

WIZARD---LAST VERSION.
APRIL 23, 1980
BY CHRIS CRAWFORD

ARCHEOLOGICAL NOTE: WIZARD SOMETIMES REFERRED TO AS HUMAN OR H
BANSHEE SOMETIMES REFERRED TO AS ROBOT, COMPUTER, OR C

PIA AND TIMER (6532) LOCATIONS

0280	SWCHA	= \$280	PO.P1 JOYSTICKS
0282	SWCHB	= \$282	CONSOLE SWITCHES
0281	CTLSWA	= \$281	
0283	CTLSWB	= \$283	
0284	INTIM	= \$284	INTERVAL TIMER IN
0295	TIMBT	= \$295	TIMER BT WRITE OUT
0296	TIM64T	= \$296	TIMER 64T WRITE OUT

STELLA (TIA) REGISTER ADDRESSES

0000	VSNC	= \$00	BIT	1	VERTICAL SYNC SET-CLR
0001	VBLANK	= \$01	BIT	1	VERTICAL BLANK SET-CLR
0002	WSNC	= \$02	STROBE		WAIT FOR HORIZ BLANK
0003	RSNC	= \$03	STROBE		RESET HORIZ SYNC COUNTER
0004	NUSIZ0	= \$04	BITS	54 210	NUMBER-SIZE PLAYER/MISSILE 0
0005	NUSIZ1	= \$05	BITS	54 210	NUMBER-SIZE PLAYER/MISSILE 1
0006	COLUP0	= \$06	BITS	7654321	COLOR(4)-LUM(3) PLAYER 0
0007	COLUP1	= \$07	BITS	7654321	COLOR(4)-LUM(3) PLAYER 1
0008	COLUPF	= \$08	BITS	7654321	COLOR(4)-LUM(3) PLAYFIELD
0009	COLUBK	= \$09	BITS	7654321	COLOR(4)-LUM(3) BACKGROUND
000A	CTRLPF	= \$0A	BITS	7 54 210	PLAYFIELD CONTROL
000R	REFP0	= \$0B	BIT	3	REFLECT PLAYER 0
000C	REFP1	= \$0C	BIT	3	REFLECT PLAYER 1
000D	PFO	= \$0D	BITS	7654	PLAYFIELD PEG BYTE 0
000E	PF1	= \$0E	BITS	ALL	PLAYFIELD REG BYTE 1
000F	PF2	= \$0F	BITS	ALL	PLAYFIELD REG BYTE 2
0010	RESP0	= \$10	STROBE		RESET PLAYER 0
0011	RESP1	= \$11	STROBE		RESET PLAYER 1
0012	RESM0	= \$12	STROBE		RESET MISSILE 0
0013	RESM1	= \$13	STROBE		RESET MISSILE 1
0014	RESBL	= \$14	STROBE		RESET BALL

0015	AUDCO	= \$15	BITS	3210 AUDIO CONTROL 0
0016	AUDC1	= \$16	BITS	3210 AUDIO CONTROL 1
0017	AUDFO	= \$17	BITS	3210 AUDIO FREQUENCY 0
0018	AUDF1	= \$18	BITS	3210 AUDIO FREQUENCY 1
0019	AUDVO	= \$19	BITS	3210 AUDIO VOLUME 0
001A	AUDV1	= \$1A	BITS	3210 AUDIO VOLUME 1
001B	GRPO	= \$1B	BITS ALL	GRAPHICS FOR PLAYER 0
001C	GRP1	= \$1C	BITS ALL	GRAPHICS FOR PLAYER 1
001D	ENAMO	= \$1D	BIT	1 ENABLE MISSILE 0
001E	ENAM1	= \$1E	BIT	1 ENABLE MISSILE 1
001F	ENABL	= \$1F	BIT	1 ENABLE BALL
0020	HMP0	= \$20	BITS 7654	HORIZ MOTION PLAYER 0
0021	HMP1	= \$21	BITS 7654	HORIZ MOTION PLAYER 1
0022	HMMO	= \$22	BITS 7654	HORIZ MOTION MISSILE 0
0023	HMM1	= \$23	BITS 7654	HORIZ MOTION MISSILE 1
0024	HMBL	= \$24	BITS 7654	HORIZ MOTION BALL
0025	VDELPO	= \$25	BIT	0 VERTICAL DELAY PLAYER 0
0026	VDELP1	= \$26	BIT	0 VERTICAL DELAY PLAYER 1
0027	VDELBL	= \$27	BIT	0 VERTICAL DELAY BALL
0028	RESMPO	= \$28	BIT	1 RESET MISSILE TO PLAYER 0
0029	RESMP1	= \$29	BIT	1 RESET MISSILE TO PLAYER 1
002A	HMOVE	= \$2A	STROBE	ACT ON HORIZ MOTION
002B	HMCLR	= \$2B	STROBE	CLEAR ALL HM REGISTERS
002C	CXCLR	= \$2C	STROBE	CLEAR COLLISION LATCHES
; READ ADDRESSES - BITS 7 & 6 ONLY				
0030	CXMOP	= \$30		
0031	CXM1P	= \$31		
0032	CXP0FB	= \$32		
0033	CXP1FB	= \$33		
0034	CXM0FB	= \$34		
0035	CXM1FB	= \$35		
0036	CXBLPF	= \$36		
0037	CXPPMM	= \$37		
0038	INPT0	= \$38		
0039	INPT1	= \$39		
003A	INPT2	= \$3A		
003B	INPT3	= \$3B		
003C	INPT4	= \$3C		
003D	INPT5	= \$3D		

RAM PAGE ZERO DEFINITIONS

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**$B0
00B0 SCORE0 **++5 SCORE TABLE
00B5 SCORE1 **++5 SCORE TABLE
00BA FRMCNT **++1 FRAME COUNT
00BB LINCNT **++1 LINE COUNT
00BC CLOCK **++1 CLOCK WITH 4 SECOND TICKS
00BD TEMP0 **++1 TEMP LOCATION
00BE TEMP1 **++1 TEMP LOCATION
00BF TEMP2 **++1 TEMP LOCATION
0090 HMP0S **++1 WIZARD HORIZONTAL POSITION
0091 CHPOS **++1 BANSHEE HORIZONTAL POSITION
0092 HMX **++1 WIZARD MISSILE HORIZONTAL POSITION
0093 CMX **++1 BANSHEE MISSILE HORIZONTAL POSITION
0094 WX **++1 WAND HORIZONTAL POSITION
0095 HVPOS **++1 WIZARD VERTICAL POSITION
0096 CVPOS **++1 BANSHEE VERTICAL POSITION
0097 HMY **++1 WIZARD MISSILE VERTICAL POSITION
0098 CMY **++1 BANSHEE MISSILE VERTICAL POSITION
0099 WY **++1 WAND VERTICAL POSITION
009A SWITCH **++1 STORED SWITCH POSITION
009B PHVPOS **++1 PREVIOUS HVPOS
009C PHHPOS **++1 PREVIOUS HMP0S
009D MYHMP0 **++1 MY RECORD OF HMP0
009E SEEN **++1 SIGHTING FLAG
009F MCOLPO **++1 MY RECORD OF PLAYER ZERO'S COLOR
00A0 SCOLOR **++1 MY RECORD OF BANSHEE'S COLOR
00A1 MCOLPF **++1 MY RECORD OF PLAYFIELD COLOR
00A2 COLBK **++1 BACKGROUND COLOR
00A3 COLNM1 **++1 COLOR OF NUMERALS 1
00A4 COLNM2 **++1 COLOR OF NUMERALS 2
00A5 DARKBK **++1 DARK BACKGROUND COLOR FOR SCORE KERNEL
00A6 FWX **++1 FAKE WAND HORIZONTAL POSITION
00A7 FWY1 **++1 FAKE WAND VERTICAL POSITION ONE
00A8 FWY2 **++1 FAKE WAND Y 2
00A9 MAGIC **++1 WIZARD STRENGTH FOR HURLING FIREBALLS
00AA DELTAX **++1 DELTA X FOR LINE OF SIGHT ROUTINE
00AB DELTAY **++1 DELTA Y FOR LINE OF SIGHT ROUTINE
00AC B **++2 BIGGER DISTANCE FOR SUBROUTINE LOOK
00AE S **++2 SMALLER DISTANCE FOR SUBROUTINE LOOK
00B0 C **++2 PSEUDO-DIVISION COUNTER FOR SUBROUTINE LOOK
00B2 DX0 **++2 SECONDARY X-STEP VECTOR FOR SUBROUTINE LOOK
00B4 DX1 **++2 PRIMARY X-STEP VECTOR FOR SUBROUTINE LOOK
00B6 DY0 **++2 SECONDARY Y-STEP VECTOR FOR LOOK
00B8 DY1 **++2 PRIMARY Y-STEP VECTOR FOR LOOK
00BA JWSSTAT **++1 JEWEL STATUS $FF IF OK, $00 IF STOLEN
00BB RANGE **++1 RANGE BETWEEN THEM (NDN-QUADRATIVE ADD)
00BC RANGE8 **++1 RANGE DIVIDED BY 8
00BD MAUDCO **++1 MY RECORD OF AUDCO
00BE MAUDC1 **++1 DITTO FOR AUDC1
00BF MAUDFO **++1 SAME IDEA
00C0 MAUDF1 **++1 YOU GUESSED IT
00C1 HSF CNT **++1 WIZARD REFRACTORY PERIOD
00C2 RSF CNT **++1 BANSHEE REFRACTORY PERIOD
00C3 HMSTAT **++1 WIZARD MISSILE FIRING STATUS $FF IF FIRING, $00 IF NOT
00C4 CMSTAT **++1 BANSHEE MISSILE FIRING STATUS $FF IF FIRING, $00 IF NOT
00C5 MAUDV1 **++1 MY AUDIO VOLUME 1, HERE FOR INITIALIZATION PURPOSES
00C6 HITSO **++1 HOW MANY HITS ON WIZARD?

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00C7	HITS1	***+1	HOW MANY HITS ON BANSHEE?
00C8	BONUS	***+1	EXTRA IMPACT OF WIZARD FIREBALL DUE TO BUTTON DELAY
00C9	HVOICE	***+1	WIZARD VOICE FLAG: \$FF=BUILDUP, \$00=NO BUILDUP
00CA	BSEES	***+1	BANSHEE SEES WIZARD FLAG, BIT 7
00CB	DHITS0	***+1	DECIMAL RECORD OF WIZARD INJURY
00CC	DHITS1	***+1	DECIMAL VERSION OF HITS1
00CD	HRTBTN	***+1	TIME FOR NEXT HEARTBEAT STAGE
00CE	HRTBTM	***+1	WHICH STAGE IN HEARTBEAT ARE WE AT?
00CF	ROBOT	***+8	ROBOT'S GRAPHICS TABLE
00D7	WIZARD	***+8	WIZARD'S GRAPHICS TABLE
00DF	PLTCNT	***+1	PLATEAU COUNTER FOR HEARTBEAT SOUND
00E0	SEEDL	***+1	RANDOM NUMBER LOW
00E1	SEEDH	***+1	RANDOM NUMBER HIGH
00E2	BANSHY	***+1	BANSHEE COUNTER
00E3	POINTR	***+2	INDIRECT POINTER TO SCORE TABLE
00E5	SCORE2	***+5	NUMERAL TABLE FOR SCORE KERNEL
00EA	LEGCNT	***+1	COUNTS WHICH SET OF LEGS WIZARD IS ON
00EB	KILLFM	***+1	TIME BANSHEE WAS SHOT
00EC	RSTFLG	***+1	RESET FLAG FOR ONE-SHOTTING RESET SWITCH
00ED	SLTFLG	***+1	FLAG FOR ONE-SHOTTING SELECT SWITCH
00EE	ROTTIM	***+1	NEXT FRAME FOR BANSHEE ROTATION
00EF	ROTHET	***+1	CURRENT ANGLE OF BANSHEE ROTATION
00F0	TWOPLR	***+1	TWO PLAYER FLAG (\$00: SOLITAIRE GAME \$FF: TWO PLAYER GAME)
00F1	LINPUT	***+1	LAST INPUT TIME (FOR TIME-OUT ATTRACT)
00F2	COLMSK	***+1	MASK FOR ATTRACT COLORS
00F3	STUNS	***+1	FLAG TO TELL IF BANSHY IS ALREADY STUNNED
00F4	FBAVL	***+1	FIREBALL AVAILABLE FLAG
00F5	NETINJ	***+1	NET WIZARD INJURY CARRYING OVER

STELLA INITIALIZATION

S=\$F000

TITLE 'WIZARD---CHRIS CRAWFORD---BEGUN SEPT 20, 1979'

F000 7B	SEI	NO INTERRUPTS ALLOWED
F001 DB	CLD	BINARY ARITHMETIC
F002 A2 FF	LDX #\$FF	CLEAR THE STACK
F004 9A	TXS	
F005 EB	INX	
F006 BA	TXA	
F007 95 00	STA VSXNC, X	CLEAR PAGE ZERO
F009 EB	INX	
F00A D0 FB	BNE CLEAR1	
F00C A9 CD	LDA #\$CD	
F00E B5 BA	STA FRMCNT	SEED FOR RANDOM NUMBER GENERATOR
F010 20 10 F5	JSR WMSTRT	INITIALIZE GAME
F013 C6 C6	DEC HITSD	POWER UP INTO ATTRACT MODE
F015 E6 E2	INC BANSHY	START WITH GAME NUMBER 1
F017 C6 F0	DEC TWOPLR	
F019 B6 BA	STX FRMCNT	

; THIS IS THE MAIN FRAME LOOP

F01B E4 8A	LOOP	INC	FRMCNT	
F01D 85 02		STA	WSYNC	
F01F D0 0F		BNE	NOWRAP	
F021 E6 8C		INC	CLOCK	
F023 20 AB F5		JSR	RAND	
F026 85 F2		STA	COLMSK	SET UP ATTRACT COLOR MASK
F028 A5 8C		LDA	CLOCK	
F02A C5 F1		CMP	LINPUT	ANY INPUTS IN LAST 18 MINUTES?
F02C D0 02		BNE	NOWRAP	
F02E C6 C6		DEC	HITS0	IF NOT, GO INTO ATTRACT MODE
F030 A7 02	NOWRAP	LDA	##02	
F032 85 02		STA	WSYNC	WAIT FOR LINE
F034 85 01		STA	VBLANK	TURN OFF SCREEN
F036 85 00		STA	VSYN	SYNC SCREEN
F038 85 2B		STA	HMCLR	CLEAR OUT MOTION REGISTER
F03A 24 32		BIT	CXPOFB	CHECK FOR COLLISIONS
F03C 10 0F		BPL	NOBUMP	IF NONE, SKIP AHEAD
F03E A5 9B		LDA	PHVPOS	GET PREVIOUS POSITION
F040 85 25		STA	HVPOS	RESTORE CURRENT POSITION
F042 A5 9C		LDA	PHHPOS	RESTORE OLD HORIZONTAL POSITION
F044 85 90		STA	HHPOS	
F046 A5 9D		LDA	MYHMP0	GET PREVIOUS HORIZ MOTION
F048 20 BB F5		JSR	ABSVAL	
F04B 85 20		STA	HMP0	MOVE BACKWARDS
F04D 85 02	NOBUMP	STA	WSYNC	WAIT FOR LINE
F04F 85 2A		STA	HMOVE	NOW EXECUTE MOVE
F051 85 02		STA	WSYNC	
F053 24 33		BIT	CXP1FB	DID BANSHEE TOUCH JEWELS?
F055 50 07		BVC	OVER10	
F057 2C 82 02		BIT	SWCHB	IS LEFT DIFFICULTY SWITCH OFF?
F05A 50 02		BVC	OVER10	IF SO, SKIP AHEAD
F05C 86 8A		STX	JWSTAT	IF NOT, OUT'EN THE FLIES
F05E 86 02	OVER10	STX	WSYNC	
F060 86 00		STX	VSYN	
F062 86 9D		STX	MYHMP0	
F064 86 2B		STX	HMCLR	
F066 A7 2E		LDA	##2E	
F068 8D 96 02		STA	TIM64T	SET UP TIMER FOR VBLANK PERIOD

THESE ARE HOUSEKEEPING THAT ARE ALWAYS DONE REGARDLESS OF ATTRACT

THIS IS THE COLOR ROUTINE

F068 AD 82 02		LDA	SWCHB	
F06E 20 C1 E9		JSR	SHIFTR	GET B/W SWITCH BIT INTO CARRY
F071 A2 06		LDX	##06	SET UP COLOR INDEX
F073 8D E7 F7	COLOOP	LDA	COLTAB,X	GET COLOR FROM TABLE
F076 24 C6		BIT	HITS0	ATTRACT MODE?
F078 10 04		BPL	CHBW	
F07A 45 F2		EDR	COLMSK	
F07C 29 E7		AND	##F7	MASKOUT TOP LVM BIT
F07E 80 02	CHBW	BCS	SAVCOL	B/W SWITCH ON?
F080 29 0F		AND	##0F	IF SO, MASK OUT COLOR
F082 95 9F	SAVCOL	STA	MCOLP0,X	
F084 CA		DEX		
F085 10 EC		BPL	COLOOP	
F087 85 06		STA	COLUP0	

WAND TWINKLE ROUTINE

F089 A5 8A		LDA	FRMCNT	
F08B 4A		LSR	A	
F08C 90 31		BCC	FIST	
F08E 20 AB F5		JSR	RAND	
F091 29 03		AND	##03	
F093 C9 02		CMP	##02	
F095 90 03		BCC	POSSE	
F097 09 FC		DRA	##FC	
F099 18		CLC		
F09A 65 94	POSSE	ADC	WX	
F09C AA		TAX		
F09D 38		SEC		
F09E E5 A6		SBC	FWX	
F0A0 20 8B F5		JSR	ABSVL	
F0A3 0A		ASL	A	
F0A4 0A		ASL	A	
F0A5 0A		ASL	A	
F0A6 0A		ASL	A	
F0A7 85 24		STA	HMBL	
F0A9 86 A6		STX	FWX	
F0AB 20 AB F5		JSR	RAND	
F0AE 29 01		AND	##01	
F0B0 18		CLC		
F0B1 65 97		ADC	WY	
F0B3 85 A7		STA	FWY1	
F0B5 20 AB F5		JSR	RAND	
F0B8 09 FE		DRA	##FE	
F0BA 18		CLC		
F0BB 65 99		ADC	WY	
F0BD 85 AB		STA	FWY2	

F0BF A0 00	FIST	LDY	##00	
F0C1 24 C6		BIT	HITS0	WIZARD DEAD?
F0C3 10 06		BPL	PRIMP	
F0C5 84 19		STY	AUDVO	

WIZARD---CHRIS CRAWFORD---SECUN SEPT 20, 1979

FOC7 84 1A
FOC9 30 04
FOCB 24 C7
FOCD 10 03
FOCF 4C EC F2

PRIMP

GWAIT

STY
BMI
BIT
BPL
JMP

AUDV1
GWAIT
HITB1
INPUTS
WAIT

TURN OFF SOUND

F0D2 A9 80	INPUTS	LDA	##80	
F0D4 24 BA		BIT	JWSTAT	ARE JEWELS INTACT?
F0D6 10 07		BPL	OVER9	IF NOT, SKIP
F0D8 A2 04		LDX	##04	SET UP FOR RANGE ROUTINE
F0DA 20 E2 F6		JSR	RNGE	GET RANGE TO JEWELS
F0DD 69 05		ADC	##05	BASLINE PLUS 5
F0DF C5 A9	OVER9	CMF	MAGIC	
F0E1 80 0B		BCS	PUNKT	IF TOO FAR, SKIP AHEAD
F0E3 24 C9		BIT	HVDICE	IF ALREADY SETTING UP SHOT, SKIP
F0E5 30 07		BMI	PUNKT	
F0E7 A5 9F		LDA	MCOLPO	GET WIZARD'S COLOR
F0E9 09 0E		ORA	##0E	BRIGHTEN WIZARD
F0EB 85 06		STA	COLUPO	STUFF IT
F0ED 88		DEY		
F0EE 84 F4	PUNKT	STY	FBAVL	SET FIREBALL AVAILABLE FLAG
F0F0 A0 FF		LDY	##FF	FAKE JOYSTICK BEING OFF
F0F2 A2 FF		LDX	##FF	FAKE FIRE BUTTON OFF
F0F4 C6 C1		DEC	HSFCNT	COUNT DOWN
F0F6 10 0F		BPL	IGNINP	IS THIS AN ACTION FRAME?
F0F8 A5 CB		LDA	DHITSO	IF SO, LET'S FIGURE NEXT ACTION FRAME
F0FA 20 C1 F5		JSR	SHIFTR	
F0FD AA		TAX		MOVE IT UP
F0FE EB		(INX) delete		
F0FF EB		INX		
F100 86 C1		STX	HSFCNT	SAVE IT IN COUNTER
F102 A6 3C		LDX	INPT4	GET REAL FIRE BUTTON INPUT
F104 AC 80 02		LDY	SWCHA	NOW GET REAL SWITCH INPUT
F107 98	IGNINP	TYA		
F108 09 0F		ORA	##0F	SET INSIGNIFICANT BITS TO 1
F10A 49 FF		EOR	##FF	INVERT ALL BITS
F10C 85 9A		STA	SWITCH	POSITIVE LOGIC. 1 MEANS ON
F10E 8A	PRUNE	TXA		NO JOYSTICK, SO CHECK FIRE BUTTON
F10F 30 18		BMI	JOYSTK	
F111 24 C3	FID	BIT	HMSTAT	IS HE ALREADY SHOOTING?
F113 30 14		BMI	JOYSTK	IF SO DON'T SHOOT AGAIN
F115 A5 E4		LDA	FBAVL	CHECK FIREBALL FLAG
F117 F0 10		BEQ	JOYSTK	
F119 C6 C9		DEC	HVOICE	SET UP SOUND FLAG
F11B A9 0C		LDA	##0C	
F11D 85 15		STA	AUDCO	
F11F A9 05		LDA	##05	
F121 85 17		STA	AUDVO	
F123 A9 1F		LDA	##1F	
F125 85 BF		STA	MAUDFO	
F127 85 17		STA	AUDFO	
F129 A5 90	JOYSTK	LDA	HMPOS	SAVE ALL OLD POSITIONS FIRST
F12B 85 9C		STA	PHMPOS	
F12D A5 95		LDA	HVPOS	
F12F 85 9B		STA	PHVPOS	
F131 A6 9A		LDX	SWITCH	
F133 F0 1E		BEQ	HOUSEK	
F135 24 9A		BIT	SWITCH	
F137 50 04		BVC	OVERS2	
F139 C6 EA		DEC	LECCNT	

F13B 70 02	BVS	OVER53	
F13D E6 EA	OVER52	INC	LEGCNT
F13F A5 EA	OVER53	LDA	LEGCNT
			SHAKE THOSE LEGS, WIZARD BABY!
F141 29 07	AND	#\$07	
F143 AA	TAX		
F144 BD 8A F7	LDA	LEGS1, X	
F147 85 D8	STA	WIZARD+1	
F149 BD 92 F7	LDA	LEGS2, X	
F14C 85 D7	STA	WIZARD	
F14E A2 00	LDX	#\$00	
F150 20 1C F6	JSR	STICK	

THIS IS THE SOUND ROUTINE WHICH MANAGES
SOUND CARRY THROUGH

F153 A5 8A HOUSEK LDA FRMCNT ONLY MESS WITH SOUND EVERY FOURTH FRAME
F155 29 03 AND ##03
F157 D0 42 BNE ELM
F159 24 C3 BIT HMSTAT
F15B 10 0C BPL NOFYET
F15D C6 BF DEC MAUDF0
F15F 10 02 BPL OVER63

NOTE: X-REGISTER CONTAINS #00

F161 E6 BF OVER63 INC MAUDF0
F163 A4 BF LDY MAUDF0
F165 84 17 STY AUDF0
F167 70 32 BVS ELM UNCONDITIONAL BRANCH
F169 24 C9 NOFYET BIT HVOICE
F16B 10 2E BPL ELM

F16D A5 8A LDA FRMCNT
F16F 29 07 AND ##07
F171 D0 0B BNE LNCMIS
F173 C6 BF DEC MAUDF0
F175 F0 0B BEQ SOLE
F177 A4 BF LDY MAUDF0

IF FIREBALL AT TOP OF SCALE, LAUNCH IT

F179 84 17 STY AUDF0
F17B A5 3C LNCMIS LDA INPT4
F17D 10 1C BPL ELM
F17F A7 0B SOLE LDA ##0B
F181 85 15 STA AUDC0
F183 A7 20 LDA ##20

SET UP WHITE NOISE

F185 38 SEC
F186 E5 BF SBC MAUDF0
F188 4A LSR A
F189 4A LSR A
F18A 85 CB STA BONUS
F18C E6 C9 INC HVOICE

F18E 8A A9 BTX MAGIC
F190 A0 01 LDY ##01
F192 20 74 F6 JSR MISEYE
F195 C6 C3 DEC HMSTAT
F197 A9 05 LDA ##05
F199 85 19 STA AUDV0

IF SO, THERE WENT ALL YOUR STRENGTH

SET SHOOTING FLAG
SET UP SOUND VOLUME

F19B 24 C4 ELM BIT CMSTAT
F19D 10 0E BPL BEEPER
F19F A5 8A LDA FRMCNT
F1A1 29 03 AND ##03
F1A3 D0 4A BNE OAK
F1A5 E6 C0 INC MAUDF1
F1A7 A4 C0 LDY MAUDF1
F1A9 84 18 STY AUDF1
F1AB D0 42 BNE OAK

NOW DO ROBOT'S VOICE
IF NOT SHOOTING, MUST BE HEARTBEATING

MESS WITH SOUND ONLY EVERY FOURTH FRAME
DECREASE FREQUENCY

F1AD C6 CD BEEPER DEC HRTBTN
F1AF F0 12 BEQ LEDGE
F1B1 C6 DF DEC PLTCNT
F1B3 10 3A BPL OAK
F1B5 E6 DF INC PLTCNT

THIS IS THE HEARTBEAT ROUTINE
IF THIS BEAT HAS ENDED, SET UP NEXT BEAT
ALLOW FOR PLATEAU DELAY AT BEGINNING OF BEAT
IF STILL IN PLATEAU, ALLOW SOUND TO CARRY ON
IF DONE WITH PLATEAU, KEEP COUNTER POSITIVE (IS THIS NECESSARY?)

F1B7 C6 C5		DEC	MAUDV1	MAKE SOUND TRAIL OFF....
F1B9 10 02		BPL	OVER21	
F1BB E6 C5		INC	MAUDV1	DON'T LET IT GO NEGATIVE!
F1BD A5 C5	OVER21	LDA	MAUDV1	
F1BF B5 1A		STA	AUDV1	OK, STUFF THE SOUND NOW
F1C1 10 2C		BPL	OAK	UNCONDITIONAL BRANCH
F1C3 A5 CE	LEDGE	LDA	HRTBTM	
F1C5 49 01		EOR	##01	
F1C7 B5 CE		STA	HRTBTM	INVERT HEARTBEAT MODE
F1C9 AA		TAX		
F1CA BD FE F7		LDA	HRTBTD, X	GET DELAY FOR THIS BEAT
F1CD B5 CD		STA	HRTBTN	STUFF IT
F1CF A9 02		LDA	##02	
F1D1 B5 DF		STA	PLTCNT	SET UP PLATEAU AT BEGINNING OF BEAT
F1D3 B5 16		STA	AUDC1	
F1D5 A4 BC		LDY	RANGE8	
F1D7 C0 09		CPY	##09	
F1D9 90 02		BCC	APRCOT	
F1DB A0 08		LDY	##08	
F1DD B9 C2 F7	APRCOT.	LDA	VOLUMT, Y	GET VOLUME(RANGE) FUNCTION FROM TABLE
F1E0 A0 0C		LDY	##0C	
F1E2 A6 CE		LDX	HRTBTM	
F1E4 D0 03		BNE	ROUND	
F1E6 4A		LSR	A	IF SECOND BEAT, HALVE VOLUME
F1E7 A0 10		LDY	##10	AND LOWER FREQUENCY
F1E9 B5 1A	ROUND	STA	AUDV1	SET UP SOUND REGISTERS
F1EB B5 C5		STA	MAUDV1	
F1ED B4 1B		STY	AUDF1	

THIS PAGE DOES HUMAN SIGHTING AND SHOOTING EFFECTS

F1EF A2 00	OAK	LXD	#500	
F1F1 20 78 F4		JSR	LOOK	
F1F4 F0 63		BEG	MISNFT	
F1F6 A0 01		LDY	#01	
F1F8 20 74 F6		JSR	MISEYE	RESET PHOTON TO EYEBALL
F1F8 24 C3		BIT	HMSTAT	
F1FD 10 02		BPL	OVER64	
E1FE B6 19		STX	AUDVO	
F201 A5 A2	OVER64	LDA	COLBK	
F203 24 F0		BIT	TWOPLR	
F205 30 06		BMI	OVER79	
F207 24 3D		BIT	INPT5	
F209 30 02		BMI	OVER79	
F20B A5 A4		LDA	CDLNH2	
F20D 24 9E	OVER79	BIT	SEEN	
F20F 70 40		BVS	CBLOCK	
F211 24 C3		BIT	HMSTAT	
F213 10 3A		BPL	QOON	
F215 A5 8A		LDA	FRMCNT	A HIT! MARK TIME OF HIT
F217 B5 EB		STA	KILLFM	(FOR DEATH PAUSE IF BANSHEE IS KILLED BY THIS SHOT)
F219 C6 EB		DEC	KILLFM	ALLOW ONE LESS FRAME FOR DEATH PAUSE
F21B A5 BC		LDA	RANGE8	IMPACT DEPENDS ON RANGE
F21D 38		SEC		MINIMUM IMPACT = 1
F21E 65 C8		ADC	BONUS	THROW IN A BONUS FOR LENGTH OF BUILDUP
F220 AA		TAX		
F221 A5 CC		LDA	DHITS1	
F223 F8		SED		
F224 69 01	UPI	ADC	#01	THIS IS A HEX-TO-DEC CONVERSION LOOP
F226 70 0C		BCC	WOOF	
F228 C6 C7		DEC	HITS1	
F22A E6 E2		INC	BANGSHY	SET UP NEXT BANSHEE
F22C A4 E2		LDY	BANGSHY	
F22E C0 0A		CPY	#0A	HAS WIZARD KILLED 10 BANSHEES?
F230 D0 02		BNE	WOOF	
F232 C6 C6		DEC	HITS0	
F234 CA	WOOF	DEX		
F235 D0 ED		BNE	UPI	
F237 05 CC		STA	DHITS1	
F239 D8		CLD		
F23A A2 10	NOHIT	LXD	#10	
F23C 2C 82 02		BIT	SWCH8	IF DIFFICULTY SWITCH DOWN,
F23F 10 04		BPL	WHATVR	STUN BANSHEE REGARDLESS OF RANGE
F241 E4 B8		CPX	RANGE	OTHERWISE, STUN ONLY AT CLOSE RANGE
F243 90 0A		BCC	QOON	
F245 A9 C0	WHATVR	LDA	#C0	
F247 A4 F3	PRO	LDY	STUNS	
F249 D0 04		BNE	QOON	DON'T ALLOW STUN IF ALREADY STUNNED (NO FAIR!)
F24B E6 F3		INC	STUNS	
F24D B5 C2		STA	RSFCNT	SET LARGE REFRACTORY PERIOD (I.E., STUN)
F24F A5 A0	QOON	LDA	SCOLOR	
F251 B5 07	CBLOCK	STA	COLUP1	
F253 A0 00		LDY	#00	
F255 B4 C3		STY	HMSTAT	
F257 F0 02		BEG	CTURN	
F259 B5 2B	MISNFT	STA	RESMPO	

F25B A2 01	CTURN	LDX	##01	
F25D 20 7B F4		JSR	LOOK	
F260 F0 2E		BEG	GOODGAH	
F262 A0 00		LDY	##00	
F264 20 74 F6		JSR	MISEYE	
F267 A0 00		LDY	##00	
F269 A3 7E		LDA	SEEN	
F26B 85 CA		STA	BSEES	
F26D 10 25		BPL	HBLOCK	
F26F 24 C4		BIT	CMSTAT	WAS A SHOT OUT?
F271 10 21		BPL	HBLOCK	IF NOT, ENABLE SHOT LATER
F273 84 1E		STY	ENAM1	
F275 84 C4		STY	CMSTAT	
F277 A9 02		LDA	##02	
F279 F8		SED		
F27A 1B		CLC		
F27B 65 CB		ADC	DHITS0	
F27D 85 CB		STA	DHITS0	
F27F DB		CLD		
F280 90 0C		BCC	ZOOM	
F282 C6 C6		DEC	HITS0	
F284 A2 07		LDX	##07	
F286 BD 82 F7	LOOP26	LDA	DEADH, X	LOAD CORPSE GRAPHICS
F289 95 D7		STA	WIZARD, X	
F28B CA		DEX		
F28C 10 F8		BPL	LOOP26	
F28E D0 04	ZOOM	BNE	HBLOCK	
F290 B5 29	GOODGAH	STA	RESMP1	UPDATE PHOTON
F292 F0 02		BEG	PLANMV	
F294 B4 C4	HBLOCK	STY	CMSTAT	

F296 C6 C2	PLANMV	DEC	RSFCNT	IS THIS AN ACTION FRAME?
F29B D0 52		BNE	WAIT	
F29A A9 00		LDA	##00	
F29C 83 F3		STA	STUNS	
F29E A5 CC		LDA	DHITS1	
F2A0 20 C1 F5		JSR	SHIFTR	
F2A3 1B		CLC		
F2A4 69 02		ADC	##01	
F2A6 0A		ASL	A	DOUBLE DELAY FOR BANSHEE
F2A7 B5 C2		STA	RSFCNT	AND STORE IT

F2A9 24 F0		BIT	TWOPLR	SOLITAIRE GAME?
F2AB 30 1B		BMI	SOLTAR	
F2AD 20 C6 F5		JSR	BFIRES	SHOOT IF ALLOWED AND REQUESTED
F2B0 AD 80 02	CASE	LDA	SWCHA	
F2B3 0A		ASL	A	
F2B4 0A		ASL	A	
F2B5 0A		ASL	A	
F2B6 0A		ASL	A	
F2B7 49 FF		EOR	##FF	
F2B9 85 9A		STA	SWITCH	
F2BB F0 2F		BEG	WAIT	
F2BD A2 01		LDX	##01	
F2BF 20 1C F0		JSR	STICK	
F2C2 4C EC F2		JMP	WAIT	

F2C5 20 C6 F5	SOLTAR	JSR	BFIRES	
F2CB A9 00		LDA	#\$00	
F2CA A6 90		LDX	HHPOS	
F2CC E4 91		CPX	CHPOS	NOW LET'S PLAN MOTION
F2CE 90 08		BCC	MOVLFT	
F2D0 F0 0A		BEQ	VERT	
F2D2 E6 91	MOVRIT	INC	CHPOS	
F2D4 A9 F0		LDA	#\$F0	SET UP ACC FOR HMOVE
F2D6 30 04		BMI	VERT	UNCONDITIONAL BRANCH
F2D8 C6 91	MOVLFT	DEC	CHPOS	
F2DA A9 10		LDA	#\$10	
F2DC 85 21	VERT	STA	HMP1	OK, MOVE THE LITTLE RUNT
F2DE A6 95		LDX	HVPOS	
F2E0 E4 96		CPX	CVPOS	
F2E2 90 06		BCC	MOVDWN	
F2E4 F0 06		BEQ	WAIT	
F2E6 E6 96	MOVUP	INC	CVPOS	
F2E8 B0 02		BCS	WAIT	UNCONDITIONAL BRANCH
F2EA C6 96	MOVDWN	DEC	CVPOS	

F2EC A5 A5	WAIT	LDA	DARKBK	
F2EE B5 09		STA	COLUBK	
F2F0 A5 E2		LDA	BANSHY	
F2F2 20 E5 F5		JSR	SETUP	
F2F5 BD 02 F7	LOOP30	LDA	NUMRL, X	THIS SETS UP FOR THE SCORE KERNEL
F2F8 29 38		AND	#138	
F2FA 99 E5 00		STA	SCORE2, Y	
F2FD CA		DEX		
F2FE 88		DEY		
F2FF 10 F4		BPL	LOOP30	
F301 A9 80		LDA	#180	
F303 B5 E3		STA	POINTR	
F305 A5 CC		LDA	DHITS1	
F307 20 F2 F5		JSR	STUFF	
F30A A2 85		LDA	#185	
F30C B5 E3		STA	POINTR	
F30E A5 CB		LDA	DHITS0	
F310 20 F2 F5		JSR	STUFF	
F313 A2 04		LDX	#104	
F315 86 0A		STX	CTRLPF	
F317 EB		INX		

F318 AD 84 02	DELAY	LDA	INTIM	
F31B D0 FB		BNE	DELAY	
F31D B5 02		STA	WSYNC	BEGINNING OF LINE
F31F B5 2A		STA	HMOVE	MOVE STUFF NOW
F321 B5 1B		STA	GRPO	
F323 B5 1C		STA	GRP1	
F325 B5 0D		STA	PFO	
F327 B5 0F		STA	PF2	
F329 B5 01		STA	VBLANK	TURN SCREEN BACK ON
F32B A9 09		LDA	#109	DISPLAY MUST HAVE 9
F32D B5 8D		STA	LINCNT	LINES IN SCORE KERNEL
F32F B5 2C		STA	CXCLR	CLEAR COLLISIONS REGISTER

F331 85 02	SCOREK	STA	WSYNC
F333 4A		LSR	A
F334 90 01		BCC	OVER33
F336 CA		DEX	
F337 A5 A3	OVER33	LDA	COLUMN1
F339 85 08		STA	COLUPF
F33B 85 E5		LDA	SCORE2, X
F33D 85 0F		STA	PF2
F33F 85 80		LDA	SCORE0, X
F341 85 0E		STA	PF1
F343 A0 03		LDY	##03
F345 88	LOOP34	DEY	
F346 D0 FD		BNE	LOOP34
F348 85 85		LDA	SCORE1, X
F34A 85 0E		STA	PF1
F34C A5 A4		LDA	COLUMN2
F34E 85 08		STA	COLUPF
F350 84 0F		STY	PF2
F352 C6 8B		DEC	LINCNT
F354 A5 8B		LDA	LINCNT
F356 10 D9		BPL	SCOREK
F358 84 0E		STY	PF1
F35A A5 A1		LDA	MCOLPF
F35C 85 08		STA	COLUPF
F35E A9 05		LDA	##05
F360 85 0A		STA	CTRLPF
F362 A9 57		LDA	##57
F364 85 8B		STA	LINCNT
F366 4A		LSR	A
F367 4A		LSR	A
F368 85 02		STA	WSYNC
F36A 85 02		STA	WSYNC
F36C A6 A2		LDX	COLORK
F36E 86 09		STX	COLORK
F370 A2 00		LDX	##00

F372 85 02	KERNEL	STA	WSYNC	WAIT FOR LINE
F374 86 1C		STX	GRP1	
F376 84 1B		STY	GRPO	
F378 AA		TAX		
F379 BD 39 F7		LDA	PLFD0, X	GET MAP FROM ROM
F37C 85 0D		STA	PF0	STUFF IT IN
F37E BD 4F F7		LDA	PLFD1, X	
F381 85 0E		STA	PF1	
F383 BD 65 F7		LDA	PLFD2, X	
F386 85 0F		STA	PF2	
F388 A0 00		LDY	#\$00	
F38A A2 00		LDX	#\$00	
F38C A5 8B		LDA	LINCNT	
F38E C5 97		CMP	HMY	
F390 D0 02		BNE	CMISSL	
F392 A6 C3		LDX	HMSTAT	
F394 C5 98	CMISSL	CMP	CMY	
F396 D0 02		BNE	PWAND	
F398 A4 C4		LDY	CMSTAT	
F39A C5 A7	PWAND	CMP	FWY1	
F39C D0 04		BNE	C2	
F39E A5 BA		LDA	JWSTAT	
F3A0 30 0A		BMI	BWAND	
F3A2 C5 AB	C2	CMP	FWY2	
F3A4 D0 04		BNE	DWAND	
F3A6 A5 BA		LDA	JWSTAT	
F3A8 30 02		BMI	BWAND	
F3AA A9 00	DWAND	LDA	#\$00	
F3AC 85 02	BWAND	STA	WSYNC	
F3AE 85 1F		STA	ENABL	
F3B0 84 1E		STY	ENAM1	
F3B2 86 1D		STX	ENAM0	
F3B4 A0 00		LDY	#\$00	CLEAR PLAYER
F3B6 A5 8B		LDA	LINCNT	
F3B8 3B		SEC		
F3B9 E5 95		SBC	HVPOS	
F3BB AA		TAX		GET INDEX FOR PLAYER GRAPHICS
F3BC 29 FB		AND	#\$FB	MASK OFF UPPER 5 BITS
F3BE D0 02		BNE	NEXT	SKIP IF SEPARATION IS TOO GREAT
F3C0 B4 D7		LDY	WIZARD, X	
F3C2 A5 8B	NEXT	LDA	LINCNT	
F3C4 3B		SEC		
F3C5 E5 96		SBC	CVPOS	
F3C7 AA		TAX		
F3C8 29 FB		AND	#\$FB	
F3CA F0 04		BEG	PUTOUT	
F3CC A9 00		LDA	#\$00	
F3CE F0 02		BEG	DONE	UNCONDITIONAL BRANCH
F3D0 B5 CF	PUTOUT	LDA	ROBOT, X	GET PICTURE BYTE
F3D2 AA	DONE	TAX		
F3D3 C6 8B		DEC	LINCNT	
F3D5 A5 8B		LDA	LINCNT	
F3D7 30 05		BMI	OVRSCN	
F3D9 4A		LSR	A	
F3DA 4A		LSR	A	
F3DB 4C 72 F3		JMP	KERNEL	

END OF PICTURE. NOW DO OVERSCAN

F3DE A6	OVERSCAN	TAX	
F3DF A9 23		LDA	##23
F3E1 B5 02		STA	WBYNC WAIT FOR LINE
F3E3 B6 01		STX	VBLANK TURN OFF SCREEN
F3E5 BD 96 02		STA	TIM64T

F3E8 A2 01	DIST	LDX	##01	GET RANGE BETWEEN WIZARD AND BANSHEE
F3EA 20 E2 F6		JSR	RNGE	
F3ED B3 BD		STA	RANGE	
F3EF 4A		LSR	A	
F3F0 4A		LSR	A	
F3F1 4A		LSR	A	
F3F2 B5 BC		STA	RANGEB	

F3F4 A5 BA		LDA	FRMCNT	THIS ROUTINE ROTATES THE ROBOT
F3F6 29 06		AND	##06	
F3F8 D0 06		BNE	ROTAT	
F3FA E6 A9		INC	MAGIC	INCREASE STRENGTH EVERY FOUR FRAMES
F3FC D0 02		BNE	ROTAT	BUT DON'T WRAP AROUND
F3FE C6 A9		DEC	MAGIC	

F400 C6 EE	ROTAT	DEC	ROTTIM
F402 10 22		BPL	BOOPY
F404 A5 CC		LDA	DHITS1
F406 20 C1 F5		JSR	SHIFTR
F409 4A		LSR	A
F40A B5 EE		STA	ROTTIM
F40C E6 EF		INC	ROTHET
F40E A5 EF		LDA	ROTHET
F410 29 06		AND	##06

F412 0A		ASL	A
F413 0A		ASL	A
F414 A8		JAY	
F415 24 C7		BIT	HITS1
F417 10 02		BPL	OVER16
F419 A0 20		LDY	##20

F41B A2 07	OVER16	LDX	##07	IF SO, USE SPECIAL GRAPHICS INDEX
F41D B9 9A F7	LOOP3	LDA	ROBOTTY	IT'S DONE WITH A TABLE
F420 75 CF		STA	ROBOTX	

F422 C8		INY	
F423 CA		DEX	
F424 10 F7		BPL	LOOP3

F426 A0 00	BOOPY	LDY	##00
F428 AD B2 02		LDA	SWCHB
F42B 4A		LSR	A
F42C 4A		LSR	A

F42D B0 15		BCS	NOSELCT	IF OFF, BRANCH AHEAD
F42F 24 ED		BIT	SLTFL0	CHECK ONE-SHOT FLAG
F431 30 13		BMI	RESET	IF ON, BRANCH AHEAD
F433 B6 ED		STX	SLTFL0	IF OFF, SET ONE-SHOT FLAG
F435 A5 F0		LDA	TWOPLR	OK, CHANGE GAME
F437 49 FF		EDR	##FF	
F439 B5 F0		STA	TWOPLR	
F43B 18		CLC		
F43C 69 02		ADC	##02	

F43E 85 E2		STA	BANSHY	
F440 C6 C6		DEC	HITSO	GO INTO ATTRACT MODE
F442 30 02		BMI	RESET	UNCONDITIONAL BRANCH
F444 B4 ED	NOSLCT	STY	SLTFLG	
F446 AD 02 02	RESET	LDA	SWCHB	GET GAME RESET SWITCH STATUS
F449 4A		LSR	A	SHIFT SWITCH BIT INTO CARRY
F44A B0 0B		BCS	PCHSW	SKIP AHEAD IF SWITCH IS OFF
F44C 24 EC		BIT	RSTFLG	CHECK ONE-SHOT FLAG
F44E 30 09		BMI	SIFBD	IF ONE-SHOT FLAG IS SET, SKIP AHEAD
F450 B6 EC		STX	RSTFLG	SET ONE-SHOT FLAG
F452 20 10 F5		JSR	WMSTRT	RESET GAME
F455 F0 19		BEG	VBKST	UNCONDITIONAL JUMP AHEAD
F457 B4 EC	PCHSW	STY	RSTFLG	CLEAR ONE-SHOT FLAG
F459 24 C7	SIFBD	BIT	HITS1	IS BANSHEE DEAD?
F45B 10 13		BPL	VBKST	IF ALIVE, SKIP AHEAD
F45D 24 C6		BIT	HITSO	IS WIZARD FORMALLY DEAD?
F45F 30 0F		BMI	VBKST	IF SO, SKIP THIS
F461 B4 07		STY	COLUP1	
F463 B4 19		STY	AUDVO	
F465 B4 1A		STY	AUDV1	
F467 A5 BA		LDA	FRMCNT	
F469 C3 EB		CMP	KILLFM	
F46B D0 03		BNE	VBKST	
F46D 20 34 F5		JSR	TRY2	
F470 AE B4 02	VBKST	LDX	INTIM	
F473 D0 EB		BNE	VBKST	
F475 4C 1B F0		JMP	LOOP	

SUBROUTINES FOLLOW

THIS IS THE LINE OF SIGHT ROUTINE
IT TRACES STRAIGHT LINES BETWEEN THE PLAYERS

X-REGISTER MUST CONTAIN A ZERO OR ONE
TO SPECIFY WIZARD OR BANSHEE RESPECTIVELY

F47B A0 40	LOOK	LDY	#440	
F47A B4 9E		STY	SEEN	
F47C B5 80		LDA	C, X	GET PSEUDO-DIVISION COUNTER
F47E 18		CLC		
F47F 75 AE		ADC	S, X	ADD IN SMALLER DISTANCE
F481 95 80		STA	C, X	
F483 B5 AC		LDA	B, X	
F485 D5 80		CMP	C, X	HAS COUNTER OVERFLOWED PAST BIGGER DISTANCE?
F487 BA		TXA		
F488 A8		TAY		
F489 B0 09		BCS	ZXBKL	IF NOT, TAKE A SECONDARY STEP
F48B B5 80		LDA	C, X	IF SO, SUBTRACT OUT BIGGER DISTANCE
F48D 38		SEC		
F48E F5 AC		SBC	B, X	
F490 95 80		STA	C, X	
F492 C8		INY		AND SET Y FOR PRIMARY STEP VECTOR
F493 C8		INY		
F494 B5 92	ZXBKL	LDA	HMX, X	NOW TAKE STEP
F496 18		CLC		
F497 79 B2 00		ADC	DX0, Y	
F49A 95 92		STA	HMX, X	
F49C B7 B2 00		LDA	DX0, Y	
F49F 20 B8 F5		JSR	ABSVAL	
F4A2 0A		ASL	A	
F4A3 0A		ASL	A	
F4A4 0A		ASL	A	
F4A5 0A		ASL	A	
F4A6 95 22		STA	HPM0, X	
F4A8 B5 97		LDA	HMY, X	
F4AA 18		CLC		
F4AB 79 B6 00		ADC	DY0, Y	
F4AC 95 97		STA	HMY, X	
F480 4A		LSR	A	
F4B1 4A		LSR	A	
F4B2 AD		TAY		
F4B3 B5 92		LDA	HMX, X	
F4B5 4A		LSR	A	
F4B6 4A		LSR	A	
F4B7 38		SEC		
F4B8 E9 14		SBC	#14	
F4BA 10 02		BPL	NONNEG	
F4BC 49 FF		EDR	#FF	
F4BE C9 08	NONNEG	CMP	#08	THIS IS FOR FIGURING HITS ON WALLS
F4C0 30 00		BCS	P1	
F4C2 B5 BE		STA	TEMP1	
F4C4 A7 08		LDA	#08	
F4C6 E9 BE		SBC	TEMP1	
F4C8 B5 BE		STA	TEMP1	
F4CA B7 65 F7		LDA	PLFD2, Y	HERE'S WHERE I LOOK UP THE WALL
F4CD B0 18		BCS	GDIT	
F4CF C9 10	P1	CMP	#10	
F4D1 B0 09		BCS	P0	

F4D3 E9 07		SBC	##07	
F4D5 85 8E		STA	TEMP1	
F4D7 B9 4F F7		LDA	PLFD1, Y	
F4DA 80 0B		BCS	GBIT	
F4DC 85 8E	PO	STA	TEMP1	
F4DE A9 17		LDA	##17	
F4E0 E5 8E		SBC	TEMP1	
F4E2 85 8E		STA	TEMP1	
F4E4 B9 39 F7		LDA	PLFDO, Y	
F4E7 A4 8E	GBIT	LDY	TEMP1	
F4E9 39 FA F6		AND	MASK, Y	
F4EC F0 01		BEG	COMPLT	
F4EE 60		RTS		LOS IS BLOCKED
F4EF 06 9E	COMPLT	ASL	SEEN	
F4F1 8A		TXA		
F4F2 49 01		EOR	##01	
F4F4 A8		TAY		
F4F5 B5 92		LDA	HMX, X	
F4F7 38		SEC		
F4F8 F9 90 00		SBC	HHPOS, Y	
F4FB F0 0E		BEG	LOOKLP	
F4FD C9 07		CMP	##07	ARE WE CLOSE?
F4FF B0 0A		BCS	LOOKLP	
F501 B5 97		LDA	HMY, X	
F503 38		SEC		
F504 F9 95 00		SBC	HVPDS, Y	
F507 C9 07		CMP	##07	ARE WE CLOSE VERTICALLY?
F509 90 04		BCC	ELOPE	
F50B 06 9E	LOOKLP	ASL	SEEN	
F50D A5 9E		LDA	SEEN	
F50F 60	ELOPE	RTS		

THIS IS THE MAIN INITIALIZATION ROUTINE

F510 A9 00	WMSTRT	LDA	##00	
F512 85 E2		STA	BANGHY	
F514 85 F5		STA	NETINJ	
F516 A5 8A		LDA	FRMCNT	
F518 85 E0		STA	SEEDL	
F51A 49 FF		EDR	##FF	
F51C 85 E1		STA	SEEDH	

NOW SET UP PLAYERS

F51E 20 67 F6		JSR	SELPLC	PLACE WIZARD
F521 85 90		STA	HHPDS	
F523 84 75		STY	HVPOS	
F525 84 2C		STY	CXCLR	CLEAR OUT COLLISION REGISTER

F527 20 67 F6	TRY1	JSR	SELPLC	PLACE WAND
F52A C5 90		CHP	HHPDS	SAME PLACE AS WIZARD?
F52C F0 F9		BEQ	TRY1	IF SO, TRY AGAIN

F52E 85 A6		STA	FWX	
F530 85 94		STA	WX	
F532 84 79		STY	WY	

F534 20 67 F6	TRY2	JSR	SELPLC	PLACE BANSHEE
F537 C5 90		CHP	HHPDS	SAME PLACE AS WIZARD?
F539 F0 F9		BEQ	TRY2	IF SO, TRY AGAIN
F53B C5 94		CHP	WX	SAME PLACE AS WAND?
F53D F0 F5		BEQ	TRY2	IF SO, TRY AGAIN

F53F 85 91		STA	CHPOS	
F541 84 96		STY	CVPOS	

THIS IS CAROL SHAW'S HORIZONTAL POSITIONING ROUTINE

F543 A2 04		LDX	##04	
F545 A9 02	CHRLP1	LDA	##02	
F547 E0 02		CPX	##02	
F549 80 02		BCS	CHSKP1	
F54B A9 01		LDA	##01	
F54D 1B	CHSKP1	CLC		
F54E 75 90		ADC	HHPDS, X	
F550 A0 02		LDY	##02	

F552 38		SEC		
F553 C8	CHRLP2	INY		

F554 E9 0F		SBC	##0F	
F556 80 FB		BCS	CHRLP2	

F558 49 FF		EDR	##FF	
F55A E9 06		SBC	##06	

F55C 0A	CHR2	ASL	A	
F55D 0A		ASL	A	

F55E 0A		ASL	A	
F55F 0A		ASL	A	

F560 84 02	HRST	STY	WSYNC	
F562 88	HRST1	DEY		

F563 10 FD		BPL	HRST1	
F565 95 10		STA	RESP0, X	

F567 95 20		STA	HMP0, X	
F569 CA		DEX		

F56A 10 D9		BPL	CHRLP1	
F56C 85 02		STA	WSYNC	

F56E 85 2A		STA	HMOVE	
------------	--	-----	-------	--

F570 A9 08	LDA	#40B
F572 85 15	STA	AUDCO
F574 C8	INX	
F575 A6 E2	LDX	BANSHY
F577 BD DD F7	LDA	DHNDGP, X
F57A 85 CC	STA	DHITS1

F57C A5 CB	LDA	DHITS0
F57E 20 C1 F5	JSR	SHIFTR
F581 E8	SED	
F582 18	CLC	
F583 65 F5	ADC	NETINJ
F585 DB	CLD	
F586 85 F5	STA	NETINJ
F588 85 CB	STA	DHITS0

F58A A2 07	LDX	#407
F58C BD 7B F7	LDA	PERSON, X
F58F 95 D7	STA	WIZARD, X
F591 94 C3	STY	HMSTAT, X
F593 CA	DEX	
F594 1Q E6	BPL	LOOP25
F596 86 2B	STX	HMCLR
F598 B6 BA	STX	JWSTAT

THIS ZEROS SOME FLAGS AND COUNTERS

F59A E8	INX	
F59B C8	INX	
F59C 20 74 F6	JSR	MISEYE
F59F E8	INX	
F5A0 B8	DEY	
F5A1 20 74 F6	JSR	MISEYE

F5A4 AD EA F7	LDA	COLTAB+3
F5A7 85 07	STA	COLUP1
F5A9 CA	DEX	
F5AA 60	RTS	

F5AB A5 E1	RAND	LDA	SEEDH	
F5AD 0A		ASL	A	
F5AE 45 E1		EOR	SEEDH	
F5B0 0A		ASL	A	
F5B1 0A		ASL	A	
F5B2 26 E0		ROL	SEEDL	
F5B4 26 E1		ROL	SEEDH	
F5B6 A5 E0		LDA	SEEDL	
F5B8 60		RTS		

F5B9 10 05	PABSVL	BPL	ENDABS	
F5BB 49 FF	ABSVL	EOR	##FF	
F5BD 18		CLC		
F5BE 69 01		ADC	##01	
F5C0 60	ENDABS	RTS		

F5C1 4A	SHIFTR	LSR	A	
F5C2 4A		LSR	A	
F5C3 4A		LSR	A	
F5C4 4A		LSR	A	
F5C5 60		RTS		

F5C6 24 C4	BFIRES	BIT	CMSTAT	IS SHOT ALREADY OUT?
F5C8 30 1A		BMI	ONWARD	IF SO, MOVE ALONG
F5CA 24 CA		BIT	BSEES	
F5CC 10 16		BPL	ONWARD	
F5CE A2 01		LDX	##01	
F5D0 A0 00		LDY	##00	

F5D2 20 74 F6		JSR	MISEYE	
F5D5 C6 C4		DEC	CMSTAT	
F5D7 A9 05		LDA	##05	

F5D9 85 C5		STA	MAUDV1	TURN ON SOUND
F5DB 85 1A		STA	AUDV1	
F5DD A7 10		LDA	##10	

F5DF B5 C0		STA	MAUDF1	SET TO HIGH NOTE
F5E1 4A		LSR	A	
F5E2 B5 16		STA	AUDC1	LET'S HAVE WHITE NOISE
F5E4 60	ONWARD	RTS		

F5E5 B5 8D	SETUP	STA	TEMPO	
F5E7 0A		ASL	A	
F5E8 0A		ASL	A	
F5E9 18		CLC		
F5EA 65 8D		ADC	TEMPO	
F5EC 69 04		ADC	##04	
F5EE AA		TAX		
F5EF A0 04		LDY	##04	
F5F1 60		RTS		

F5F2 48	STUFF	PHA	
F5F3 29 0F		AND	##0F
F5F5 20 E5 F5		JSR	SETUP
F5F8 BD 02 E7	LOOP32	LDA	NUMRL,X
F5F8 29 07		AND	##07
F5FD 91 E3		STA	(POINTR),Y
F5FF CA		DEX	
F600 88		DEY	
F601 10 F5		BPL	LOOP32
F603 68		PLA	
F604 20 C1 F5		JSR	SHIFR
F607 20 E5 F5		JSR	SETUP
F60A BD 02 E7	LOOP33	LDA	NUMRL,X
F60D 29 07		AND	##07
F60F 0A		ASL	A
F610 0A		ASL	A
F611 0A		ASL	A
F612 0A		ASL	A
F613 11 E3		DRA	(POINTR),Y
F615 91 E3		STA	(POINTR),Y
F617 CA		DEX	
F618 88		DEY	
F619 10 EF		BPL	LOOP33
F61B 60		RTS	

THIS ROUTINE MANAGES JOYSTICK INPUT FOR BOTH PLAYERS

F61C A9 00	STICK	LDA	##00	
F61E A4 8C		LDY	CLOCK	
F620 24 9A		BIT	SWITCH	CHECK SWITCH
F622 10 10		BPL	NOTRIT	SKIP IF RIGHT SWITCH UNPRESSED
F624 F6 90		INC	HHPOS,X	
F626 B5 90		LDA	HHPOS,X	
F628 C9 97		CMP	##97	
F62A A9 F0		LDA	##F0	MOVE IMAGE
F62C 90 04		BCC	OVER76	
F62E D6 90		DEC	HHPOS,X	
F630 A9 00		LDA	##00	
F632 84 F1	OVER76	STY	LINPUT	
F634 90 10	NOTRIT	BVC	NOTLFT	SKIP IF LEFT SWITCH UNPRESSED
F636 D6 90		DEC	HHPOS,X	IF PRESSED, MOVE HUMAN
F638 B5 90		LDA	HHPOS,X	
F63A C9 C0		CMP	##C0	
F63C A9 10		LDA	##10	
F63E 90 04		BCC	OVER77	
F640 F6 90		INC	HHPOS,X	
F642 A9 00		LDA	##00	
F644 84 F1	OVER77	STY	LINPUT	
F646 95 20	NOTLFT	STA	HMPO,X	DELIVER MOTION COMMAND
F648 95 9D		STA	MYHMPO,X	AND KEEP ARECORD IN CASE OF A BUMP
F64A 06 9A		ASL	SWITCH	MOVE NEXT TWO SWITCH BITS INTO PLACE
F64C 06 9A		ASL	SWITCH	
F64E 85 95		LDA	HYPOS,X	
F650 24 9A		BIT	SWITCH	CHECK THOSE BITS
F652 10 0B		BPL	NOTDWN	SKIP IF DOWN SWITCH UNPRESSED
F654 84 F1		STY	LINPUT	
F656 C9 01		CMP	##01	CHECK IF HUMAN AT BOTTOM OF SCREEN
F658 F0 02		BEG	NOTDWN	IF SO, DON'T ALLOW DOWNWARD MOTION

F65A	D6	95	DEC	HVPOS, X	MOVE HUMAN DOWN
F65C	50	08	NOTDWN BVC	ESTICK	SKIP IF SWITCH UNPRESSED
F65E	84	F1	STY	LINPUT	
F660	C9	51	CMP	##51	AT TOP EDGE?
F662	F0	02	BEG	ESTICK	IF SO, DON'T ALLOW UPWARD MOTION
F664	F6	95	INC	HVPOS, X	MOVE HUMAN UP
F666	60		ESTICK	RTS	

F667 20 AB F5	SELPLC	RAND
F66A 29 07	AND	W\$07
F66C AA	TAX	
F66D 8D CD F7	LDA	XTABL, X
F670 BC D5 F7	LDY	YTABL, X
F673 60	RTS	

THIS SUBROUTINE INITIALIZES THE MISSLES
AND SETS UP THE PARAMETERS FOR SUBROUTINE LOOK
X-REGISTER CONTAINS LOOKER'S # (0 OR 1)
Y-REGISTER CONTAINS LOOKEE'S # (0 OR 1)

F674 A9 03	MISEYE	LDA	W\$03
F676 93 2B		STA	RESHPQ, X
F678 38		SEC	
F679 75 90		ADC	HHPOS, X
F67B 93 92		STA	HMX, X
F67D 85 95		LDA	HVPOS, X
F67F 69 04		ADC	W\$04
F681 93 97		STA	HMY, X
F683 B9 90 00		LDA	HHPOS, X
F686 D5 90		CMP	HHPOS, X
F688 4B		PHA	

THIS COMPARISON DETERMINES X-STEP

F689 D0 04		BNE	NORTH
F68B A9 00		LDA	W\$00
F68D F0 D6		BEQ	SOUTH
F68F A9 FF	NORTH	LDA	W\$FF
F691 90 02		BCC	SOUTH
F693 A9 01		LDA	W\$01

F695 95 B4	SOUTH	STA	DX1, X
F697 6B		PLA	
F698 3B		SEC	

STUFF PRIMARY X-STEP

F697 F3 90		SBC	HHPOS, X
F69B 20 B9 F5		JSR	PABSVL
F69E B5 AA		STA	DELTA X
F6A0 B9 73 00		LDA	HVPOS, Y
F6A3 D5 95		CMP	HVPOS, X
F6A5 DC 04		BNE	EAST
F6A7 A9 00		LDA	W\$00
F6A9 F0 06		BEQ	WEST
F6AB A9 F1	EAST	LDA	W\$FF
F6AD 90 02		BCC	WEST
F6AF A9 01		LDA	W\$01

THIS COMPARISON DETERMINES Y-STEP

F6B1 95 B9	WEST	STA	DY1, X
F6B3 B9 95 00		LDA	HVPOS, Y
F6B6 3B		SEC	
F6B7 F5 75		SBC	HVPOS, X
F6B9 20 B9 F5		JSR	PABSVL
F6BC A4 AA		LDY	DELTA X
F6BE C5 AA		CMP	DELTA X
F6C0 B0 0E		BCS	SH00
F6C2 95 AE		STA	S, X
F6C4 74 AC		STY	B, X

DELTA X < DELTA Y, SO STUFF SHALL AND BIG ACCORDINGLY

F6CA B5 B4		LDA	DX1, X
F6CB 95 B2		STA	DX0, X
F6CA A9 00		LDA	W\$00
F6CC 95 B6		STA	DY0, X
F6CE F0 0C		BEQ	BLOO
F6D0 95 AC	SH00	STA	B, X

SET SECONDARY X-STEP

SECONDARY Y-STEP IS ZERO
UNCONDITIONAL BRANCH
DELTA Y > DELTA X

F6D2 94 AE		STY	S, X	SET SMALL AND BIG REGISTERS ACCORDINGLY
F6D4 B5 B8		LDA	DY1, X	
F6D6 95 B6		STA	DY0, X	SET SECONDARY Y-STEP
F6D8 A9 00		LDA	##00	
F6DA 95 B2		STA	DX0, X	SECONDARY X-STEP IS ZERO
F6DC B5 AC	BLOO	LDA	B, X	
F6DE 4A		LSR	A	
F6DF 95 B0		STA	C, X	SET C TO ONE-HALF OF BIGGER
F6E1 60		RTS		

F6E2 B5 95	RNGE	LDA	HVPOS, X	THIS IS THE RANGE-FINDING SUBROUTINE
F6E4 38		SEC		
F6E5 E5 95		SBC	HVPOS	
F6E7 20 B9 F5		JSR	PABSVL	
F6EA B5 8F	APPLE	STA	TEMP2	
F6EC B5 90		LDA	HHPOS, X	
F6EE 38		SEC		
F6EF E5 90		SBC	HHPOS	
F6F1 B0 03		BCS	PEAR	
F6F3 20 B8 F5		JSR	ABSVAL	
F6F6 4A	PEAR	LSR	A	
F6F7 65 8F		ADC	TEMP2	
F6F9 60		RTS		

PLAYFIELD TABLES AND OTHER TABLES

E6FA 01 02 04	MASK	BYTE	\$01, \$02, \$04, \$08, \$10, \$20, \$40, \$80
F6FD 08 10 20			
F700 40 80			
E702 3F 2D 2D	NUMRL	BYTE	\$3F, \$2D, \$2D, \$2D, \$3F
F705 2D 3F			
F707 3F 12 12		BYTE	\$3F, \$12, \$12, \$12, \$1E
E70A 12 1E			
F70C 3F 0C 3F		BYTE	\$3F, \$0C, \$3F, \$21, \$3F
F70F 21 3F			
E711 3E 21 33		BYTE	\$3E, \$21, \$33, \$21, \$3E
F714 21 3F			
F716 21 21 3F		BYTE	\$21, \$21, \$3F, \$2D, \$2D
E719 2D 2D			
F71B 3F 21 3F		BYTE	\$3F, \$21, \$3F, \$0C, \$3F
F71E 0C 3F			
E720 3E 2D 3E		BYTE	\$3E, \$2D, \$3F, \$0C, \$3E
F723 0C 3F			
F725 21 21 21		BYTE	\$21, \$21, \$21, \$21, \$3F
E728 21 3F			
F72A 3F 2D 3F		BYTE	\$3F, \$2D, \$3F, \$2D, \$3F
F72D 2D 3F			
E72F 3F 21 3F		BYTE	\$3F, \$21, \$3F, \$2D, \$3F
F732 2D 3F			
F734 2B 00 2B		BYTE	\$2B, \$00, \$2B, \$2B, \$2B
E737 2B 2B			
F739 10 10 90	PLFDO	BYTE	\$10, \$10, \$90, \$10, \$10, \$10, \$10, \$10, \$10, \$30, \$10
F73C 90 F0 10			
F73F 10 10 10			
F742 10 30 10			
F745 10 10 10		BYTE	\$10, \$10, \$10, \$10, \$10, \$10, \$10, \$10, \$10
F748 90 10 10			
F74B 10 10 10			
F74E 10			
E74F 00 00 00	PLFD1	BYTE	\$00, \$00, \$00, \$0A, \$0A, \$3A, \$3A, \$00, \$00, \$8A, \$0A, \$00
F752 0A 0A 3A			
F755 3A 00 00			
F75B 8A 0A 00			
F75B 40 73 41		BYTE	\$40, \$41, \$41, \$41, \$41, \$00, \$00, \$7B 00
F75E C1 41 61			
E761 47 00 00			
F764 7B			
F765 0C 0C 0C	PLFD2	BYTE	\$0C, \$0C, \$0C, \$00, \$0C, \$C2, \$02, \$06, \$0A, \$0A, \$0A, \$80
E768 00 C0 C2			
F76B 02 06 9A			
F76E 86 86 80			
E771 80 E3 10		BYTE	\$80, \$E3, \$10, \$10, \$00, \$00, \$00, \$0A, \$04, \$04
F774 10 00 00			
F777 00 0A 04			
E77A 0A			
F77B 42 24 1B	PERSON	BYTE	\$42, \$24, \$1B, \$5A, \$3C, \$1B, \$00
F77E 5A 3C 1B			
E781 00			
F782 00 11 12	DEADH	BYTE	\$00, \$11, \$12, \$3C, \$3C, \$12, \$11, \$00
F785 3C 3C 12			
E78B 11 00			
F78A 24 24 2B	LECS1	BYTE	\$24, \$24, \$2B, \$2B, \$1B, \$14, \$14, \$24
F78D 2B 1B 14			
E790 14 24			

F792 42 44 48	LEGS2	. BYTE	\$42, \$44, \$48, \$28, \$18, \$14, \$12, \$22
F795 28 18 14			
F798 12 22			
F79A 20 23 14	ROBOTT	. BYTE	\$20, \$23, \$14, \$08, \$14, \$62, \$02, \$00
F79D 08 14 62			
F7A0 02 00			
F7A2 02 44 34		. BYTE	\$02, \$44, \$34, \$08, \$26, \$21, \$40, \$00
F7A5 08 26 21			
F7A8 40 00			
F7AA 04 08 48		. BYTE	\$04, \$08, \$48, \$3E, \$09, \$08, \$10, \$00
F7AD 3E 09 08			
F7B0 10 00			
F7B2 08 10 16		. BYTE	\$08, \$10, \$16, \$49, \$34, \$04, \$08, \$00
F7B5 49 34 04			
F7B8 08 00			
F7BA 00 00 20		. BYTE	\$00, \$00, \$20, \$56, \$09, \$14, \$24, \$22
F7BD 56 09 14			
F7C0 24 22			
F7C2 0F 0D 08	VOLUMT	. BYTE	\$0F, \$0D, \$08, \$09, \$07, \$05, \$03, \$01, \$00, \$00, \$00
F7C5 09 07 05			
F7C8 03 01 00			
F7CB 00 00			
F7CD 14 20 43	XTABL	. BYTE	\$14, \$20, \$43, \$50, \$54, \$6F, \$90, \$94
F7D0 50 54 6F			
F7D3 90 94			
F7D5 0C 3C 28	YTABL	. BYTE	\$0C, \$3C, \$28, \$40, \$08, \$1F, \$49, \$07
F7D8 40 08 1F			
F7DB 49 07			
F7DD 63 56 49	DHNDGP	. BYTE	\$63, \$56, \$49, \$42, \$35, \$28, \$21, \$14, \$07, \$00
F7E0 42 35 28			
F7E3 21 14 07			
F7E6 00			
F7E7 E6 8A 36	CULTAB	. BYTE	\$E6, \$8A, \$36, \$D2, \$84, \$32, \$90
F7EA D2 84 32			
F7ED 90			
			=\$F7FC
F7FC 00 F0		. BYTE	\$00, \$F0
F7FE 13 24	HRTBTD	. BYTE	\$13, \$24
		. END	

	SYMBOL	TABLE					
ABSVL	F5DR	APPLE	F6EA	APRCOT	F1DD	AUDCD	0015
AUDC1	0016	AUDFO	0017	AUDF1	0018	AUDVO	0019
AUDV1	001A	B	00AC	BANSHY	00E2	BEEPER	F1AD
BFIREB	F5C6	BLOO	F6DC	BONUS	00CB	BODPY	F426
BSEES	00CA	BWAND	F3AC	C	00B0	CC	F3A2
CASE	F2B0	CBLOCK	F291	CHRW	F07E	CHPOS	0091
CHR2	F55C	CHRLP1	F545	CHRLP2	F553	CHSKP1	F54D
CLEAR1	F007	CLOCK	008C	CMISL	F394	CMSTAT	00C4
CHK	0093	CHY	0098	COLBK	00A2	COLMSK	00F2
COLNM1	00A3	COLNM2	00A4	COLOP	F073	COLTAB	F7E7
COLUBK	0009	COLUP0	0006	COLUP1	0007	COLUPF	0008
COMPLT	F4EF	CTLSWA	02B1	CTLSWB	02B3	CTRLPF	000A
CTURN	F25B	CVPOS	0096	CXBLPF	0036	CXCLR	002C
CXMOFB	0034	CXMOF	0030	CXMIFB	0035	CXMIFP	0031
CXPOFB	0032	CXP1FB	0033	CXPPM	0037	DARKBK	00A5
DEADH	F7B2	DELAY	F318	DELTA	00AA	DELTA	00AB
DHITS0	00CB	DHITS1	00CC	DHNDP	F7DD	DIST	F3E8
DONE	F3D2	DWAND	F3AA	DX	00B2	DX1	00B4
DYO	00B6	DY1	00B8	EAST	F6AB	ELM	F19B
ELOPE	F50F	ENABL	001F	ENAMO	001D	ENAM1	001E
ENDABS	F3C0	ESTICK	F466	FBAVL	00FA	F16	F111
F1ST	F0BF	FRMCNT	00BA	FW	00A6	FWY1	00A7
FWY2	00AB	GBIT	F4E7	GOOGAM	F29D	GOON	F24E
GRPO	001B	GRP1	001C	GWAIT	F0CF	HBLOCK	F294
HHPOS	0090	HITS0	00C6	HITS1	00C7	HMBL	0024
HNCLR	002B	HMMO	0022	HMM1	0023	HMOVE	002A
HMP0	0020	HMP1	0021	HMSAT	00C3	HMX	0092
HMY	0097	HMOSEK	F153	HRST	F56D	HRST1	F562
HRTBD	F7FE	HRTBTM	00CE	HRTBTN	00CD	HSCNT	00C1
HVOICE	00C9	HVPOS	0095	IGNINP	F107	INPT0	0038
INPT1	0039	INPT2	003A	INPT3	003B	INPT4	003C
INPTS	003D	INPUTS	F0D2	INTIM	02B4	JOYSTK	F129
JWSTAT	005A	KERNEL	F372	KILLFM	00EB	LEDGE	F1C3
LEGNT	00EA	LEOS1	F76A	LEOS2	F792	LINCNT	00B8
LINPNT	00F1	LNCHIS	F17B	LOOK	F47B	LOOKLP	F50B
LOOP	F01B	LODP25	F58C	LOOP26	F286	LOOPS	F41D
LODP30	F2F5	LODP32	F5F8	LODP38	F60A	LODP34	F345
MAG1C	00A9	MASK	F6FA	MAUDCO	00BD	MAUDC1	00BE
MAUDFO	00BF	MAUDF1	00C0	MAUDV1	00C5	MCOLPO	009F
MCOLFF	00A1	MISCYE	F674	MISNFT	F259	MOVDOWN	F2EA
MOVLFT	F2D8	MOVRII	F2D2	MOVUP	F2E6	MYHMPD	009D
NETINJ	00F5	NEXT	F3C2	NORUMP	F04D	NOFYET	F169
NOHIT	F23A	NORNEG	F4BE	NOHCH	F4BF	NOBLCT	F444
NOTDOWN	F65C	NOTLET	F644	NOTRII	F634	NOHWRAP	F030
NUMRL	F702	NUSIZ0	0004	NUSIZ1	0005	OAK	F1EF
ONWARD	F5E4	OVER10	F05E	OVER16	F41B	OVER21	F1BD
OVER33	F337	OVER52	F13D	OVER53	F13F	OVER63	F16D
OVER64	F201	OVER76	F632	OVER77	F644	OVER79	F20D
OVER9	F0DF	OVERCH	F3DE	PO	F4DC	P1	F4CF
PABSVL	F5B9	PCHSW	F437	PEAR	F6FA	PERSON	F77B
PFO	00D0	PF1	00DE	PF2	00DF	PHHPOS	009C
PHVPOS	009B	PLANHV	F296	PLFDO	F739	PLFD1	F74F
PLFD2	F765	PLTCNT	00DF	POINTR	00E3	POSSE	F09A
PRIMP	F0CB	PRO	F247	PRUNE	F10E	PUNKT	F0EE
PUTOUT	F3D0	PWAND	F39A	RAND	F5AD	RANCE	00BD
RANGES	00BC	REFPO	0008	REFP1	000C	RESBL	0014
RESET	F446	RESMO	0012	RESM1	0013	RESMPO	0028
RESMP1	0029	RESPO	0010	RESF1	0011	RNCE	F6FD
ROBOT	00CF	ROBOT1	F29A	ROTA1	F40D	ROTHER	0011

ROTTIM	00EE	ROUND	F1E9	RSFCNT	00C2	RSTFLG	00EC
RSYNC	0003	S	00AE	SAVCDL	F0B2	SCOLOR	00A0
SCORE0	0080	SCORE1	00B5	SCORE2	00E5	SCOREK	F331
SEEDH	00E1	SEEDL	00E0	SEEN	009E	SELPLC	F667
SETUP	F5E5	SHIFTR	F5C1	SHOO	F6D0	SIFBD	F459
SLTFLG	00ED	SOLE	F17F	SOLTAR	F2C5	SOUTH	F695
STICK	F61C	STUFF	F5F2	STUNS	00F3	SWCHA	0280
SWCHB	0282	SWITCH	009A	TEMPO	008D	TEMP1	008E
TEMP2	008F	TIM64T	0296	TIM8T	0295	TRY1	F527
TRY2	F534	TWOPLR	00F0	UP1	F224	VBKST	F470
VBLANK	0001	VDELBL	0027	VDELP0	0025	VDELP1	0026
VERT	F2DC	VOLUNT	F7C2	VSUNC	0000	WAIT	F2EC
WEST	F6B1	WHATVR	F245	WIZARD	00D7	WMSTRT	F510
WOOF	F234	WSUNC	0002	WX	0094	WY	0099
XTABL	F7CD	YTABL	F7D5	ZOOM	F28E	ZXBKL	F494