

M I C R O C H E S S

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2          ;          EXECUTION BEGINS AT ADDRESS 0000
3          ;
4          ;          +++          INITIALIZE
5 0000 D8   CHESS   CLD          TWO STACKS
6 0001 A2 FF LDXIM          FF
7 0003 9A   TXS
8 0004 A2 C8 LDXIM          C8
9 0006 86 B2 STXZ          .SP2
10         ;
11         ;          ROUTINES TO LIGHT LED
12         ;          DISPLAY AND GET KEY
13         ;          FROM KEYBOARD.
14         ;
15 0008 20 1F 1F OUT          JSR          *OUT          DISPLAY AND
16 000B 20 6A 1F JSR          *GETKEY         GET INPUT
17 000E C5 F3   CMPZ         .OLDKY          KEY IN ACC
18 0010 F0 F6   BEQ          OUT            (DEBOUNCE)
19 0012 85 F3   STAZ         .OLDKY
20         ;
21 0014 C9 0C   CMPIM        0C          [C]
22 0016 D0 0F   BNE          NOSET         SET UP
23 0018 A2 1F   LDXIM        1F          BOARD
24 001A B5 70   WHSET       LDAZX        .SETW   FROM
25 001C 95 50   STAZX        .BOARD      SETW
26 001E CA     DEX
27 001F 10 F9   BPL          WHSET
28 0021 86 DC   STXZ         .OMOVE
29 0023 A9 CC   LDAIM        CC
30 0025 D0 12   BNE          CLDSP
31         ;
32 0027 C9 0E   NOSET       CMPIM        0E          [E]
33 0029 D0 07   BNE          NOREV         REVERSE
34 002B 20 B2 02 JSR          REVERSE         BOARD AS
35 002E A9 EE   LDAIM        EE            IS
36 0030 D0 07   BNE          CLDSP
37         ;
38 0032 C9 14   NOREV       CMPIM        14          [PC]
39 0034 D0 0B   BNE          NOGO          PLAY CHESS
40 0036 20 A2 03 JSR          GO
41         ;
42 0039 85 FB   CLDSP       STA          .DIS1         DISPLAY
43 003B 85 FA   STAZ         .DIS2         ACROSS
44 003D 85 F9   STAZ         .DIS3         DISPLAY
45 003F D0 BF   BNE          CHESS
46         ;
47 0041 C9 0F   NOGO       CMPIM        0F          [F]
48 0043 D0 06   BNE          NOMV         MOVE MAN
49 0045 20 4B 03 JSR          MOVE          AS ENTERED
50 0048 4C 9D 01 JMP          DISP
  
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51 004B 4C 96 01  NOMV      JMP      INPUT
52  ;
53  ; THE ROUTINE JANUS DIRECTS THE
54  ; ANALYSIS BY DETERMINING WHAT
55  ; SHOULD OCCUR AFTER EACH MOVE
56  ; GENERATED BY GNM
57  ;
58  ;
59  ;
60 0100 A6 B5  JANUS      +++
61 0102 30 5C  LDXZ      .STATE
62  ;
63  ; THIS ROUTINE COUNTS OCCURRENCES
64  ; IT DEPENDS UPON STATE TO INDEX
65  ; THE CORRECT COUNTERS
66  ;
67 0104 A5 B0  COUNTS    LDAZ      .PIECE
68 0106 F0 08  BEQ      OVER      IF STATE=8
69 0108 E0 08  CPXIM     08      DO NOT COUNT
70 010A D0 04  BNE      OVER      BLK MAX CAP
71 010C C5 E6  CMPZ     .BMAXP   MOVES FOR
72 010E F0 2E  BEQ      XRT      WHITE
73  ;
74 0110 F6 E3  OVER     INCZX     .MOB      MOBILITY
75 0112 C9 01  CMPIM     01      + QUEEN
76 0114 D0 02  BNE      NOQ      FOR TWO
77 0116 F6 E3  INCZX     .MOB
78  ;
79 0118 50 1E  NOQ      BVC      NOCAP
80 011A A0 0F  LDYIM     OF      CALCULATE
81 011C A5 B1  LDAZ     .SQUARE  POINTS
82 011E D9 60 00 ELOOP    CMPAY     .BK      CAPTURED
83 0121 F0 03  BEQ      FOUN     BY THIS
84 0123 88     DEY      MOVE
85 0124 10 F8  BPL      ELOOP
86 0126 B9 A0 00 FOUN     LDAAY     .POINTS
87 0129 D5 E4  CMPZX     .MAXC
88 012B 90 04  BCC      LESS     SAVE IF
89 012D 94 E6  STYZX     .PCAP   BEST THIS
90 012F 95 E4  STAZX     .MAXC   STATE
91  ;
92 0131 18     LESS     CLC
93 0132 08     PHP
94 0133 75 E5  ADCZX     .CC      ADD TO
95 0135 95 E5  STAZX     .CC      CAPTURE
96 0137 28     PLP      COUNTS
97  ;
98 0138 E0 04  NOCAP    CPXIM     04
99 013A F0 03  BEQ      ON4
100 013C 30 31  BMI      TREE      (=00 ONLY)

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101 013E 60 XRT RTS
102 ;
103 ; GENERATE FURTHER MOVES FOR COUNT
104 ; AND ANALYSIS
105 ;
106 013F A5 E8 ON4 LDAZ .XMAXC SAVE ACTUAL
107 0141 85 DD STAZ .WCAPO CAPTURE
108 0143 A9 00 LDAIM 00 STATE=0
109 0145 85 B5 STAZ .STATE
110 0147 20 4B 03 JSR MOVE GENERATE
111 014A 20 B2 02 JSR REVERSE IMMEDIATE
112 014D 20 00 02 JSR GNMZ REPLY MOVES
113 0150 20 B2 02 JSR REVERSE
114 ;
115 0153 A9 08 LDAIM 08 STATE=8
116 0155 85 B5 STAZ .STATE GENERATE
117 0157 20 09 02 JSR GNM CONTINUATION
118 015A 20 31 03 JSR UMOVE MOVES
119 ;
120 015D 4C 80 17 JMP STRATGY FINAL EVALUATION
121 0160 E0 F9 NOCOUNT CPXIM F9
122 0162 D0 0B BNE TREE
123 ;
124 ; DETERMINE IF THE KING CAN BE
125 ; TAKEN, USED BY CHKCHK
126 ;
127 0164 A5 60 LDAZ .BK IS KING
128 0166 C5 B1 CMPZ .SQUARE IN CHECK?
129 0168 D0 04 BNE RETJ SET INCHEK=0
130 016A A9 00 LDAIM 00 IF IT IS
131 016C 85 B4 STAZ .INCHEK
132 016E 60 RETJ RTS
133 ;
134 ; IF A PIECE HAS BEEN CAPTURED BY
135 ; A TRIAL MOVE, GENERATE REPLIES &
136 ; EVALUATE THE EXCHANGE GAIN/LOSS
137 ;
138 016F 50 FD TREE BVC RETJ NO CAP
139 0171 A0 07 LDYIM 07 (PIECES)
140 0173 A5 B1 LDAZ .SQUARE
141 0175 D9 60 00 LOOPX CMPAY .BK
142 0178 F0 05 BEQ FOUNX
143 017A 88 DEY
144 017B F0 F1 BEQ RETJ (KING)
145 017D 10 F6 BPL LOOPX SAVE
146 017F B9 A0 00 FOUNX LDAAY .POINTS BEST CAP
147 0182 D5 E2 CMPZX .BCAPO AT THIS
148 0184 90 02 BCC NOMAX LEVEL
149 0186 95 E2 STAZX .BCAPO
150 0188 C6 B5 NOMAX DEC .STATE

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151 018A A9 FB          LDAIM      FB          IF STATE=FB
152 018C C5 B5          CMPZ      .STATE     TIME TO TURN
153 018E F0 03          BEQ       UPTREE     AROUND
154 0190 20 25 03      JSR       GENRM     GENERATE FURTHER
155 0193 E6 B5          INC       .STATE     CAPTURES
156 0195 60            RTS
157 ;
158 ; THE PLAYER'S MOVE IS INPUT
159 ;
160 0196 C9 08          INPUT     CMPIM      08          NOT A LEGAL
161 0198 B0 12          BCS      ERROR     SQUARE #
162 019A 20 EA 03      JSR      DISMV
163 019D A2 1F          DISP     LDXIM      1F
164 019F B5 50          SEARCH  LDAZX      .BOARD
165 01A1 C5 FA          CMPZ      .DIS2
166 01A3 F0 03          BEQ      HERE      DISPLAY
167 01A5 CA            DEX
168 01A6 10 F7          BPL      SEARCH    PIECE AT
169 01A8 86 FB          HERE     STXZ      .DIS1     FROM
170 01AA 86 B0          STXZ      .PIECE    SQUARE
171 01AC 4C 00 00      ERROR    JMP       CHESS
172 ;
173 ; GENERATE ALL MOVES FOR ONE
174 ; SIDE, CALL JANUS AFTER EACH
175 ; ONE FOR NEXT STEP
176 ;
177 ;
178 0200 A2 10          GNMZ     LDXIM      10          CLEAR
179 0202 A9 00          GNMX     LDAIM      00          COUNTERS
180 0204 95 DE          CLEAR   STAZX     .COUNT
181 0206 CA            DEX
182 0207 10 FB          BPL      CLEAR
183 ;
184 0209 A9 10          GNM      LDAIM      10          SET UP
185 020B 85 B0          STAZ     .PIECE     PIECE
186 020D C6 B0          NEWP    DECZ      .PIECE     NEW PIECE
187 020F 10 01          BPL     NEX        ALL DONE?
188 0211 60            RTS        -YES
189 ;
190 0212 20 1E 03      NEX     JSR      RESET    READY
191 0215 A4 B0          LDYZ     .PIECE     GET PIECE
192 0217 A2 08          LDXIM    08
193 0219 86 B6          STXZ     .MOVEN    COMMON START
194 021B C0 08          CPYIM    08        WHAT IS IT?
195 021D 10 41          BPL     PAWN      PAWN
196 021F C0 06          CPYIM    06
197 0221 10 2E          BPL     KNIGHT    KNIGHT
198 0223 C0 04          CPYIM    04
199 0225 10 1F          BPL     BISHOP    BISHOP
200 0227 C0 01          CPYIM    01

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201	0229	F0	09		BEQ	QUEEN	QUEEN	
202	022B	10	0E		BPL	ROOK	ROOK	
203					;			
204	022D	20	8E	02	KING	JSR	SNGMV	MUST BE KING!
205	0230	D0	FB		BNE	KING	MOVES	
206	0232	F0	D9		BEQ	NEWP	8 TO 1	
207	0234	20	9C	02	QUEEN	JSR	LINE	
208	0237	D0	FB		BNE	QUEEN	MOVES	
209	0239	F0	D2		BEQ	NEWP	8 TO 1	
210					;			
211	023B	A2	04		ROOK	LDXIM	04	
212	023D	86	B6			STXZ	.MOVEN	MOVES
213	023F	20	9C	02	AGNR	JSR	LINE	4 TO 1
214	0242	D0	FB		BNE	AGNR		
215	0244	F0	C7		BEQ	NEWP		
216					;			
217	0246	20	9C	02	BISHOP	JSR	LINE	
218	0249	A5	B6			LDAZ	.MOVEN	MOVES
219	024B	C9	04			CMPIM	04	8 TO 5
220	024D	D0	F7		BNE	BISHOP		
221	024F	F0	BC		BEQ	NEWP		
222					;			
223	0251	A2	10		KNIGHT	LDXIM	10	
224	0253	86	B6			STXZ	.MOVEN	MOVES
225	0255	20	8E	02	AGNN	JSR	SNGMV	16 TO 9
226	0258	A5	B6			LDAZ	.MOVEN	
227	025A	C9	08			CMPIM	08	
228	025C	D0	F7		BNE	AGNN		
229	025E	F0	AD		BEQ	NEWP		
230					;			
231	0260	A2	06		PAWN	LDXIM	06	
232	0262	86	B6			STXZ	.MOVEN	
233	0264	20	CA	02	P1	JSR	CMOVE	RIGHT CAP?
234	0267	50	05			BVC	P2	
235	0269	30	03			BMI	P2	
236	026B	20	00	01		JSR	JANUS	YES
237	026E	20	1E	03	P2	JSR	RESET	
238	0271	C6	B6			DECZ	.MOVEN	LEFT CAP?
239	0273	A5	B6			LDAZ	.MOVEN	
240	0275	C9	05			CMPIM	05	
241	0277	F0	EB			BEQ	P1	
242	0279	20	CA	02	P3	JSR	CMOVE	AHEAD
243	027C	70	8F			BVS	NEWP	ILLEGAL
244	027E	30	8D			BMI	NEWP	
245	0280	20	00	01		JSR	JANUS	
246	0283	A5	B1			LDAZ	.SQUARE	GETS TO
247	0285	29	F0			ANDIM	F0	3RD RANK?
248	0287	C9	20			CMPIM	20	
249	0289	F0	EE			BEQ	P3	DO DOUBLE
250	028B	4C	0D	02		JMP	NEWP	

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251 ;
252 ; CALCULATE SINGLE STEP MOVES
253 ; FOR K, N
254 ;
255 028E 20 CA 02 SNGMV JSR CMOVE CALC MOVE
256 0291 30 03 BMI ILL1 -IF LEGAL
257 0293 20 00 01 JSR JANUS -EVALUATE
258 0296 20 1E 03 ILL1 JSR RESET
259 0299 C6 B6 DECZ .MOVEN
260 029B 60 RTS
261 ;
262 ; CALCULATE ALL MOVES DOWN A
263 ; STRAIGHT LINE FOR Q,B,R
264 ;
265 029C 20 CA 02 LINE JSR CMOVE CALC MOVE
266 029F 90 02 BCC OVL NO CHK
267 02A1 50 F9 BVC LINE CH, NOCAP
268 02A3 30 07 OVL BMI ILL RETURN
269 02A5 08 PHP
270 02A6 20 00 01 JSR JANUS EVALUATE POSN
271 02A9 28 PLP
272 02AA 50 F0 BVC LINE NOT A CAP
273 02AC 20 1E 03 ILL JSR RESET LINE STOPPED
274 02AF C6 B6 DECZ .MOVEN NEXT DIR
275 02B1 60 RTS
276 ;
277 ; EXCHANGE SIDES FOR REPLY
278 ; ANALYSIS
279 ;
280 02B2 A2 0F REVERSE LDXIM 0F
281 02B4 38 ETC SEC
282 02B5 B4 60 LDYZX .BK SUBTRACT
283 02B7 A9 77 LDAIM 77 POSITION
284 02B9 F5 50 SBCZX .BOARD FROM 77
285 02BB 95 60 STAZX .BK
286 02BD 94 50 STYZX .BOARD AND
287 02BF 38 SEC
288 02C0 A9 77 LDAIM 77 EXCHANGE
289 02C2 F5 50 SBCZX .BOARD PIECES
290 02C4 95 50 STAZX .BOARD
291 02C6 CA DEX
292 02C7 10 EB BPL ETC
293 02C9 60 RTS
294 ;
295 ;
296 ;
297 ;
298 ;
299 ;
300 ;

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301 ; CMOVE CALCULATES THE TO SQUARE
302 ; USING .SQUARE AND THE MOVE
303 ; TABLE.  FLAGS SET AS FOLLOWS:
304 ; N - ILLEGAL MOVE
305 ; V - CAPTURE (LEGAL UNLESS IN CH)
306 ; C - ILLEGAL BECAUSE OF CHECK
307 ; [MY THANKS TO JIM BUTTERFIELD
308 ; WHO WROTE THIS MORE EFFICIENT
309 ; VERSION OF CMOVE]
310 ;
311 CMOVE LDAZ .SQUARE GET SQUARE
312 02CA A5 B1 LDXZ .MOVEN MOVE POINTER
313 02CC A6 B6 CLC
314 02CE 18 ADCZX .MOVEX MOVE LIST
315 02CF 75 8F STAZ .SQUARE NEW POS'N
316 02D1 85 B1 ANDIM 88
317 02D3 29 88 BNE ILLEGAL OFF BOARD
318 02D5 D0 42 LDAZ .SQUARE
319 ;
320 02D9 A2 20 LDXIM 20
321 02DB CA DEX IS TO
322 02DC 30 0E BMI NO SQUARE
323 02DE D5 50 CMPZX .BOARD OCCUPIED?
324 02E0 D0 F9 BNE LOOP
325 ;
326 02E2 E0 10 CPXIM 10 BY SELF?
327 02E4 30 33 BMI ILLEGAL
328 ;
329 02E6 A9 7F LDAIM 7F MUST BE CAP!
330 02E8 69 01 ADCIM 01 SET V FLAG
331 02EA 70 01 BVS SPX (JMP)
332 ;
333 02EC B8 NO CLV NO CAPTURE
334 ;
335 02ED A5 B5 SPX LDAZ .STATE SHOULD WE
336 02EF 30 24 BMI RETL DO THE
337 02F1 C9 08 CMPIM 08 CHECK CHECK?
338 02F3 10 20 BPL RETL
339 ;
340 ; CHKCHK REVERSES SIDES
341 ; AND LOOKS FOR A KING
342 ; CAPTURE TO INDICATE
343 ; ILLEGAL MOVE BECAUSE OF
344 ; CHECK.  SINCE THIS IS
345 ; TIME CONSUMING, IT IS NOT
346 ; ALWAYS DONE.
347 ;
348 CHKCHK PHA STATE
349 02F5 48 PHP
350 02F7 A9 F9 LDAIM F9

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351	02F9	85	B5		STAZ	.STATE	GENERATE
352	02FB	85	B4		STAZ	.INCHEK	ALL REPLY
353	02FD	20	4B	03	JSR	MOVE	MOVES TO
354	0300	20	B2	02	JSR	REVERSE	SEE IF KING
355	0303	20	09	02	JSR	GNM	IS IN
356	0306	20	2E	03	JSR	RUM	CHECK
357	0309	28			PLP		
358	030A	68			PLA		
359	030B	85	B5		STAZ	.STATE	
360	030D	A5	B4		LDAZ	.INCHEK	
361	030F	30	04		BMI	RETL	NO - SAFE
362	0311	38			SEC		YES - IN CHK
363	0312	A9	FF		LDAIM	FF	
364	0314	60			RTS		
365							
366	0315	18			; RETL		
367	0316	A9	00		CLC		LEGAL
368	0318	60			LDAIM	00	RETURN
369					RTS		
370	0319	A9	FF		; ILLEGAL		
371	031B	18			LDAIM	FF	
372	031C	B8			CLC		ILLEGAL
373	031D	60			CLV		RETURN
374					RTS		
375					; ;		
376					; REPLACE .PIECE ON CORRECT .SQUARE		
377	031E	A6	B0		; RESET		
378	0320	B5	50		LDXZ	.PIECE	GET LOCAT.
379	0322	85	B1		LDAZX	.BOARD	FOR PIECE
380	0324	60			STAZ	.SQUARE	FROM BOARD
381					RTS		
382					; ;		
383					; ;		
384	0325	20	4B	03	GENRM		
385	0328	20	B2	02	JSR	MOVE	MAKE MOVE
386	032B	20	09	02	GENR2	REVERSE	REVERSE BOARD
387	032E	20	B2	02	JSR	GNM	GENERATE MOVES
388					RUM	REVERSE	REVERSE BACK
389					; ;		
390					; ROUTINE TO UNMAKE A MOVE MADE BY		
391					; MOVE		
392	0331	BA			; UMOVE		
393	0332	86	B3		TSX		UNMAKE MOVE
394	0334	A6	B2		STXZ	.SP1	
395	0336	9A			LDXZ	.SP2	EXCHANGE
396	0337	68			TXS		STACKS
397	0338	85	B6		PLA		MOVEN
398	033A	68			STAZ	.MOVEN	
399	033B	85	B0		PLA		CAPTURED
400	033D	AA			STAZ	.PIECE	PIECE
					TAX		

401	033E	68			PLA		FROM SQUARE
402	033F	95	50		STAZX	.BOARD	
403	0341	68			PLA		PIECE
404	0342	AA			TAX		
405	0343	68			PLA		TO SQUARE
406	0344	85	B1		STAZ	.SQUARE	
407	0346	95	50		STAZX	.BOARD	
408	0348	4C	70	03	JMP	STRV	
409							
410							
411							
412							
413							
414							
415	034B	BA			TSX		
416	034C	86	B3		STXZ	.SP1	SWITCH
417	034E	A6	B2		LDXZ	.SP2	STACKS
418	0350	9A			TXS		
419	0351	A5	B1		LDAZ	.SQUARE	
420	0353	48			PHA		TO SQUARE
421	0354	A8			TAY		
422	0355	A2	1F		LDXIM	1F	
423	0357	D5	50		CMPZX	.BOARD	CHECK FOR
424	0359	F0	03		BEQ	TAKE	CAPTURE
425	035B	CA			DEX		
426	035C	10	F9		BPL	CHECK	
427	035E	A9	CC		LDAIM	CC	
428	0360	95	50		STAZX	.BOARD	
429	0362	8A			TXA		CAPTURED
430	0363	48			PHA		PIECE
431	0364	A6	B0		LDXZ	.PIECE	
432	0366	B5	50		LDAZX	.BOARD	
433	0368	94	50		STYZX	.BOARD	FROM
434	036A	48			PHA		SQUARE
435	036B	8A			TXA		
436	036C	48			PHA		PIECE
437	036D	A5	B6		LDAZ	.MOVEN	
438	036F	48			PHA		MOVEN
439	0370	BA			TSX		
440	0371	86	B2		STXZ	.SP2	SWITCH
441	0373	A6	B3		LDXZ	.SP1	STACKS
442	0375	9A			TXS		BACK
443	0376	60			RTS		
444							
445							
446							
447							
448							
449	0377	A6	E4		LDXZ	.BMAXC	CAN BLK CAP
450	0379	E4	A0		CPXZ	.POINTS	MY KING?

THIS ROUTINE MOVES .PIECE
TO .SQUARE, PARAMETERS
ARE SAVED IN A STACK TO UNMAKE
THE MOVE LATER

MOVE

CHECK

TAKE

STRV

CKMATE

```

451 037B D0 04      BNE      NOCHEK
452 037D A9 00      LDAIM     00      GULP!
453 037F F0 0A      BEQ      RETV     DUMB MOVE!
454                ;
455 0381 A6 E3      NOCHEK   LDZX     .BMOB   IS BLACK
456 0383 D0 06      BNE      RETV     UNABLE TO
457 0385 A6 EE      LDZX     .WMAXP  MOVE AND
458 0387 D0 02      BNE      RETV     KING IN CH?
459 0389 A9 FF      LDAIM     FF     YES! MATE
460                ;
461 038B A2 04      RETV     LDXIM   04     RESTORE
462 038D 86 B5      STXZ     .STATE  STATE=4
463                ;
464                ;      THE VALUE OF THE MOVE (IN ACC)
465                ;      IS COMPARED TO THE BEST MOVE AND
466                ;      REPLACES IT IF IT IS BETTER
467                ;
468 038F C5 FA      PUSH     CMPZ     .BESTV  IS THIS BEST
469 0391 90 0C      BCC      RETP    MOVE SO FAR?
470 0393 F0 0A      BEQ      RETP
471 0395 85 FA      STAZ     .BESTV  YES!
472 0397 A5 B0      LDAZ     .PIECE  SAVE IT
473 0399 85 FB      STAZ     .BESTP
474 039B A5 B1      LDAZ     .SQUARE
475 039D 85 F9      STAZ     .BESTM  FLASH DISPLAY
476 039F 4C 1F 1F  RETP     JMP      *OUT   AND RTS
477                ;
478                ;      MAIN PROGRAM TO PLAY CHESS
479                ;      PLAY FROM OPENING OR THINK
480                ;
481 03A2 A6 DC      GO      LDZX     .OMOVE  OPENING?
482 03A4 10 17      BPL      NOOPEN  -NO
483 03A6 A5 F9      LDAZ     .DIS3   -YES WAS
484 03A8 D5 DC      CMPZX   .OPNING  OPPONENT'S
485 03AA D0 0F      BNE      END     MOVE OK?
486 03AC CA        DEX
487 03AD B5 DC      LDAZX   .OPNING  GET NEXT
488 03AF 85 FB      STAZ     .DIS1   CANNED
489 03B1 CA        DEX      OPENING MOVE
490 03B2 B5 DC      LDAZX   .OPNING
491 03B4 85 F9      STAZ     .DIS3   DISPLAY IT
492 03B6 CA        DEX
493 03B7 86 DC      STXZ     .OMOVE  MOVE IT
494 03B9 D0 1A      BNE      MV2     (JMP)
495                ;
496 03BB 85 DC      END     STAZ     .OMOVE  FLAG OPENING
497 03BD A2 0C      NOOPEN  LDXIM   0C     FINISHED
498 03BF 86 B5      STXZ     .STATE  STATE=C
499 03C1 86 FA      STXZ     .BESTV  CLEAR BESTV
500 03C3 A2 14      LDXIM   14     GENERATE P

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501 03C5 20 02 02          JSR      GNMX          MOVES
502                          ;
503 03C8 A2 04          LDXIM    04          STATE=4
504 03CA 86 B5          STXZ     .STATE     GENERATE AND
505 03CC 20 00 02      JSR      GNMZ          TEST AVAILABLE
506                          ;          MOVES
507                          ;
508 03CF A6 FA          LDXZ     .BESTV     GET BEST MOVE
509 03D1 E0 0F          CPXIM    0F          IF NONE
510 03D3 90 12          BCC      MATE        OH OH!
511                          ;
512 03D5 A6 FB          MV2     LDXZ     .BESTP     MOVE
513 03D7 B5 50          LDAZX    .BOARD     THE
514 03D9 85 FA          STAZ     .BESTV     BEST
515 03DB 86 B0          STXZ     .PIECE     MOVE
516 03DD A5 F9          LDAZ     .BESTM
517 03DF 85 B1          STAZ     .SQUARE   AND DISPLAY
518 03E1 20 4B 03      JSR      MOVE        IT
519 03E4 4C 00 00      JMP      CHESS
520                          ;
521 03E7 A9 FF          MATE    LDAIM    FF     RESIGN
522 03E9 60          RTS          OR STALEMATE
523                          ;
524                          ;      SUBROUTINE TO ENTER THE
525                          ;      PLAYER'S MOVE
526                          ;
527 03EA A2 04          DISMV   LDXIM    04     ROTATE
528 03EC 06 F9          ROL     ASLZ     .DIS3   KEY
529 03EE 26 FA          ROLZ    .DIS2   INTO
530 03F0 CA          DEX     DISPLAY
531 03F1 D0 F9          BNE     ROL
532 03F3 05 F9          ORAZ    .DIS3
533 03F5 85 F9          STAZ    .DIS3
534 03F7 85 B1          STAZ    .SQUARE
535 03F9 60          RTS
536                          ;
537                          ;      THE FOLLOWING SUBROUTINE ASSIGNS
538                          ;      A VALUE TO THE MOVE UNDER
539                          ;      CONSIDERATION AND RETURNS IT IN
540                          ;      THE ACCUMULATOR
541                          ;
542                          ;
543 1780 18          STRATGY CLC
544 1781 A9 80          LDAIM    80
545 1783 65 EB          ADCZ    .WMOB     PARAMETERS
546 1785 65 EC          ADCZ    .WMAXC    WITH WEIGHT
547 1787 65 ED          ADCZ    .WCC      OF 0.25
548 1789 65 E1          ADCZ    .WCAP1
549 178B 65 DF          ADCZ    .WCAP2
550 178D 38          SEC

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551	178E	E5	F0		SBCZ	.PMAXC	
552	1790	E5	F1		SBCZ	.PCC	
553	1792	E5	E2		SBCZ	.BCAPO	
554	1794	E5	E0		SBCZ	.BCAP1	
555	1796	E5	DE		SBCZ	.BCAP2	
556	1798	E5	EF		SBCZ	.PMOB	
557	179A	E5	E3		SBCZ	.BMOB	
558	179C	B0	02		BCS	POS	
559	179E	A9	00		LDAIM	00	UNDERFLOW PREVENTION
560	17A0	4A		POS	LSRA		
561	17A1	18			CLC		
562	17A2	69	40		ADCIM	40	*****
563	17A4	65	EC		ADCZ	.WMAXC	PARAMETERS WITH WEIGHT OF 0.5
564	17A6	65	ED		ADCZ	.WCC	
565	17A8	38			SEC		
566	17A9	E5	E4		SBCZ	.BMAXC	
567	17AB	4A			LSRA		*****
568	17AC	18			CLC		
569	17AD	69	90		ADCIM	90	
570	17AF	65	DD		ADCZ	.WCAPO	PARAMETERS WITH WEIGHT OF 1.0
571	17B1	65	DD		ADCZ	.WCAPO	
572	17B3	65	DD		ADCZ	.WCAPO	
573	17B5	65	DD		ADCZ	.WCAPO	
574	17B7	65	E1		ADCZ	.WCAPO	
575	17B9	38			ADCZ	.WCAPO	
576	17BA	E5	E4		SEC		[UNDER OR OVER- FLOW MAY OCCUR FROM THIS SECTION]
577	17BC	E5	E4		SBCZ	.BMAXC	
578	17BE	E5	E5		SBCZ	.BMAXC	
579	17C0	E5	E5		SBCZ	.BCC	
580	17C2	E5	E0		SBCZ	.BCC	
581	17C4	A6	B1		SBCZ	.BCAP1	
582	17C6	E0	33		LDXZ	.SQUARE	*****
583	17C8	F0	16		CPXIM	33	
584	17CA	E0	34		BEQ	POSN	POSITION BONUS FOR MOVE TO CENTRE OR OUT OF BACK RANK
585	17CC	F0	12		CPXIM	34	
586	17CE	E0	22		BEQ	POSN	
587	17D0	F0	0E		CPXIM	22	
588	17D2	E0	25		BEQ	POSN	
589	17D4	F0	0A		CPXIM	25	
590	17D6	A6	B0		BEQ	POSN	
591	17D8	F0	09		LDXZ	.PIECE	
592	17DA	B4	50		BEQ	NOPOSN	
593	17DC	C0	10		LDYZX	.BOARD	
594	17DE	10	03		CPYIM	10	
595	17E0	18			BPL	NOPOSN	
596	17E1	69	02	POSN	CLC		
597	17E3	4C	77	03	ADCIM	02	
598					JMP	CKMATE	
599							CONTINUE
600							

SYMBOL	ADDR	DEF	CROSS REFERENCES															
.PCAP	00E6	626	89															
.BMOB	00E3	627	455	557														
.BMAXC	00E4	628	449	566	576	577												
.BCC	00E5	629	578	579														
.BMAXP	00E6	630	71															
.XMAXC	00E8	631	106															
.WMOB	00EB	632	545															
.WMAXC	00EC	633	546	563														
.WCC	00ED	634	547	564														
.WMAXP	00EE	635	457															
.PMOB	00EF	636	556															
.PMAXC	00F0	637	551															
.PCC	00F1	638	552															
.PCP	00F2	639																
.OLDKY	00F3	640	17	19														
.BESTP	00FB	641	473	512														
.BESTV	00FA	642	468	471	499	508	514											
.BESTM	00F9	643	475	516														
.DIS1	00FB	644	42	169	488													
.DIS2	00FA	645	43	165	529													
.DIS3	00F9	646	44	483	491	528	532	533										
*OUT	1F1F	647	15	476														
*GETKEY	1F6A	648	16															

BLOCK DATA

.SETW	0070	03	04	00	07	02	05	01	06	10	17	11	16	12	15	14	13	
		73	74	70	77	72	75	71	76	60	67	51	66	62	65	64	63	
.MOVEX	0090	F0	FF	01	10	11	0F	EF	F1	DF	E1	EE	F2	12	0E	1F	21	
.POINTS	00A0	0B	0A	06	06	04	04	04	04	02	02	02	02	02	02	02	02	
.OPNING	00C0	99	25	0B	25	01	00	33	25	07	36	34	0D	34	34	0E	52	
		25	0D	45	35	04	55	22	06	43	33	0F	CC					

NOTE THAT 00B7 TO 00BF, 00F4 TO 00F8, AND 00FC TO 00FF ARE AVAILABLE FOR USER EXPANSION AND I/O ROUTINES.