y
2B3C 3D3C2E      AND      MISLOF,X
2B3F 990003      STA      MISSLS,Y
2B42 B90103      LDA      MISSLS+1,Y
2B45 3D3C2E      AND      MISLOF,X
2B48 990103      STA      MISSLS+1,Y
2B4B A59C      LDX      VBXHLD
2B4D A5A1      LDA      PRADVT      ;READY TO
2B4F 2901      AND      #1          ;ADVANCE PROJ?
2B51 D00A ^2B5D  BNE      NOPADV      ;NOT YET
2B53 BD2C2E      LDA      PROJSG,X      ;GET PROJ SEG#
2B56 18        CLC
2B57 7D142E      ADC      PROINC,X      ;ADD INCREMENT
2B5A 9D2C2E      STA      PROJSG,X      ;THEN SAVE
2B5D BD142E      NOPADV  LDA      PROINC,X      ;ENEMY SHOT?
2B60 3043 ^2BA5 BMI      NOOHCK      ;NO OBJ HIT CHECK
2B62 A005      LDY      #5
2B64 B9682E      OBKILP LDA      OBDEAD,Y      ;ALREADY DEAD?
2B67 D039 ^2BA2 BNE      NXTOCK      ;YES!
2B69 B9E500      LDA      OBJPRS,Y      ;OBJECT THERE?
2B6C F034 ^2BA2 BEQ      NXTOCK      ;NO!
2B6E B9742E      LDA      OBJTYP,Y      ;TRANSIENT?
2B71 C904      CMP      #4
2B73 D005 ^2B7A BNE      NOTRNC      ;NO!
2B75 AD902E      LDA      OBJHUE+4      ;INVISIBLE?
2B78 F028 ^2BA2 BEQ      NXTOCK      ;YES!
2B7A B9802E      NOTRNC LDA      OBJGRD,Y      ;SAME GRID #
2B7D DD1C2E      CMP      PROGRD,X      ;AS PROJ?
2B80 D020 ^2BA2 BNE      NXTOCK      ;NO!
2B82 B9862E      LDA      OBJSEG,Y      ;SAME SEG #
2B85 4A      LSR      A
2B86 38        SEC
2B87 FD2C2E      SBC      PROJSG,X      ;AS PROJ?
2B8A F004 ^2B90 BEQ      HITOBJ
2B8C C9FE      CMP      #254
2B8E 9012 ^2BA2 BCC      NXTOCK      ;NO!
2B90 B9742E      HITOBJ LDA      OBJTYP,Y      ;RESISTOR?
2B93 F008 ^2B9D BEQ      CGPRDR      ;YES!
2B95 A901      LDA      #1          ;KILL OBJECT
2B97 99682E      STA      OBDEAD,Y
2B9A 4CF02B      JMP      KILLPR      ;AND PROJ.
2B9D A9FF      CGPRDR  LDA      #$FF      ;PROJ NOW HEADING
2B9F 9D142E      STA      PROINC,X      ;FOR PLAYER!
2BA2 88        NXTOCK  DEY
2BA3 10BF ^2B64 BPL      OBKILP      ;MORE TO DO!

```

```

2BA5 BD2C2E      NOOHCK LDA      PROJSG,X      ;IS PROJ SEG# =0?
2BA8 F046 ^2BF0 BEQ      KILLPR  ;YES, KILL IT!
2BAA C910        CMP      #16      ;=16?
2BAC F042 ^2BF0 BEQ      KILLPR  ;YES, KILL IT!
2BAE 18         CLC      ;NOW ADD PROJ
2BAF 7D242E     ADC      PROJGN,X    ;GRID INDEX
2BB2 AA         TAX      ;AND GET
2BB3 BDA031     LDA      SEGX,X     ;X COORD
2BB6 BCA032     LDY      SEGY,X     ;AND Y COORD
2BB9 18         CLC      ;ADD 64 TO
2BBA 6940       ADC      #64      ;X COORD FOR
2BBC A59F       LDX      MISNUM   ;P/M HORIZ
2BBE 9D04D0     STA      HPOSM0,X   ;AND SAVE
2BC1 98         TYA      ;GET Y
2BC2 18         CLC      ;ADD 32 TO
2BC3 6920       ADC      #32      ;Y COORD FOR
2BC5 A8         TAY      ;P/M VERT
2BC6 94D4       STY      PRYHLD,X   ;AND SAVE.
2BC8 B9FF02     LDA      MISSLS-1,Y   ;NOW DRAW
2BCB 1D382E     ORA      MISLON,X   ;PROJECTILE IN
2BCE 99FF02     STA      MISSLS-1,Y   ;NEW POSITION
2BD1 B90003     LDA      MISSLS,Y
2BD4 1D382E     ORA      MISLON,X
2BD7 990003     STA      MISSLS,Y
2BDA B90103     LDA      MISSLS+1,Y
2BDD 1D382E     ORA      MISLON,X
2BE0 990103     STA      MISSLS+1,Y
2BE3 C59F       CKPEND  DEC      MISNUM   ;NEXT MISSILE #
2BE5 C59C       DEC      VBXHLD  ;NEXT PROJ.
2BE7 A59C       LDX      VBXHLD
2BE9 E49E       CPX      ENDVAL   ;DONE?
2BEB F026 ^2C13 BEQ      SHORTS  ;YES!
2BED 4C242B     JMP      PROJLP   ;DO NEXT PROJ.
2BF0 A900       KILLPR  LDA      #0      ;KILL PROJ.
2BF2 9D0C2E     STA      PROJAC,X
2BF5 E002       CPX      #2      ;ENEMY PROJ?
2BF7 9002 ^2BFB BCC      NOAVIN  ;YES DON'T INC
2BF9 E5BE       INC      PAVAIL   ;ANOTHER AVAIL
2BFB BD2C2E     NOAVIN  LDA      PROJSG,X   ;SEGMENT 0?
2BFE D010 ^2C10 BNE      NOKILP  ;NO!
2C00 BD142E     LDA      PROINC,X   ;TOWARD RIM?
2C03 100B ^2C10 BPL      NOKILP  ;NO!
2C05 BD1C2E     LDA      PROGRD,X   ;SAME GRID...
2C08 C595       CMP      PLRGRD   ;AS PLAYER?
2C0A D004 ^2C10 BNE      NOKILP  ;NO!
2C0C A901       LDA      #1      ;THE PLAYER
2C0E 85BD       STA      KILPLR   ;IS DEAD!
2C10 4CE32B     NOKILP  JMP      CKPEND   ;NEXT PROJ.

```

```

;
; -----
; THIS SECTION HANDLES SHORTS.
; 2 PLAYERS ARE USED TO SHOW A
; MAXIMUM OF 4 SHORTS, SO SOME
; FLICKER MAY BE OBSERVED.
; -----
;

```

```

2C13 E5C2       SHORTS  INC      SHFLIP  ;TOGGLE FLIP

```

```

2C15 A5C2          LDA      SHFLIP ;MASK FLIP
2C17 4A           LSR      A ;TO EITHER
2C18 2901         AND      #1 ;0 OR 1
2C1A A8           TAY      ;PUT IN Y
2C1B B92331       LDA      CPYSTN,Y ;AND GET IMAGE
2C1E 85C4         STA      CPYST ;TO USE (+/X)
2C20 A5C2          LDA      SHFLIP ;GET FLIP,
2C22 2901         AND      #1 ;MASK AND
2C24 A8           TAY      ;PUT IN Y
2C25 A907         LDA      #PL3/255 ;PUT PLAYER 3
2C27 85C1         STA      DESTHI ;IN DESTINATION
2C29 A900         LDA      #PL3&255 ;ADDRESS
2C2B 85C0         STA      DESTLO ;HI & LO
2C2D A901         LDA      #1 ;SET DEST #
2C2F 85C3         STA      DESTNM
2C31 B91531       LDA      SHSTRT,Y ;GET START
2C34 859C         STA      VBXHLD ;SHORT #
2C36 A900         SHORLP LDA      #0
2C38 A5C3         LDX      DESTNM
2C3A BC1731       LDY      SHYHLD,X ;GET LAST INDEX
2C3D A209         LDX      #9 ;NOW ERASE
2C3F 91C0         ERSSHO STA      (DESTLO),Y ;PREVIOUS
2C41 C8           INY      ;SHORT
2C42 CA           DEX
2C43 10FA ^2C3F   BPL      ERSSHO
2C45 A59C         LDX      VBXHLD
2C47 BD582E       LDA      SHORTF,X ;SHORT ALIVE?
2C4A F02E ^2C7A   BEQ      NXTSHO ;NO!
2C4C BD5C2E       LDA      SHORTX,X ;GET INDEX OF
2C4F AA           TAX      ;SHORT'S POS.
2C50 BDA033       LDA      RIMX,X ;GET X COORD
2C53 BCA034       LDY      RIMY,X ;AND Y COORD
2C56 18           CLC
2C57 693E         ADC      #62 ;ADJUST X
2C59 A5C3         LDX      DESTNM ;GET PLAYER#
2C5B 9D02D0       STA      HPOSP2,X ;AND STORE
2C5E 98           TYA
2C5F 18           CLC
2C60 691C         ADC      #28 ;ADJUST Y
2C62 9D1731       STA      SHYHLD,X ;SAVE IT
2C65 A8           TAY
2C66 A5C4         LDX      CPYST
2C68 A904         LDA      #4
2C6A 85CF         STA      CPYCNT
2C6C BD1931       SHOCOP LDA      SHOIMG,X ;NOW COPY
2C6F 91C0         STA      (DESTLO),Y ;SHORT IMAGE
2C71 C8           INY      ;TO P/M
2C72 91C0         STA      (DESTLO),Y ;AREA
2C74 C8           INY
2C75 CA           DEX
2C76 C5CF         DEC      CPYCNT
2C78 10F2 ^2C6C   BPL      SHOCOP
2C7A C5C3         NXTSHO DEC      DESTNM ;MORE?
2C7C 3007 ^2C85   BMI      VBEND ;NO, EXIT!
2C7E C5C1         DEC      DESTHI ;NEXT PLAYER
2C80 E59C         INC      VBXHLD
2C82 4C362C       JMP      SHORLP ;LOOP BACK.

```

```

2C85 8D1ED0      VBEND   STA      HITCLR  ;CLEAR COLLISION
2C88 4C62E4      JMP      XITVBV  ;VBI DONE! (WHEW!)

;
; -----
; CLEAR PLAYER-MISSILES
; -----

2C8B A900          PMCLR   LDA      #0      ;PUT 255
2C8D 0A          TAX          ;ZEROS IN
2C8E 9D0003      PMCLP   STA      MISSLS,X ;EACH P/M
2C91 9D0004      STA      PL0,X  ;AREA
2C94 9D0005      STA      PL1,X
2C97 9D0006      STA      PL2,X
2C9A 9D0007      STA      PL3,X
2C9D 0A          DEX
2C9E D0EE ^2C8E   BNE      PMCLP
2CA0 60          RTS          ;FINIS!

;
; -----
; CLEAR SCREEN
; -----

2CA1 A908          CLRSC   LDA      #DISP/255 ;INITIAL
2CA3 8581          STA      HI      ;DISPLAY
2CA5 A900          LDA      #DISP%255 ;ADDRESS
2CA7 8580          STA      LO      ;WORK AREA
2CA9 A214          LDX      #20     ;CLEAR 20 GROUPS
2CAB A000          CLRSC2 LDY      #0      ;OF 256 BYTES
2CAD 98          TYA          ;(5120 BYTES)
2CAE 9180          CLRSC3 STA      (LO),Y
2CB0 88          DEY
2CB1 D0FB ^2CAE   BNE      CLRSC3
2CB3 0A          DEX
2CB4 D001 ^2CB7   BNE      CLRSC4
2CB6 60          RTS
2CB7 E581          CLRSC4 INC      HI
2CB9 4CAB2C       JMP      CLRSC2

;
; -----
; GR. 7+ PLOTTER ROUTINE
; (SEE A.N.A.L.O.G. #11)
; -----

2CBC A583          PLOTCL LDA      PLOTY  ;MULT. Y BY 32:
2CBE 0A          ASL      A
2CBF 8580          STA      LO
2CC1 A900          LDA      #0
2CC3 2A          ROL      A
2CC4 8581          STA      HI      ;*2
2CC6 0580          ASL      LO
2CC8 2581          ROL      HI      ;*4
2CCA 0580          ASL      LO
2CCC 2581          ROL      HI      ;*8
2CCE 0580          ASL      LO
2CD0 2581          ROL      HI      ;*16
2CD2 0580          ASL      LO
2CD4 2581          ROL      HI      ;*32
2CD6 A900          LDA      #DISP%255 ;ADD THE DISPLAY

```



```

2CD8 18          CLC          ;ADDRESS TO GET
2CD9 6580        ADC         LO          ;THE ACTUAL
2CDB 8580        STA         LO          ;ADDRESS OF THE
2CDD A908        LDA         #DISP/256 ;BYTE THAT WILL
2CDF 6581        ADC         HI          ;BE ALTERED FOR
2CE1 8581        STA         HI          ;THE PLOT.
2CE3 A582        LDA         PLOTX      ;MASK PLOTX FOR
2CE5 2903        AND         #3         ;PLOT INDEX,
2CE7 AA         TAX          ;PLACE IN X.
2CE8 A582        LDA         PLOTX      ;GET PLOTX AND
2CEA 4A         LSR         A          ;DIVIDE
2CEB 4A         LSR         A          ;BY 4,
2CEC 85A8        STA         YOFSET
2CEE A8         TAY
2CEF B180        LDA         (LO),Y
2CF1 3D172D      AND         BMASK2,X
2CF4 DD1B2D      CMP         COLOR1,X
2CF7 F015 ^2D0E BEQ         PABORT
2CF9 A484        LDY         COLOR      ;GET COLOR
2CFB BD172D      LDA         BMASK2,X    ;AND MASK OFF
2CFE 390F2D      AND         COLORS,Y   ;PIXEL POSITION
2D01 858F        STA         HOLD      ;SAVE IT,
2D03 BD132D      LDA         BMASK1,X    ;MASK OFF PIXEL
2D06 A4A8        LDY         YOFSET     ;OF THE ADDRESS
2D08 3180        AND         (LO),Y    ;TO BE ALTERED
2D0A 058F        ORA         HOLD      ;SET THE PLOT
2D0C 9180        STA         (LO),Y    ;BITS AND STORE!
2D0E 60          PABORT    RTS         ;FINIS!

```

```

;
; -----
; PLOT MASK TABLES
; -----

```

```

2D0F 0055AAFF    COLORS    DB         $00,$55,$AA,$FF
2D13 3FCFF3FC    BMASK1     DB         $3F,$CF,$F3,$FC
2D17 C0300C03    BMASK2     DB         $C0,$30,$0C,$03
2D1B 40100401    COLOR1     DB         $40,$10,$04,$01

```

```

;
; -----
; DRAW HANDLER
; -----

```

```

2D1F A586        DRAW      LDA         DRAWY
2D21 C583        CMP         PLOTY    ;IS DRAWY>PLOTY?
2D23 900B ^2D30 BCC         YMINUS  ;NO!
2D25 38         SEC         ;SUBTRACT
2D26 E583        SBC         PLOTY    ;PLOTY FROM DRAWY
2D28 858A        STA         DELTAY  ;AND SAVE DIFFERENCE.
2D2A A901        LDA         #1         ;Y INCREMENT
2D2C 858C        STA         INCY     ;= 1 (DOWN)
2D2E D00B ^2D3B BNE         XVEC     ;BRANCH!
2D30 A583        YMINUS   LDA         PLOTY    ;SUBTRACT
2D32 38         SEC         ;DRAWY
2D33 E586        SBC         DRAWY    ;FROM PLOTY
2D35 858A        STA         DELTAY  ;AND SAVE DIFFERENCE.
2D37 A9FF        LDA         #255    ;Y INCREMENT
2D39 858C        STA         INCY     ;= -1 (UP)

```

```

2D3B A585      XVEC   LDA     DRAWX   ;IS DRAWX
2D3D C582      CMP     PLOTX   ;> PLOTX?
2D3F 900B ^2D4C BCC    XMINUS  ;NO!
2D41 38       SEC     ;SUBTRACT
2D42 E582      SBC     PLOTX   ;PLOTX FROM DRAWX
2D44 8589      STA     DELTAX  ;AND SAVE DIFFERENCE.
2D46 A901      LDA     #1     ;X INCREMENT
2D48 858B      STA     INCX   ;IS 1 (RIGHT)
2D4A D00B ^2D57 BNE    VECSET  ;BRANCH!
2D4C A582      XMINUS LDA     PLOTX   ;SUBTRACT
2D4E 38       SEC     ;DRAWX FROM
2D4F E585      SBC     DRAWX   ;PLOTX
2D51 8589      STA     DELTAX  ;AND SAVE DIFFERENCE.
2D53 A9FF      LDA     #255   ;X INCREMENT
2D55 858B      STA     INCX   ;IS -1 (LEFT)
2D57 A900      VECSET LDA     #0     ;ZERO OUT:
2D59 8588      STA     ACCY   ;Y ACCUMULATOR
2D5B 8587      STA     ACCX   ;X ACCUMULATOR
2D5D A589      LDA     DELTAX  ;IS DELTAX>
2D5F C58A      CMP     DELTAY  ;DELTAY?
2D61 900A ^2D6D BCC    YMAX    ;NO!
2D63 858D      STA     COUNTR  ;SAVE DELTAX
2D65 858E      STA     ENDPT   ;IN COUNTR, ENDPT.
2D67 4A       LSR     A     ;DIVIDE BY 2 AND
2D68 8588      STA     ACCY   ;STORE IN Y ACCUM.
2D6A 4C762D   JMP     DRAWGO   ;START DRAW
2D6D A58A      YMAX   LDA     DELTAY  ;DELTAY LARGER,
2D6F 858D      STA     COUNTR  ;STORE IT IN
2D71 858E      STA     ENDPT   ;COUNTR, ENDPT.
2D73 4A       LSR     A     ;DIVIDE BY 2 AND
2D74 8587      STA     ACCX   ;STORE IN X ACCUM.

```

```

; -----
; NOW WE START THE ACTUAL
; DRAWTO FUNCTION!
; -----

```

```

2D76 A58D      DRAWGO LDA     COUNTR  ;IF COUNTR=0...
2D78 F039 ^2DB3 BEQ    DRWEND  ;NO DRAW!
2D7A A588      BEGIN  LDA     ACCY   ;ADD DELTAY
2D7C 18       CLC     ;TO Y ACCUMULATOR
2D7D 658A      ADC     DELTAY
2D7F 8588      STA     ACCY
2D81 C58E      CMP     ENDPT   ;AT ENDPOINT YET?
2D83 900E ^2D93 BCC    BEGIN2  ;NO, GO DO X.
2D85 A588      LDA     ACCY   ;SUBTRACT ENDPT
2D87 38       SEC     ;FROM Y ACCUMULATOR
2D88 E58E      SBC     ENDPT
2D8A 8588      STA     ACCY
2D8C A583      LDA     PLOTY  ;AND INCREMENT
2D8E 18       CLC     ;THE Y POSITION!
2D8F 658C      ADC     INCY
2D91 8583      STA     PLOTY
2D93 A587      BEGIN2 LDA     ACCX  ;ADD DELTAX TO
2D95 18       CLC     ;X ACCUMULATOR
2D96 6589      ADC     DELTAX
2D98 8587      STA     ACCX

```

```

2D9A C58E          CMP      ENDPT      ;AT ENDPOINT YET?
2D9C 900E ^2DAC   BCC      PLOTIT    ;NO, GO PLOT.
2D9E A587          LDA      ACCX      ;SUBTRACT ENDPT
2DA0 38           SEC      ;FROM X ACCUMULATOR
2DA1 E58E          SBC      ENDPT
2DA3 8587          STA      ACCX
2DA5 A582          LDA      PLOTX     ;AND INCREMENT
2DA7 18           CLC      ;PLOT X
2DA8 658B          ADC      INCX
2DAA 8582          STA      PLOTX
2DAC 20BC2C       PLOTIT  JSR      PLOTCL ;PLOT THE POINT!
2DAF C58D          DEC      COUNTR   ;MORE TO DRAW?
2DB1 D0C7 ^2D7A   BNE      BEGIN    ;YES!
2DB3 60           DRWEND  RTS      ;NO, EXIT!

```

```

; -----
; MISCELLANEOUS DATA
; -----

```

```

2DB4 0001020304  GRDTBL  DB      0,1,2,3,4,1,5,3
;                               L,I,V,E,W,I,R,E
;                               COLORS (0=GRID, 1=OBJ1 2=OBJ2)

```

```

2DBC C43674F6      C0TBL  DB      $C4,$36,$74,$F6
2DC0 54060026      DB      $54,$06,$00,$26
2DC4 860C3656      C1TBL  DB      $86,$0C,$36,$56
2DC8 26C69818      DB      $26,$C6,$98,$18
2DCC 9846A836      C2TBL  DB      $98,$46,$A8,$36
2DD0 8418C638      DB      $84,$18,$C6,$38

```

```

; OBJECT COUNT TABLES (DIFFICULTY)

```

```

2DD4 0000000004    OBCNT0 DB      0,0,0,0,4,6,8,10
2DDC 00000000608  OBCNT1 DB      0,0,0,6,8,9,10,11
2DE4 080A0C0E10    OBCNT2 DB      8,10,12,14,16,18,20,22
2DEC 06080A0B0C    OBCNT3 DB      6,8,10,11,12,14,15,16
2DF4 000004080A    OBCNT4 DB      0,0,4,8,10,12,14,16

```

```

; STICK ADD VALUES

```

```

2DFC 0000000000    STKADD DB      0,0,0,0,0,1,1,1
2E04 00FFFFFF00     DB      0,$FF,$FF,$FF,0,0,0,0

```

```

; PROJECTILE DATA

```

```

2E0C 0000000000    PROJAC DB      0,0,0,0,0,0,0,0
2E14 = 0008          PROINC DS      8
2E1C = 0008          PROGRD DS      8
2E24 = 0008          PROJGN DS      8
2E2C = 0008          PROJSG DS      8
2E34 0307          PRSTRT DB      3,7
2E36 FF03          PREND  DB      $FF,3
2E38 030C30C0      MISLON DB      $03,$0C,$30,$C0
2E3C FCF3CF3F        MISLOF DB      $FC,$F3,$CF,$3F

```

```

; FLASH (OBJECT DEATH) DATA

```

```

2E40 2828289254 FLBYTE DB $28,$28,$28,$92,$54,$28,$10
2E47 1028549228 DB $10,$28,$54,$92,$28,$28,$28
; OBJECT POINTS (250,200,50,100,150)

2E4E 0202000101 POINT1 DB $02,$02,$00,$01,$01
2E53 5000500050 POINT2 DB $50,$00,$50,$00,$50
; SHORT DATA

2E58 = 0004 SHORTF DS 4
2E5C = 0004 SHORTX DS 4
2E60 = 0004 SHORTD DS 4
2E64 = 0004 SHORTT DS 4
; OBJECT DATA

2E68 = 0006 OBDEAD DS 6
2E6E = 0006 OBDED2 DS 6
2E74 = 0006 OBJTYP DS 6
2E7A = 0006 OBJINC DS 6
2E80 = 0006 OBJGRD DS 6
2E86 = 0006 OBJSEG DS 6
2E8C 0203020302 OBJHUE DB 2,3,2,3,2
2E91 0000000000 SIZEWK DB 0,0,0,0,0,0,0,0
2E99 000001FF01 PXINC DB 0,0,1,$FF,1,$FF,1,$FF
2EA1 FF010000FF PYINC DB $FF,1,0,0,$FF,1,1,$FF
2EA9 120F0E0C OBSTBL DB 18,15,14,12
2EAD 0B0A0907 DB 11,10,9,7
2EB1 0403010200 OBJDIR DB 4,3,1,2,0,5,$FF,0
2EB9 0405000600 DB 4,5,0,6,0,$FF,0,0
2EC1 0005060407 DB 0,5,6,4,7,1,$FF,0
2EC9 0600030102 DB 6,0,3,1,2,7,$FF,0
2ED1 0406050705 DB 4,6,5,7,5,6,4,$FF
2ED9 0307070707 OBJLEN DB 3,7,7,7,7,7,0,0
2EE1 0307070707 DB 3,7,7,7,7,0,0,0
2EE9 0303030303 DB 3,3,3,3,3,7,0,0
2EF1 0203030303 DB 2,3,3,3,3,3,0,0
2EF9 0101010301 DB 1,1,1,3,1,1,3,0
2F01 0000000000 SIZTBL DB 0,0,0,0,0,1,1,1
2F09 0000000101 DB 0,0,0,1,1,2,2,2
2F11 0000010101 DB 0,0,1,1,1,2,2,2
2F19 0001010202 DB 0,1,1,2,2,2,2,3
2F21 0001010202 DB 0,1,1,2,2,2,3,3
2F29 0102020202 DB 1,2,2,2,2,2,3,3
2F31 0102020203 DB 1,2,2,2,3,3,3,4
2F39 0102020303 DB 1,2,2,3,3,3,4,4
; PLAYER SHAPES

2F41 1010101010 PN1 DB $10,$10,$10,$10,$10,$10,$10,$10
2F49 0808080808 DB $08,$08,$08,$08,$08,$08,$08,$08
2F51 0000000080 PN2 DB $00,$00,$00,$00,$80,$40,$20,$10
2F59 0804020100 DB $08,$04,$02,$01,$00,$00,$00,$00
2F61 0000010102 PN3 DB $00,$00,$01,$01,$02,$02,$04,$08
2F69 1020404080 DB $10,$20,$40,$40,$80,$80,$00,$00

```

; SHAPE START/END POINTS

2F71	0001020304	SPTBL	DB	0,1,2,3,4,5,6,7
2F79	0807060504		DB	8,7,6,5,4,3,2,1
2F81	11100F0E0D	EPTBL	DB	17,16,15,14,13,12,11,10
2F89	090A0B0C0D		DB	9,10,11,12,13,14,15,16

; JOYSTICK/PADDLE MESSAGE POINTERS

2F91	4353	JPLO	DB	JOYMSG&255,PADMSG&255
2F93	2121	JPHI	DB	JOYMSG/256,PADMSG/256

; GRID DATA TABLES

2F95	0E0E0E0E0E	CX	DB	14,14,14,14,14,14,14,14
2F9D	1A2733404B		DB	26,39,51,64,75,88,100,113
2FA5	0E0E0E0E0E		DB	14,14,14,14,14,14,14,14
2FAD	0E0E0E0E0E		DB	14,14,14,14,14,14,14,14
2FB5	0E141A2026		DB	14,20,26,32,38,43,49,59
2FBD	454E54595F		DB	69,78,84,89,95,101,107,113
2FC5	715840270E		DB	113,88,64,39,14,14,14,27
2FCD	1B0E0E0E27		DB	27,14,14,14,39,64,88,113
2FD5	0E0E0E0E0E		DB	14,14,14,14,14,29,43,58
2FDD	4554627171		DB	70,84,98,113,113,113,113,113
2FE5	716A647171		DB	113,106,100,113,113,100,82,65
2FED	30200E0E0E		DB	48,32,14,14,14,14,14,14
2FF5	1222344658	CY	DB	18,34,52,70,88,105,123,141
2FFD	8D8D8D8D8D		DB	141,141,141,141,141,141,141,141
3005	1219222A32		DB	18,25,34,42,50,58,67,75
300D	535B646C74		DB	83,91,100,108,116,125,133,141
3015	12273B5065		DB	18,39,59,80,101,121,141,141
301D	8D8D796550		DB	141,141,121,101,80,59,39,18
3025	1212121212		DB	18,18,18,18,18,35,53,71
302D	596A7C8D8D		DB	89,106,124,141,141,141,141,141
3035	1231506F8D		DB	18,49,80,111,141,132,123,114
303D	727B848D6F		DB	114,123,132,141,111,80,49,18
3045	8D6E503D26		DB	141,110,80,61,38,18,18,18
304D	1212122B44		DB	18,18,18,43,68,92,117,141
3055	3737373737	FX	DB	55,55,55,55,55,55,55,55
305D	3A3C3E4042		DB	58,60,62,64,66,68,70,73
3065	3737373737		DB	55,55,55,55,55,55,55,55
306D	3737373737		DB	55,55,55,55,55,55,55,55
3075	37393A3B3B		DB	55,57,58,59,59,60,61,63
307D	4143444545		DB	65,67,68,69,69,70,71,73
3085	4944403C37		DB	73,68,64,60,55,55,55,57
308D	393737373C		DB	57,55,55,55,60,64,68,73
3095	3737373737		DB	55,55,55,55,55,58,61,63
309D	4143464949		DB	65,67,70,73,73,73,73,73
30A5	4948464949		DB	73,72,70,73,73,70,67,64
30AD	3D3A373737		DB	61,58,55,55,55,55,55,55
30B5	43474A4D51	FY	DB	67,71,74,77,81,84,87,90
30BD	5A5A5A5A5A		DB	90,90,90,90,90,90,90,90
30C5	3C3E414447		DB	60,62,65,68,71,73,76,78

```

30CD 515356595C      DB      81,83,86,89,92,94,97,99
30D5 43494D5054      DB      67,73,77,80,84,88,90,90
30DD 5A5A585450      DB      90,90,88,84,80,77,73,67
30E5 4343434343      DB      67,67,67,67,67,71,74,77
30ED 5053565A5A      DB      80,83,86,90,90,90,90,90
30F5 434A50565A      DB      67,74,80,86,90,89,87,86
30FD 5657595A56      DB      86,87,89,90,86,80,74,67
3105 5A55504B47      DB      90,85,80,75,71,67,67,67
310D 434343494E      DB      67,67,67,73,78,82,86,90

3115 0002      SHSTRT DB      0,2
3117 = 0002      SHYHLD DS      2
3119 8850205088      SHOIMG DB      $88,$50,$20,$50,$88
311E 2020F82020      DB      $20,$20,$F8,$20,$20
3123 0409      CPYSTN DB      4,9

3125 02FE      ADDSUB DB      2,$FE      ;ADD/SUB. 2
3127 01FF      ADDSB1 DB      1,$FF      ;ADD/SUB. 1

;      SOUND DATA

3129 00A1A1A2A2      FIRCTL DB      $00,$A1,$A1,$A2,$A2,$A3
312F A3A4A4A5A5      DB      $A3,$A4,$A4,$A5,$A5,$A6
3135 A6A7A7A8A8      DB      $A6,$A7,$A7,$A8,$A8,$A9
313B A9AAAA      DB      $A9,$AA,$AA
313E 00C2A6B498      FIRFRQ DB      0,194,166,180,152,166
3144 8A987C8A6E      DB      138,152,124,138,110,124
314A 606E526044      DB      96,110,82,96,68,82
3150 364428      DB      54,68,40

3153 0041414242      OBDCTL DB      $00,$41,$41,$42,$42,$43
3159 4344444545      DB      $43,$44,$44,$45,$45,$46
315F 4647474848      DB      $46,$47,$47,$48,$48,$49
3165 494A4A      DB      $49,$4A,$4A
3168 0050287850      OBDFRQ DB      0,80,40,120,80,160
316E 78C8A0F0C8      DB      120,200,160,240,200,24
3174 F040186840      DB      240,64,24,104,64,144
317A 68CC90      DB      104,204,144

317D 00A1A1A2A2      MOVCTL DB      $00,$A1,$A1,$A2,$A2,$A3
3183 A3A4A4      DB      $A3,$A4,$A4
3186 00141E141E      MOVFRQ DB      0,20,30,20,30,20,30,20,30

;      DATA TABLES

318F = 0011      SEGWK  DS      17
31A0 = 0100      SEGX   DS      256
32A0 = 0100      SEGY   DS      256
33A0 = 0100      RIMX   DS      256
34A0 = 0100      RIMY   DS      256

35A0      END      LIVE

```

no ERRORS, 411 Labels, \$20FA free.

ACCX	0087	1#27	34/22	34/35	34/58	34/61	35/ 7	35/10
ACCY	0088	1#28	34/21	34/29	34/44	34/47	34/50	34/53
ADDSB1	3127	11/36	38#22					
ADDSCO	255A	8/53	11/ 9	14#39				
ADDSUB	3125	14/20	38#21					
ATTRAC	004D	3#39	8/29					
AUDC1	D201	3#29	16/32	16/40	25/14			
AUDC2	D203	3#30	25/15	25/26				
AUDC3	D205	3#31	25/16	25/34				
AUDC4	D207	3#32	25/17	25/42				
AUDCTL	D208	3#37	6/13					
AUDF1	D200	3#33	16/35	18/28				
AUDF2	D202	3#34	25/24					
AUDF3	D204	3#35	25/32					
AUDF4	D206	3#36	25/40					
AUTHOR	2133	4/49	5#39					
BCDLVL	00A5	1#57	5/61	9/58	9/61	17/17		
BEGIN	2D7A	34#44	35/17					
BEGIN2	2D93	34/49	34#58					
BMASK1	2D13	33/27	33#39					
BMASK2	2D17	33/20	33/24	33#40				
BONUS	00D0	2#43	6/48	14/57	14/61	15/ 8		
C0TBL	2DBC	18/61	35#29					
C1TBL	2DC4	19/ 6	35#31					
C2TBL	2DCC	19/ 8	35#33					
CGPRDR	2B9D	29/54	29#58					
CHKINT	290F	24/31	24#33					
CHKPMV	2A31	26/17	26/25	26/27	26#49			
CKOBLV	22DF	8#58	8/60					
CKOBMT	22E6	8#62	9/ 7					
CKPEND	2BE3	29/11	30#32	30/52				
CKPRLV	25B6	15#51	15/53					
CKSEL	2256	7/38	7#43					
CKSHOR	2441	11/55	11#59					
CKZAP	2926	24/38	24#43					
CLFLSH	265B	17#44	17/47					
CLPRJC	26B4	18#49	18/51					
CLRDED	21AB	6#21	6/23					
CLRPRJ	21BC	6#30	6/32					
CLRPS	2A96	27#44	27/47					
CLRSC	2CA1	8/16	32#26					
CLRSC2	2CAB	32#31	32/40					
CLRSC3	2CAE	32#33	32/35					
CLRSC4	2CB7	32/37	32#39					
CLRSCO	21B3	6#25	6/28					
CLRSH0	21A3	6#17	6/19					
CLSHRT	26AC	18#45	18/47					
CMPTRG	2A00	26/23	26#25					
COLBK	02C8	3#24	6/15					
COLOR	0084	1#24	8/14	10/54	11/43	16/14	33/23	
COLOR1	2D1B	33/21	33#41					
COLORS	2D0F	33/25	33#38					
COLPF0	02C4	3#25	7/10	18/62	19/50	20/27	20/62	
COLPF1	02C5	3#26	7/12	19/ 7				
COLPF2	02C6	3#27	7/14	19/ 9				
COLPF3	02C7	3#28	7/16	25/49				
COLPM0	02C0	3#44	7/30	16/31	16/38	16/39	16/51	

COLPM1	02C1	3#45	7/26					
COLPM2	02C2	3#46	7/27	25/43	25/46			
COLPM3	02C3	3#47	7/28	25/47				
CONSOL	D01F	3#19	7/36	7/39	7/43	9/42		
CONTRL	20CA	4#51	6/7	6/9	7/53	7/55		
CONWT	22A2	8#24	8/25	9/46				
COPDED	22C0	8#43	8/48					
COPY1	27ED	21#37	21/42					
COPY2	280E	21#52	21/57					
COPY3	282F	22#14	22/19					
COPY4	2850	22#29	22/34					
COPYSZ	24C9	13#16	13/21					
COUNTR	008D	1#33	34/26	34/32	34/42	35/16		
CPAGE0	217B	5#57	5/59					
CPYCNT	00CF	2#42	31/48	31/55				
CPYST	00C4	2#31	31/10	31/46				
CPYSTN	3123	31/9	38#19					
CX	2F95	19/42	20/6	20/10	37#19			
CY	2FF5	19/44	20/8	20/16	37#33			
CYCCOL	29A8	25/36	25#43					
DEAD	2627	16/43	16#53					
DECLIV	25AF	8/28	15#43					
DELTA	0089	1#29	34/10	34/17	34/23	34/60		
DELTA	008A	1#30	33/52	33/59	34/24	34/31	34/46	
DEST	009B	1#47	23/7	23/16	23/26	23/29	23/37	
DESTHI	00C1	2#28	31/15	31/59				
DESTLO	00C0	2#27	31/17	31/26	31/50	31/52		
DESTNM	00C3	2#30	31/19	31/23	31/39	31/57		
DIFF	00E4	2#52	9/55	9/56	19/28			
DIFFAD	2700	19#26	19/31					
DIGIN	227B	7/42	8/7					
DISP	0800	3/8	4/8	4/18	32/26	32/28	32/61	33/8
DIVCTL	27D9	21#29	22/41					
DIVIDE	2877	21/34	21/49	22/11	22/26	22#60		
DIVLP1	2884	23#10	23/30					
DIVLP2	2880	23/8	23/38					
DLI1	20CF	4#59	24/16	24/18				
DLI2	20E9	5/8	5/10	5#15				
DLIST	2000	4/7	4/35	8/7	8/9			
DLISTL	0230	3#41	6/56	6/58	8/8	8/10		
DMAC1	00C5	2#32	5/6	18/41	22/43			
DMACTL	022F	3#40	6/11	7/18				
DOBLP	24E3	13#30	14/7					
DRAW	2D1F	19/53	20/30	21/8	33#47			
DRAWGO	2D76	34/30	34#42					
DRAWX	0085	1#25	19/47	20/11	20/46	24/6	33/62	34/16
DRAWY	0086	1#26	19/49	20/17	20/52	24/8	33/47	33/58
DRGRID	269B	8/23	18#37					
DRWEND	2DB3	34/43	35#18					
DRWOBJ	2479	10/55	11/44	12#29	16/17			
ENDDIV	28BD	23/36	23#39					
ENDDVC	286A	22/40	22#42					
ENDKEY	2952	24/42	24/44	24/46	25/9			
ENDOBJ	252B	13/33	14/8					
ENDPT	008E	1#34	34/27	34/33	34/48	34/52	34/62	35/9
ENDVAL	009E	1#50	28/61	30/35				
EPTBL	2F81	27/58	28/12	28/24	37/9			

ERSOBJ	25D0	16#17	16/29					
ERSSH0	2C3F	31#26	31/29					
FIRCTL	3129	25/25	38#26					
FIRE	29EF	26/15	26#18					
FIRFRQ	313E	25/23	38#30					
FIRSOU	00D1	2#44	10/50	18/24	25/19	25/21	25/22	26/37
FLASH	2655	10/59	17#41					
FLASHY	00B5	2#16	17/41	17/56				
FLBYTE	2E40	17/58	36# 6					
FLIPIT	2B0F	28/43	28#56					
FLTIME	00B6	2#17	8/30	18/ 7	24/27	24/29		
FOREVR	2289	8#13	10/ 6					
FX	3055	19/46	20/41	20/45	37#46			
FY	30B5	19/48	20/43	20/51	37#59			
GENCOO	27D5	21/10	21#27					
GENNOL	22F1	9#12	9/37					
GOCKEK	224C	7#39	7/41					
GOSTIK	2A44	26/50	26#60					
GOTPRJ	2B2C	29/10	29#12					
GOTPRN	2A10	26/30	26#33					
GRAC1	00C6	2#33	4/60	18/43	22/45			
GRACTL	D01D	3#42	4/62	7/20				
GRDADJ	00C9	2#36	19/37	19/59	20/36			
GRDBL1	274B	20# 6	20/35					
GRDBL2	2795	20#41	21/13					
GRDBO1	2743	19/55	19#59					
GRDBO2	278B	20/32	20#36					
GRDLIN	2719	19#42	19/58					
GRDNUM	00CC	2#39	8/21	19/32				
GRDTBL	2DB4	8/20	35#24					
GRDWK	00CA	2#37	19/38	19/56	19/57	19/60	20/33	20/34
		20/37	21/11	21/12				
GRDWK2	00CB	2#38	19/41	19/54	19/62	20/24	20/31	20/39
		20/59	21/ 9					
GRID	0092	1#38	20/25	20/60	23/45			
GRIDIX	00C7	2#34	8/17	9/47	9/52	18/56	19/12	
GRIDNO	0097	1#43	21/28	21/35	21/44	21/50	22/ 6	22/12
		22/21	22/27	22/35	22/38			
GRIDSV	28BE	20/26	20/61	23#45				
HANNXS	2556	14/16	14/25	14#31				
HI	0081	1#21	32/27	32/39	32/52	32/54	32/56	32/58
		32/60	33/ 9	33/10				
HITCLR	D01E	3#53	6/14	31/62				
HITOBJ	2B90	29/50	29#53					
HLDGRD	00B0	2#11	12/35	12/40	12/50			
HOLD	008F	1#35	33/26	33/30				
HPOSM0	D004	3#52	30/17					
HPOSP0	D000	3#48	27/36					
HPOSP1	D001	3#49	8/32	17/51				
HPOSP2	D002	3#50	31/40					
n HPOSP3	D003	3#51						
INCLIV	25A3	14/59	15#32					
INCX	008B	1#31	34/12	34/19	35/13			
INCY	008C	1#32	33/54	33/61	34/56			
INFOLN	2103	4/33	5#32	6/34	17/27	17/34		
INIOBS	21D1	6#40	6/42					
INISH0	2454	12/ 7	12#11					

INTRFG	00A4	1#56	5/62	8/12	18/38	22/47	24/33	
INTRO	2245	7#36	7/45	7/58				
JCONMT	2339	9/44	9#46					
JOBHAN	2476	11/52	11/58	11/61	12/10	12#27		
JOYMSG	2143	4/51	5#42	6/ 6	6/ 8	37/14	37/15	
JOYPAD	00CE	2#41	7/46	7/50	26/20	26/49		
JPHI	2F93	7/54	37#15					
JPLO	2F91	7/52	37#14					
n JVBC	2A4A	27# 6						
KEY	02FC	3#18	24/36	25/10				
KILLPR	2BF0	29/57	30/ 6	30/ 8	30#38			
KILOBJ	2427	11/11	11/16	11/20	11#47			
KILPLR	00BD	2#24	8/26	11/57	16/49	24/30	27/31	30/51
LAST	0098	1#44	23/ 9	23/10	23/18	23/21		
LASTSC	2163	4/43	5#46	6/35				
LENGTH	00AC	2# 7	13/41	13/60				
LIVE	2173	5#53	9/45	16/55	38/56			
LIVES	00C8	2#35	6/49	15/32	15/35	16/42	16/44	17/ 6
LO	0080	1#20	32/29	32/33	32/49	32/53	32/55	32/57
		32/59	33/ 6	33/ 7	33/19	33/29	33/31	
LVLEND	233C	9/ 9	9#47					
MAGMSG	2113	4/45	5#34					
MISCAD	00DE	2#50	8/50	8/55	24/56	24/60		
MISLOF	2E3C	29/15	29/18	29/21	35#59			
MISLON	2E38	30/24	30/27	30/30	35#58			
MISNUM	009F	1#51	29/ 8	29/12	30/16	30/32		
MISSLS	0300	2#50	29/14	29/16	29/17	29/19	29/20	29/22
		30/23	30/25	30/26	30/28	30/29	30/31	32/14
MOREMT	25F7	16#33	16/41					
MOVCTL	317D	25/41	38#44					
MOVFRQ	3186	25/39	38#46					
MOVSCO	21C4	6#34	6/37					
MOVSOU	00D3	2#46	18/26	25/35	25/37	25/38	27/20	
NEWGRD	230E	9#26	9/29					
NEXT	0099	1#45	22/62	23/12	23/25	23/34		
NMIEN	D40E	3#43	6/12	7/22				
NOARVIN	2BFB	30/41	30#43					
NOBONS	258C	14/58	15# 9					
NODIFI	234F	9/54	9#57					
NOFEND	22B6	8/31	8#33					
NOFSND	2980	25/20	25#27					
NOFTIM	2908	24/28	24#30					
NOGRD1	2738	19/51	19#54					
NOGRD2	2780	20/28	20#31					
NOGRD3	27CA	21/ 6	21# 9					
NOGRDI	2358	9/49	10# 6					
NOHSHO	2A7F	27/29	27#33					
NOKILP	2C10	30/44	30/46	30/49	30#52			
NOMOLV	25AE	15/34	15#37					
NOMSCO	22DB	8/51	8#56					
NOOBFI	23B1	10/26	10/29	10/35	10#53			
NOOBD	28FC	24/22	24#24					
NOOHAN	232F	8/34	9#42					
NOOHCK	2BA5	29/32	29#62					
NOOKIL	23D9	10/58	11#12					
NOOSND	2994	25/28	25#35					
NOPADV	2B5D	29/26	29#31					

NOPAU	296C	25/12	25#19					
NOPLT1	2513	13/51	13#53					
NOPLT2	2521	13/58	13#60					
NOPSIN	29E6	26/ 8	26#14					
NOPST0	2A6C	27/18	27#22					
NOSKIL	294F	24/55	25# 7					
NOSP1	2ABC	27/57	27/59	28# 6				
NOSP2	2AD5	28/11	28/13	28#18				
NOSP3	2AEE	28/23	28/25	28#30				
NOSTEP	28AE	23/24	23#31					
NOTIMR	2902	24/25	24#27					
NOTINT	2916	24/34	24#36					
NOTOT3	23ED	11/18	11#21					
NOTRAN	29D4	25/51	25#62					
NOTRNC	2B7A	29/40	29#43					
NUMOBJ	00DF	2#51	8/62	9/19	9/23	11/19	19/16	19/18
		19/20	19/22	19/24	19/26	19/29		
NXTOCK	2BA2	29/35	29/37	29/42	29/45	29/52	29#60	
NXTOGN	2326	9/13	9/20	9#36				
NXTSH0	2C7A	31/32	31#57					
OBCNT0	2DD4	19/15	35#38					
OBCNT1	2DDC	19/17	35#39					
OBCNT2	2DE4	19/19	35#40					
OBCNT3	2DEC	19/21	35#41					
OBCNT4	2DF4	19/23	35#42					
OBCTL	3153	25/33	38#35					
OBDEAD	2E68	6/21	8/43	8/46	24/50	29/34	29/56	36#22
OBDED2	2E6E	8/44	10/57	36#23				
OBDFR0	3168	25/31	38#39					
OBDSOU	00D2	2#45	11/50	18/25	25/27	25/29	25/30	
n OBHLP1	236B	10#21						
OBHLP2	23FD	11/22	11/25	11#28				
OBJDIR	2EB1	13/31	36#34					
OBJGRD	2E80	9/30	10/40	11/34	11/39	11/53	12/11	12/30
		16/27	29/43	36#26				
OBJHAN	235B	9/39	10#12	10/23	11/45	12/27		
OBJHUE	2E8C	11/42	25/52	25/57	29/41	36#28		
OBJINC	2E7A	9/34	11/14	11/27	16/22	36#25		
OBJLEN	2ED9	13/38	36#39					
OBJNUM	00AA	1#62	10/12	10/18	10/20	10/21	10/56	10/60
		11/10	12/29	13/22	16/16	16/18	16/28	
OBJPRS	00E5	2#53	8/58	9/12	9/35	10/22	11/48	29/36
OBJSEG	2E86	6/40	9/32	10/24	10/37	11/12	11/15	11/51
		12/36	13/ 9	16/20	29/46	36#27		
OBJSPD	00CD	2#40	8/35	19/11				
OBJTYP	2E74	9/25	10/61	11/23	11/28	11/40	11/59	13/23
		29/38	29/53	36#24				
OBKILP	2B64	29#34	29/61					
n OBLIVE	2371	10#24						
OBSTBL	2EA9	19/10	36#32					
OBTIM1	00A9	1#61	8/33	8/36	24/21	24/23		
ODDSEG	249F	12/38	12#49					
ODDSKP	24BB	12/48	13# 7					
OFFSET	0093	1#39	18/53	20/40	23/51	23/57		
P0PL	D00C	3#54	27/27					
PABORT	2D0E	33/22	33#32					
PADMSG	2153	5#44	37/14	37/15				

PAUFLG	00B1	2#12	8/24	24/39	24/41	25/11		
PAVAIL	00BE	2#25	6/46	18/55	26/26	26/33	30/42	
PFTIME	009D	1#49	26/14	26/16	26/19			
PL0	0400	2#61	27/44	28/37	32/15			
PL1	0500	2#62	17/44	17/59	32/16			
PL2	0600	3# 6	32/17					
PL3	0700	3# 7	31/14	31/16	32/18			
PLIVE	22AD	8/27	8#29					
PLOTCL	2CBC	13/52	13/59	19/52	20/29	21/ 7	32#47	35/15
PLOTIT	2DAC	35/ 6	35#15					
PLOT0B	24FE	13#42	13/61					
PLOTX	0082	1#22	12/43	12/56	13/42	13/45	19/43	20/ 7
		20/13	20/42	20/48	23/59	33/11	33/14	34/ 6
		34/ 9	34/14	35/11	35/14			
PLOTY	0083	1#23	12/46	12/62	13/46	13/49	13/53	13/56
		19/45	20/ 9	20/19	20/44	20/54	23/61	32/47
		33/48	33/51	33/56	34/54	34/57		
PLRGRD	0095	1#41	11/54	26/40	27/10	27/16	27/17	27/21
		30/48						
PLRY	0096	1#42	27/37	27/41	28/30			
PLTBYT	00BB	2#22	27/51	27/62	28/16	28/17	28/28	28/29
		28/36						
PMAREA	0000	2#59	2/60	2/61	2/62	3/ 6	3/ 7	7/ 6
PMBASE	D407	3#20	7/ 7					
PMCLP	2C8E	32#14	32/20					
PMCLR	2C8B	7/ 8	18/52	32#12				
PMTIME	0094	1#40	26/60	26/62	27/ 8			
PN1	2F41	27/61	36#55					
PN2	2F51	28/15	36#57					
PN3	2F61	28/27	36#59					
POINT1	2E4E	10/62	36#10					
POINT2	2E53	11/ 7	36#11					
POT0	0270	3#17	26/51					
PRADV1	00A2	1#54	28/40	28/42	28/46			
PRADVT	00A1	1#53	28/44	29/24				
PREND	2E36	28/60	35#57					
PRFLIP	00A0	1#52	28/56	28/57				
PRIOR	026F	3#38	7/24					
PROGRD	2E1C	10/41	26/41	29/44	30/47	35#53		
PROINC	2E14	10/48	26/48	29/29	29/31	29/59	30/45	35#52
PROJAC	2E0C	6/30	10/30	10/34	10/52	15/51	18/49	26/29
		26/35	29/ 9	30/39	35#51			
PROJGN	2E24	10/46	26/46	30/10	35#54			
PROJLP	2B24	29# 9	30/37					
PROJSG	2E2C	10/39	26/39	29/27	29/30	29/49	29/62	30/43
		35#55						
PRSCAN	2A08	26#29	26/32					
PRSTRT	2E34	28/62	35#56					
PRYHLD	00D4	2#47	29/13	30/22				
PSCNT	00BC	2#23	25/62	26/ 6	26/10			
PTRIG0	027C	3#16	26/22					
PXINC	2E99	13/34	36#30					
PYINC	2EA1	13/36	36#31					
RANDOM	D20A	3#21	9/14	9/26	10/27	11/31	12/21	12/24
		14/26	16/23	16/33	25/58			
RDSTIK	2A4D	26/61	27# 7					
RDSTRG	29FD	26/21	26#24					

RESSHD	2549	14/22	14#26					
RIMX	33A0	22/ 7	22/ 9	22/15	23/60	24/ 7	31/35	38#53
RIMY	34A0	22/22	22/24	22/30	23/62	24/ 9	31/36	38#54
RNDOBG	25DF	16#23	16/26					
SAMPOS	2A50	27/13	27#16					
SAVEND	28EA	23/58	24#10					
SAVEX	00B3	2#14	12/44	12/57	17/48			
SAVEY	00B4	2#15	12/47	13/ 6	17/52			
SCOADD	00DB	2#49	6/26	8/52	11/ 6	11/ 8	14/43	14/45
		14/47	14/49	14/51	14/53			
SCORE	00D8	2#48	6/25	14/41	14/44	14/46	14/48	14/50
		14/52	14/56	15/19				
SEFLSH	2674	17#58	17/62					
SEGWK	318F	21/31	21/33	21/37	21/46	21/48	21/52	22/ 8
		22/10	22/14	22/23	22/25	22/29	23/11	23/14
		23/17	38#50					
SEGX	31A0	12/42	12/52	12/54	21/30	21/32	21/38	23/54
		27/33	30/12	38#51				
SEGY	32A0	12/45	12/58	12/60	21/45	21/47	21/53	23/56
		27/38	30/13	38#52				
SETHUE	2418	11/30	11/38	11#40				
SETPRA	2B09	28/41	28#44					
SETVBY	E45C	3#22	6/62					
SHAPCT	00AF	2#10	13/29	14/ 6				
SHAPIX	00AB	2# 6	13/27	13/30	13/50	13/57	13/62	
SHCOLR	00A6	1#58	15/16	16/62	17/16	17/26	17/33	
SHFLIP	00C2	2#29	30/61	30/62	31/11			
SHHANL	252E	14#15	14/32					
SHOBCD	2640	15/20	17/ 8	17#24				
SHOBYT	00A7	1#59	17/24	17/28				
SHOCOP	2C6C	31#49	31/56					
SHOHAN	252C	9/40	14#14					
SHOIMG	3119	31/49	38#17					
SHOLIV	262C	6/50	15/36	16/45	16#61			
SHOLVL	2638	8/22	17#15					
SHORLP	2C36	31#22	31/61					
SHORTD	2E60	12/23	14/17	14/30	36#17			
SHORTF	2E58	6/17	12/ 6	12/20	14/15	15/62	18/45	24/54
		25/ 6	31/31	36#15				
SHORTS	2C13	30/36	30#61					
SHORTT	2E64	12/26	14/24	14/28	36#18			
SHORTX	2E5C	12/18	14/18	14/23	31/33	36#16		
SHOSCO	258D	6/43	14/55	15#15				
SHSTRT	3115	31/20	38#15					
SHYHLD	3117	31/24	31/44	38#16				
SIZEMK	2E91	13/17	13/40	36#29				
SIZTBL	2F01	13/16	36#44					
SNDOF2	2694	18#28	18/30					
SNDOFF	268A	6/44	15/43	18#23	18/39			
SP1IX	00B7	2#18	26/11	27/52				
SP2IX	00B8	2#19	6/52	26/12	28/ 6			
SP3IX	00B9	2#20	6/54	26/13	28/18			
SPIX	00BA	2#21	27/49	27/55	28/ 9	28/21	28/32	28/38
SFLOOP	2AA1	27#50	28/39					
SPTBL	2F71	27/56	28/10	28/22	37# 7			
SSCOLP	2595	15#19	15/25					
STEP	009A	1#46	22/61	23/20	23/22	23/28	23/31	23/33

STICK	0278	3#55	27/ 9					
STKADD	2DFC		27/12	35#46				
STOBF1	238F		10/33	10#37				
STONUM	2369		10/16	10#20				
STOPOS	2A62		26/57	26/59	27/15	27#17		
STOTRN	29C8		25/55	25#57				
STPSHO	25C2		15#62	16/ 7				
STRIG	0284		3#56	26/24				
TIMER	00A3		1#55	18/14	18/15	24/24	24/26	
TITLDL	20AF		4#41	4/53	6/55	6/57		
TITLE	2123		4/47	5#37				
TRAN1	29C6		25/53	25#56				
TRANTM	00BF		2#26	25/50	25/61			
TRYPR1	2388		10/31	10#34				
TRYSHO	244A		12# 6	12/ 9				
TRYTYP	22F5		9#14	9/17				
VBCONT	2B00		24/32	27/ 6	28#40			
VBEND	2C85		27/32	31/58	31#62			
VBI	28EB		6/59	6/60	24#16			
VBXHLD	009C		1#48	29/ 6	29/23	30/33	30/34	31/21 31/30
			31/60					
VDSLST	0200		3#14	5/ 9	5/11	24/17	24/19	
VECSET	2D57		34/13	34#20				
WAIT	2683		7/57	16/37	16/47	18#14		
WAITLP	2685		18#15	18/16				
WAITPD	25B2		15#49	15/55				
MSYNC	D40A		3#15	4/61	5/17			
XI	00AD		2# 8	13/35	13/44			
XITVBV	E462		3#23	24/35	25/18	32/ 6		
XMINUS	2D4C		34/ 7	34#14				
XVEC	2D3B		33/55	33#62				
XWORK	0090		1#36	20/15	20/50	23/53		
YI	00AE		2# 9	13/37	13/48	13/55		
YMAX	2D6D		34/25	34#31				
YMINUS	2D30		33/49	33#56				
YOFFSET	00A8		1#60	33/17	33/28			
YWORK	0091		1#37	20/21	20/56	23/55		
ZAP	00B2		2#13	8/15	24/45	24/47		
ZAPOBJ	2934		24#50	24/52				
ZAPSHO	293C		24#54	25/ 8				