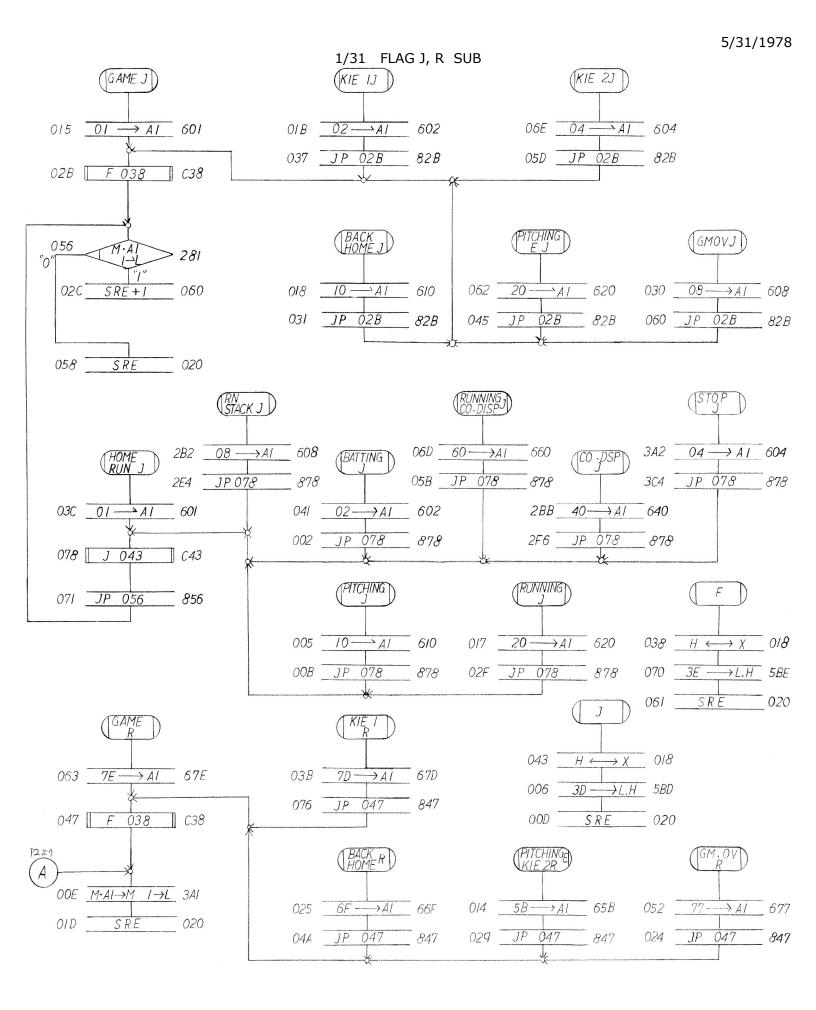
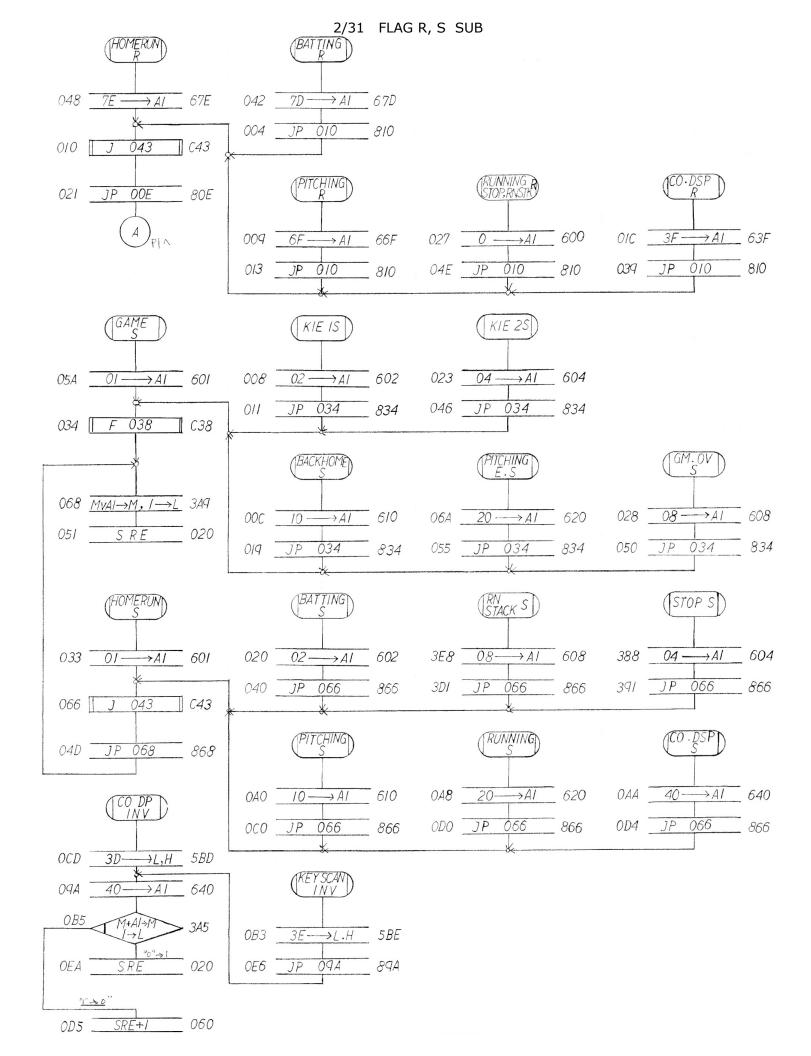
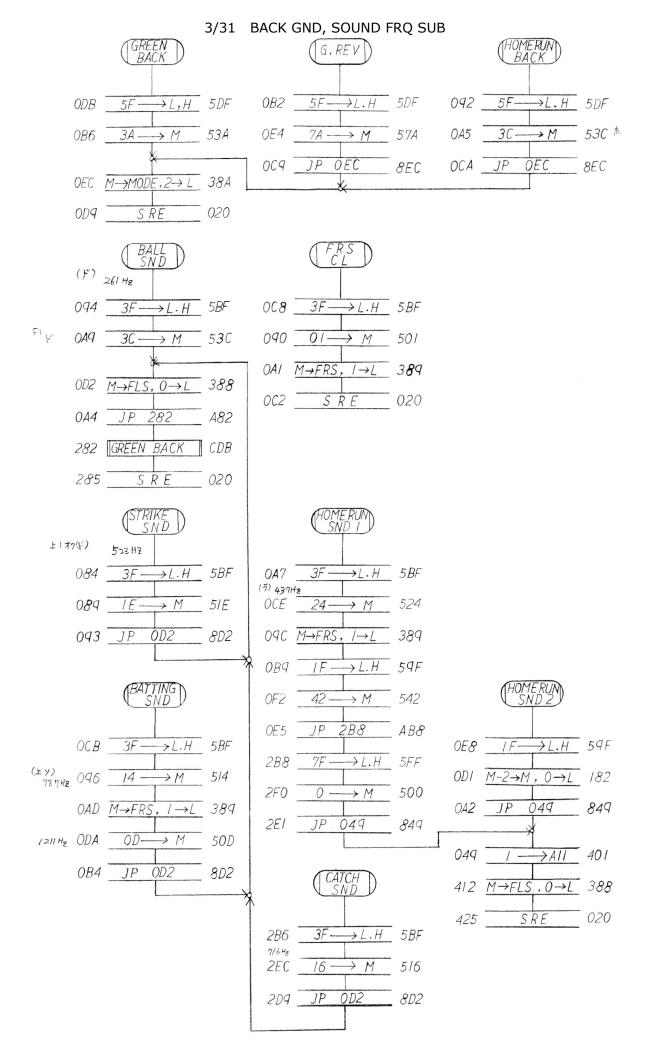
Firmware of 7/28 bit (*1) Video Game Microcomputer µPD778C (*2)

*1 : 7 bit CPU with 28 bit data transfer between 28 bit SRAM cells (MA) and 28 bit register file (A) constructed by four sets of 7 bit register (A1, A2, A3, and A4) in one instruction (A \rightarrow MA, MA \rightarrow A, MA \leftrightarrow A).

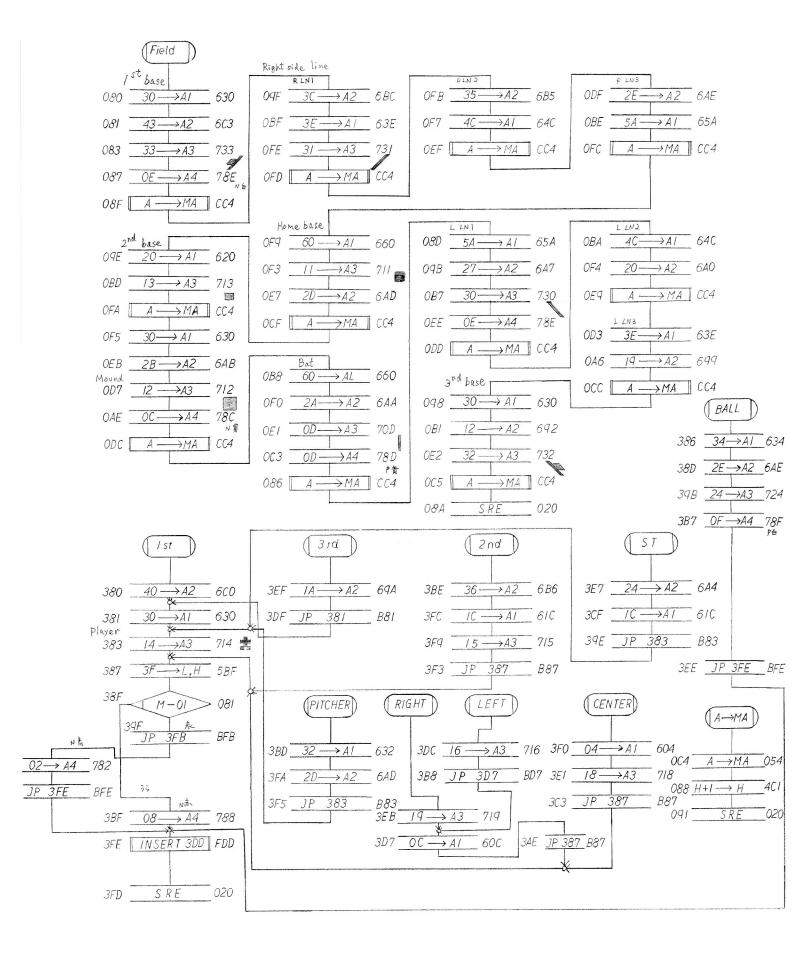
*2 : A second LSI of µPD777 which die size is 5.95 mm square, supplied to EPOCH CO. LTD., in 6/1978 for their TV BASEBALL GAME. EPOCH released it on 8/21/1978. The TV BASEBALL GAME was exhibited on "TV_game & Digital Science Exhibition" held from 7/17/2004 to 10/11/2004 at "National Museum of Nature and Science" in Tokyo, Japan. "National Museum of Nature and Science" still owns the TV BASEBALL GAME. Refer to the brochure for both events.



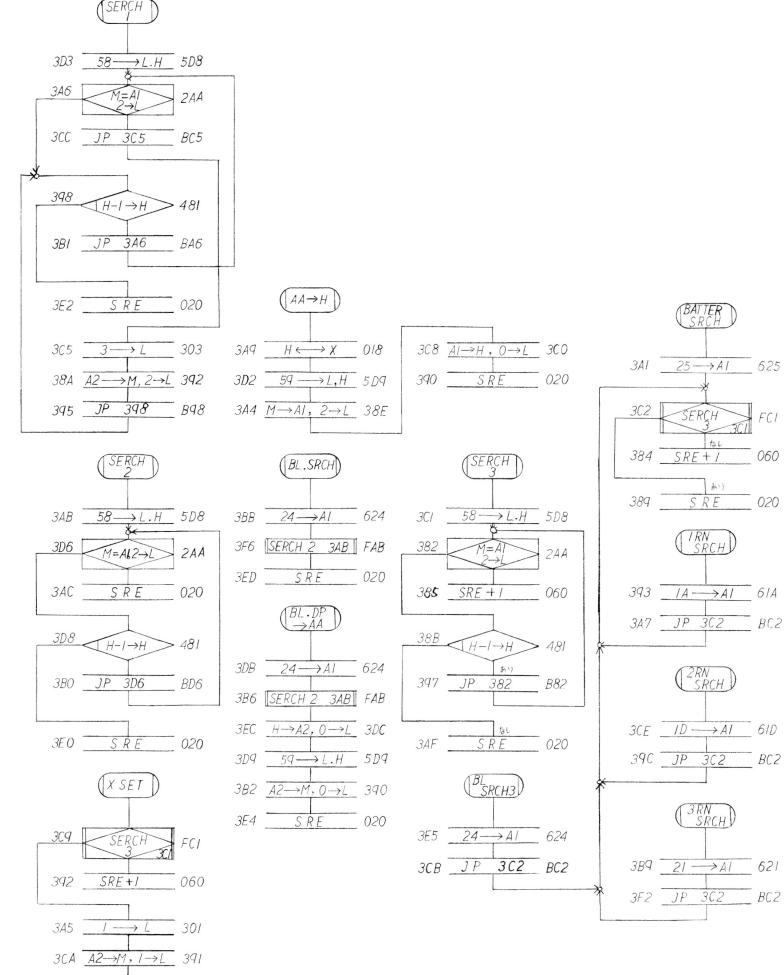




4/31 FIELD S, BALL S, FIELDER S, SUB

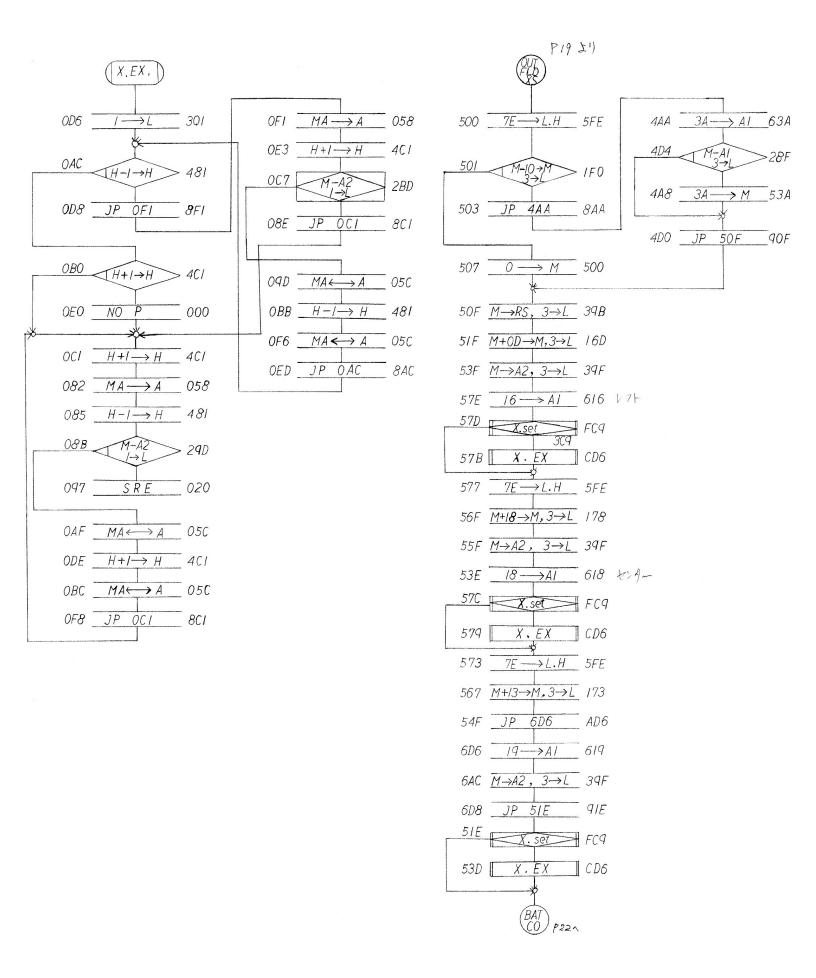


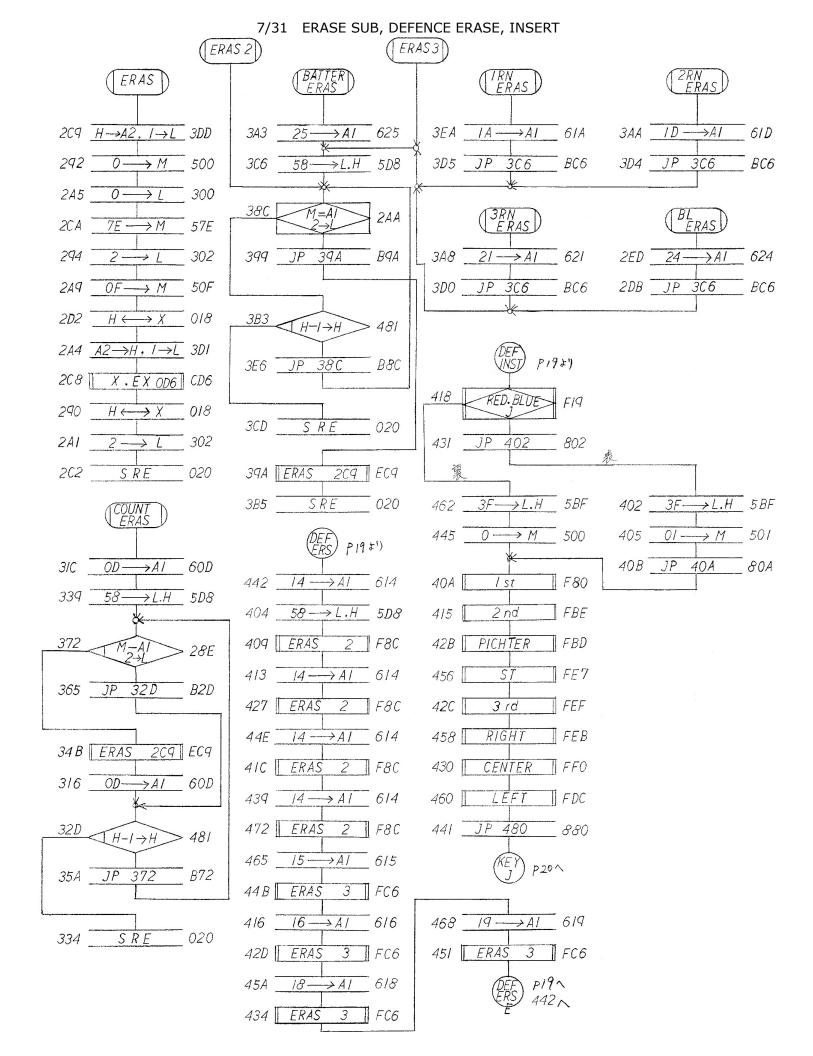




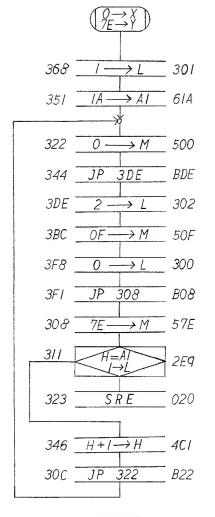
394 SRE 020

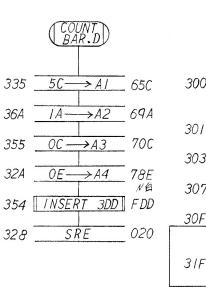
6/31 X EXCHANGE, OUT FIELDER XS SUB



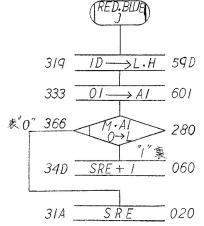


8/31 FIELD S SUB, TIME SUB





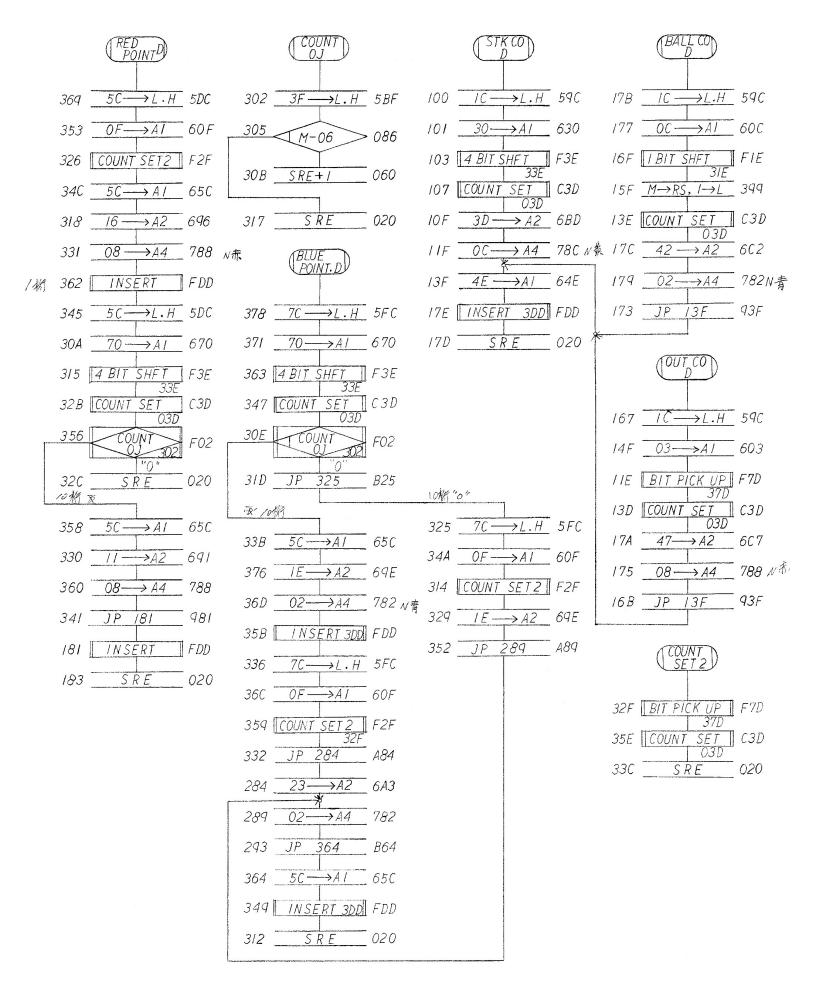
$$\begin{array}{c} \hline CO.DISP\\ z. / Sec\\ 300 \hline 7F \rightarrow AI \\ & 67F\\ 300 \hline 7F \rightarrow AI \\ & 67F\\ 320 \hline JP \\ 301 \hline H \\ & 320 \hline JP \\ 301 \hline B01\\ \hline$$

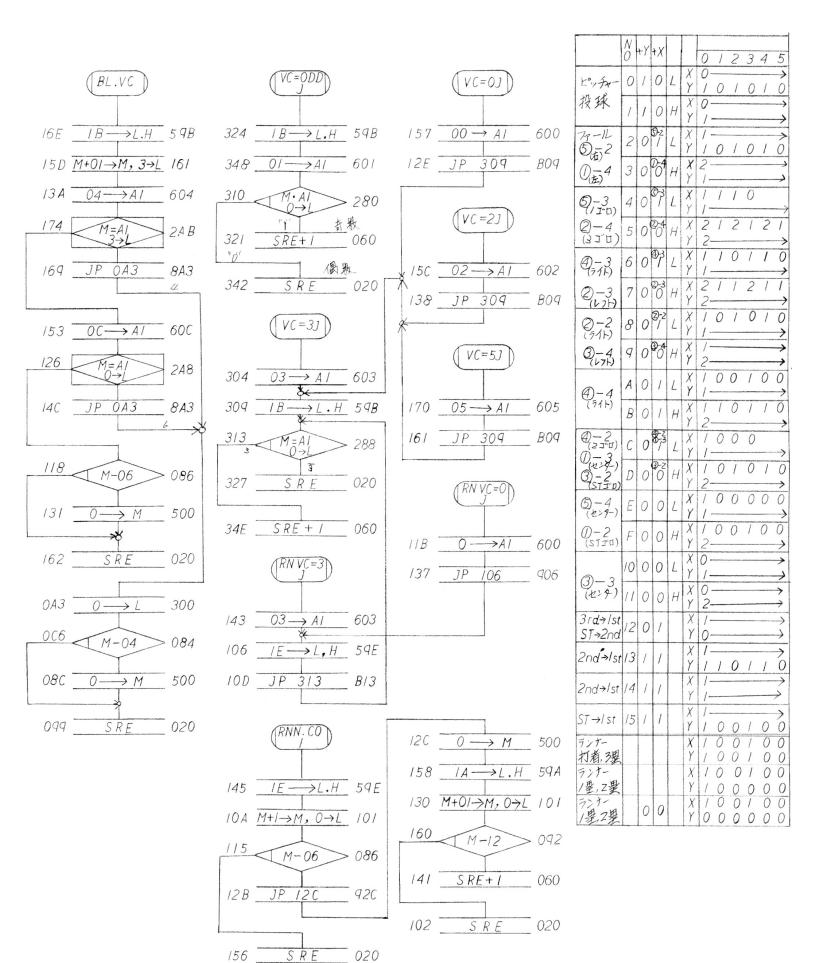


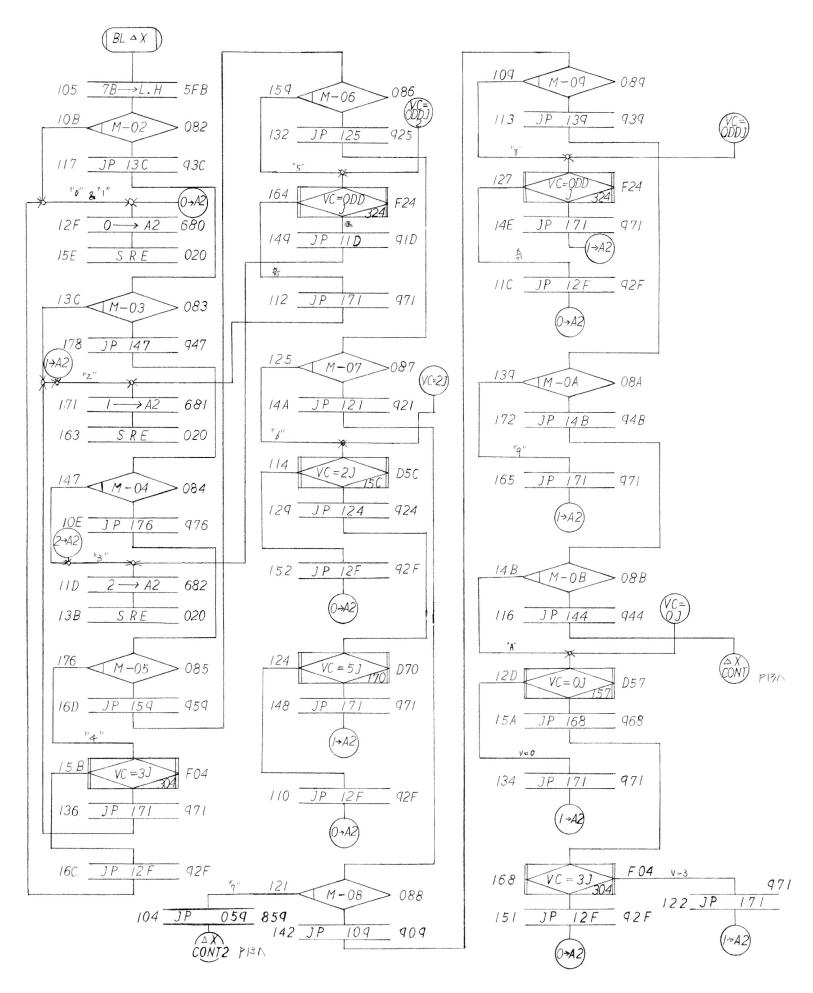
9/31 INNING CO D, COUNT SET, INSERT, BIT PICK UP SUB

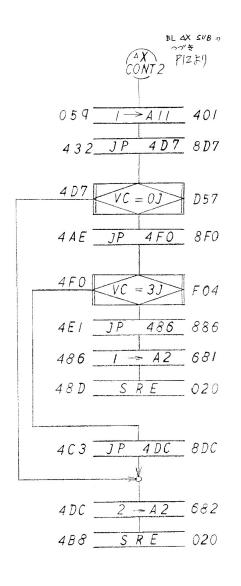
(INN/NG.) CO.D	(BITPICK) UP2	(BIT PICK)	(COUNT SET)
$37A \longrightarrow L.H 59D$	$337 \underline{M \rightarrow A2}, 0 \rightarrow \underline{L} 39C$	$37D \xrightarrow{M \to A2, \ 0 \to L} 39C$	03D M-02 082
$375 _IE \longrightarrow AI = 6IE$	36E <u>AI•A2→AI, O→L</u> 330	$37B \overline{A1 \cdot A2 \rightarrow A1, 0 \rightarrow L} 330$	07A M-03 083
36B IBIT SHFT FIE	$35D \xrightarrow{5F \rightarrow L.H} 5DF$	$377 \xrightarrow{3F \longrightarrow L.H} 5BF$	
357 <u>COUNT SET</u> C3D	$33A \xrightarrow{A \to M, 2 \to L} 382$ $374 \qquad SRE \qquad 020$	$36F _ AI \rightarrow M, I \rightarrow L \qquad 38I$ $35F \qquad SRE \qquad 020$	075 <u>JP 069</u> 869
$32E \xrightarrow{IA \rightarrow A2} 69A$ $35C \xrightarrow{RED} EIG$	514 <u>5 KE</u> 020	<u> </u>	$069 \underline{M+5 \rightarrow M, 1 \rightarrow L} 125$
35C RED BLUE JIG FIG	053 <u>JP M.O→L,O→AI</u> I 402		2
338 <u>JP 30D</u> BOD	$016 \boxed{00 \longrightarrow A3} 700$	$0/A \xrightarrow{1} 0/ \longrightarrow A3 701$	$06B \xrightarrow{02 \longrightarrow A3} 702$
270 02 14 702	02D SRE 020	035 <u>SRE</u> 020	057 <u>JP 187</u> 987
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$022 03 \longrightarrow A3 703$	$026 \xrightarrow{4} 437704$	$02A \xrightarrow{f} A3 705$
$361 \underline{50 \longrightarrow A1} 650$	044 <u>SRE</u> 020	04C SRE 020	054 <u>SRE</u> 020
343 <u>INSERT 3DD</u> FDD	6	7	<u>}</u>
306 <u>SRE</u> 020	$02E 06 \longrightarrow A3 706$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
30D <u>08 → A4</u> 788N †	05C <u>S R E</u> 020		
31B JP 361 B61	$03A \xrightarrow{09 \longrightarrow A3} 709$	(INSERT)	$187 \underline{M+5 \rightarrow M, 1 \rightarrow L} 125$
(14 BIT)	074 <u>SRE</u> 020	$3DD \xrightarrow{38 \longrightarrow L.H} 5B8$	18F <u>SRE</u> 020
(⁴ BIT SHFT)		$3BA \longrightarrow MA = 054$	
33E <u>BIT PICK UP</u> F7D	(1 BIT SHFT)	3F4 X · EX OD6 CD6	
$37C \longrightarrow RS, I \rightarrow L 399$		3E9 <u>SRE</u> 020	
	31E BIT PICK UP F7D		
$373 \xrightarrow{M \longrightarrow RS, I \longrightarrow L} 399$	33D <u>JP 367</u> B67		
$367 \xrightarrow{M \longrightarrow RS, I \rightarrow L} 399$			
34F <u>SRE</u> 020			

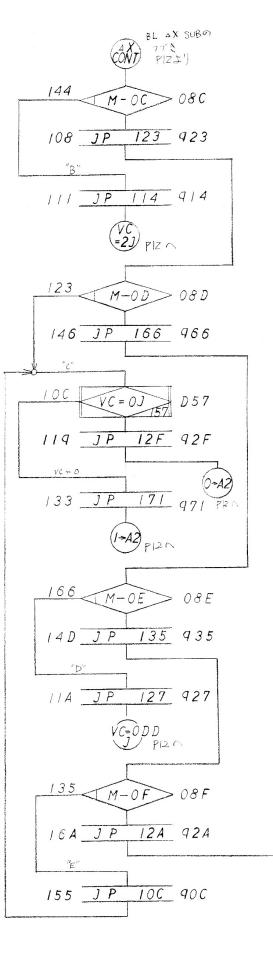
10/31 POINT DISP SUB, COUNT DISP SUB

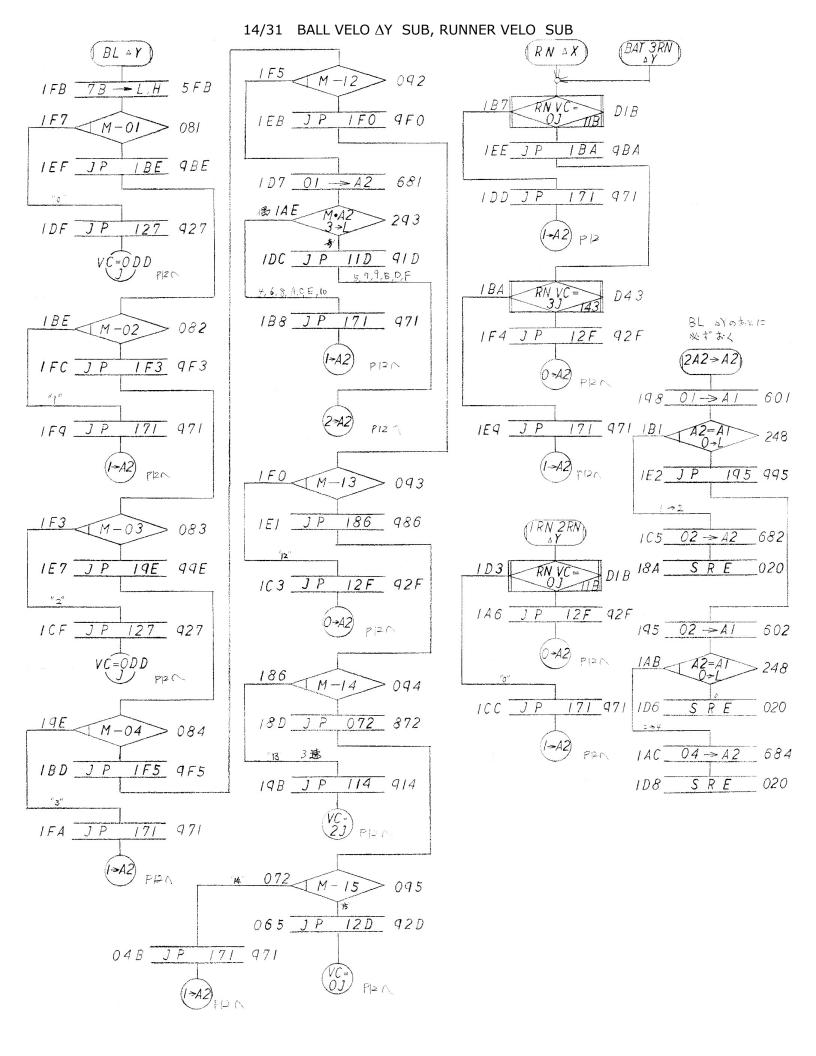




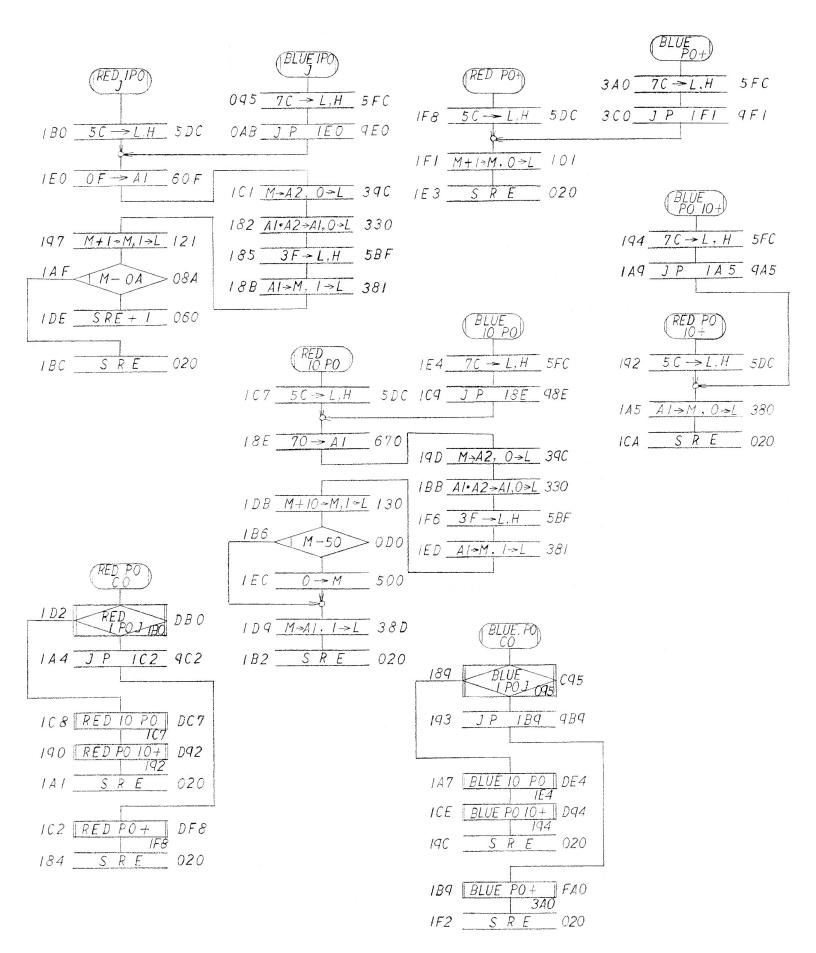




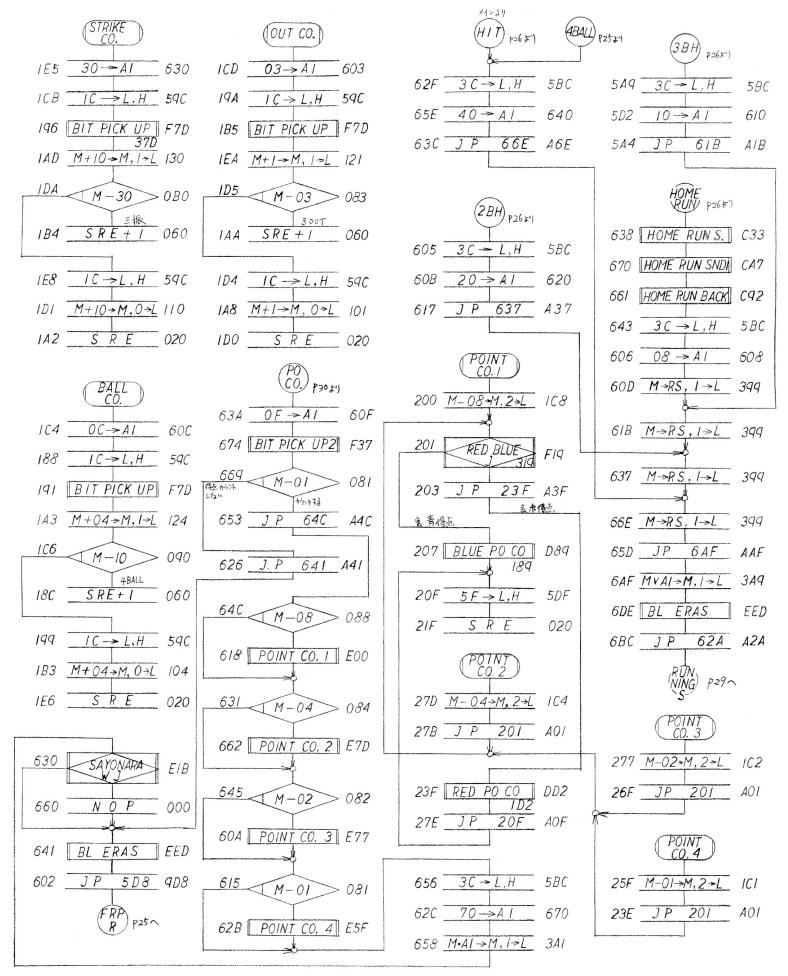




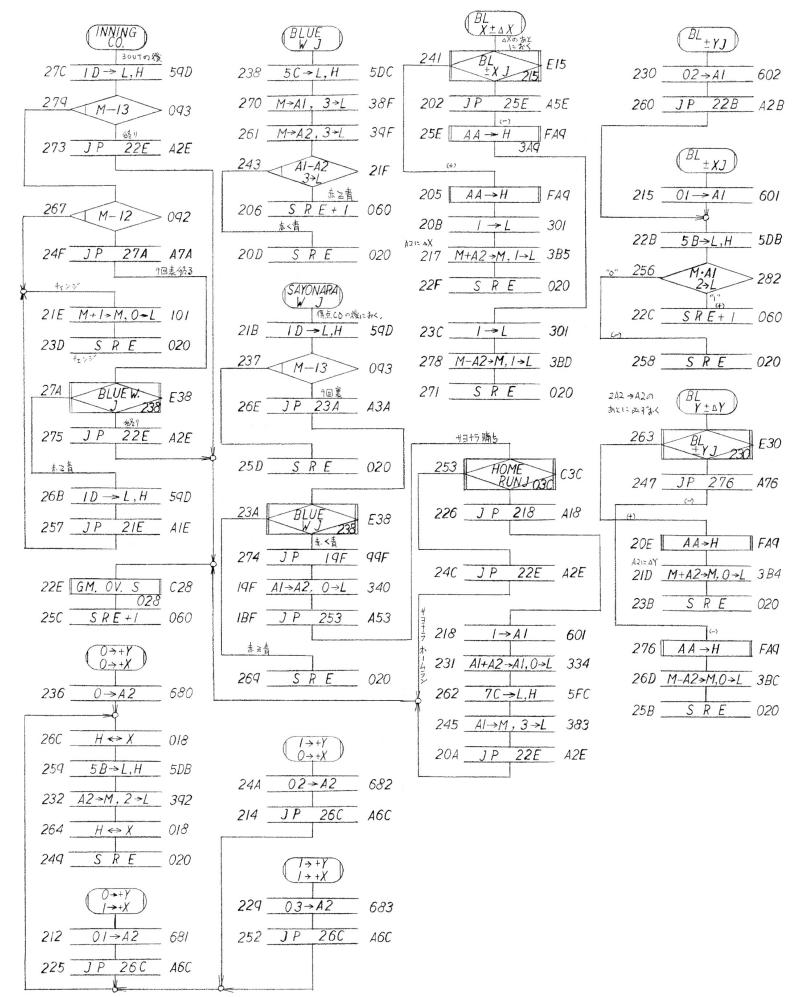
15/31 POINT COUNT SUB

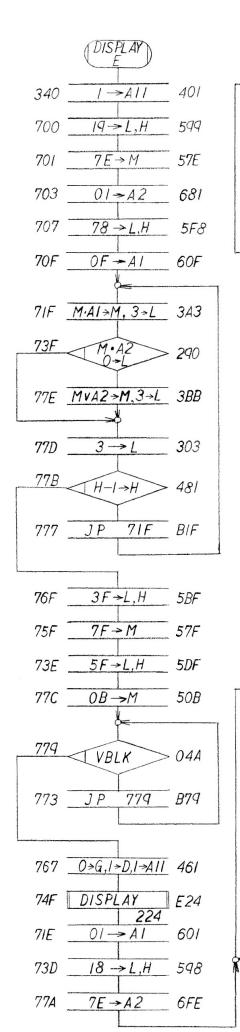


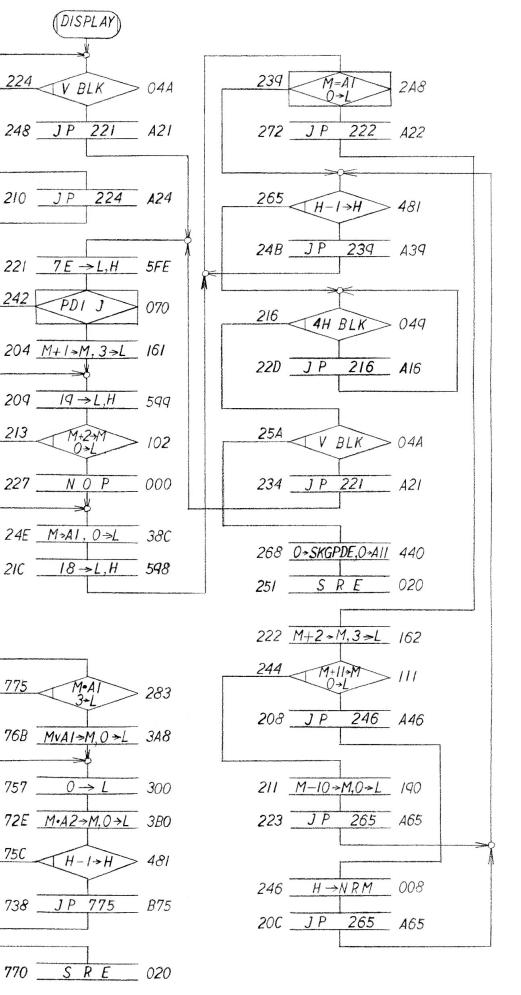
16/31 STRIK CO, BALL CO, OUT CO, POINT CO, SUB, HIT~HOMERUN→RUNNING SUB



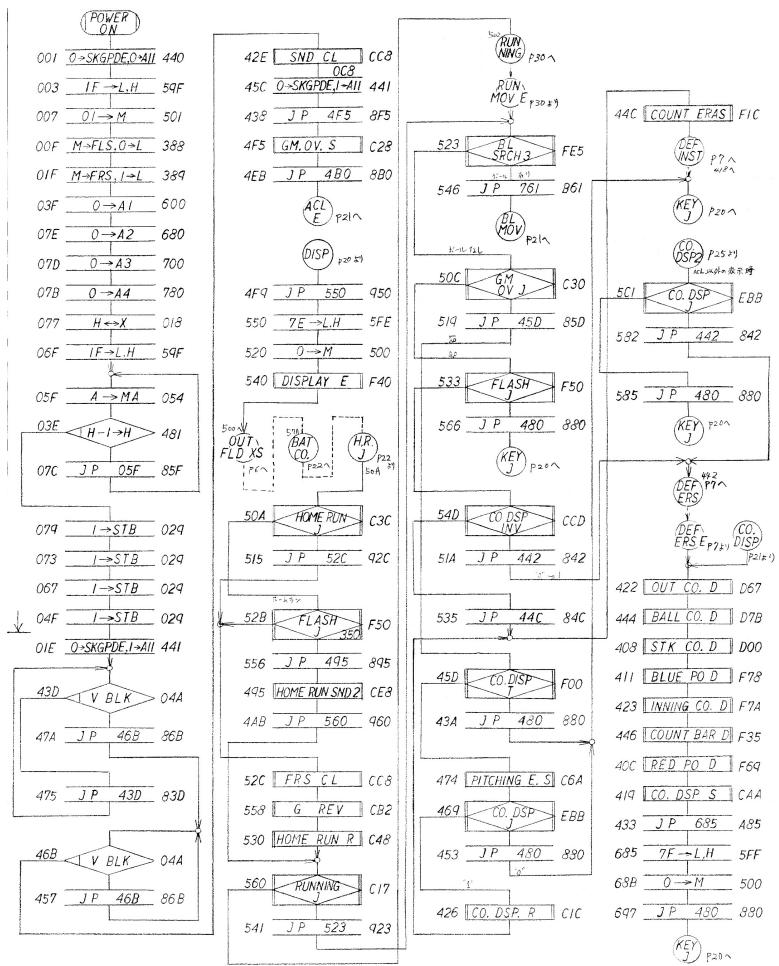
17/31 INNING CO, BLUE WJ, SAYONARA WJ, BALL X $\pm \Delta X$, BALL Y $\pm \Delta Y$, BALL $\pm X$, $\pm Y$ J&S SUB



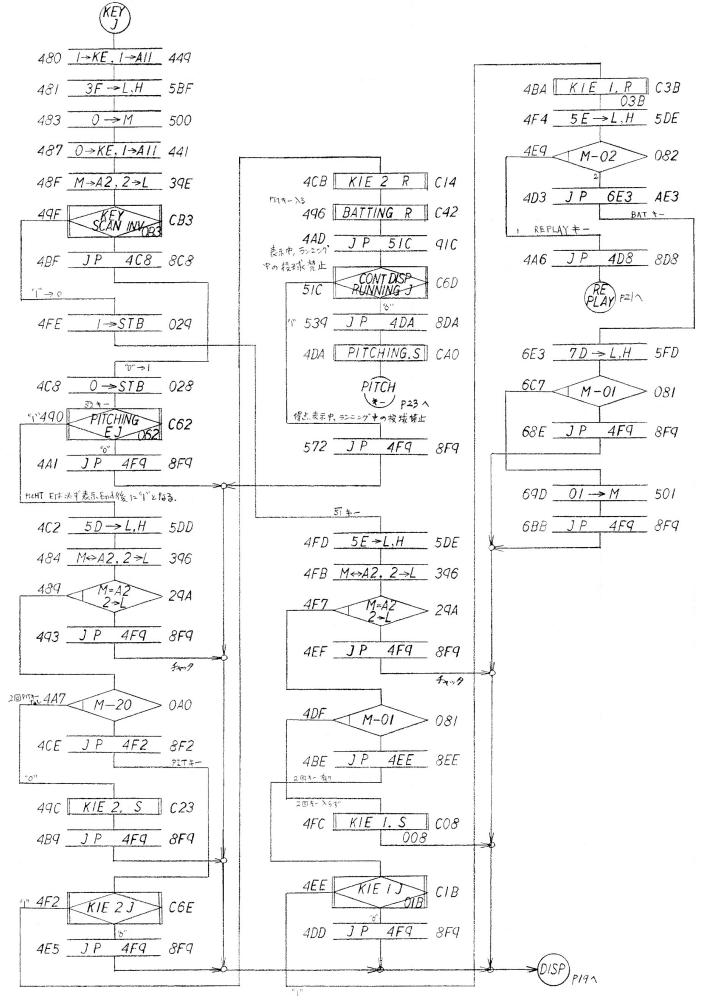




19/31 ACL



20/31 KEY J



21/31 REPLAY, BALL MOVE, OUT FLD XJ, RN MOV J, RUNNER RUN E J SUB

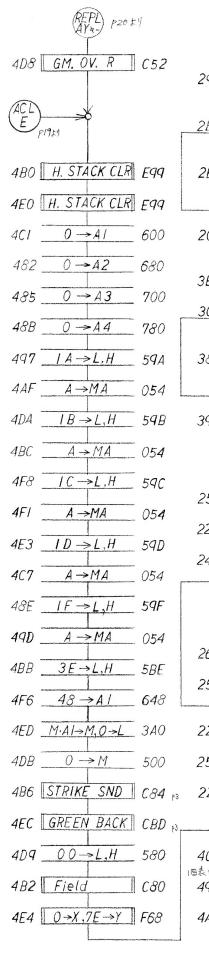
761

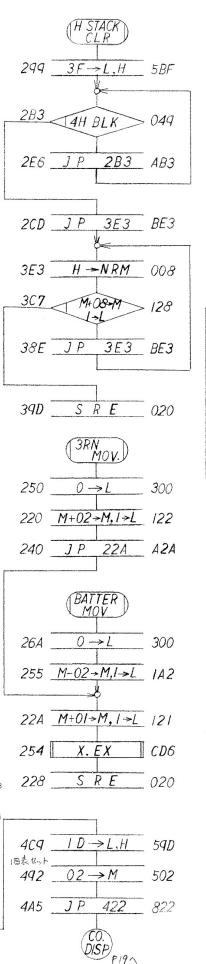
70D

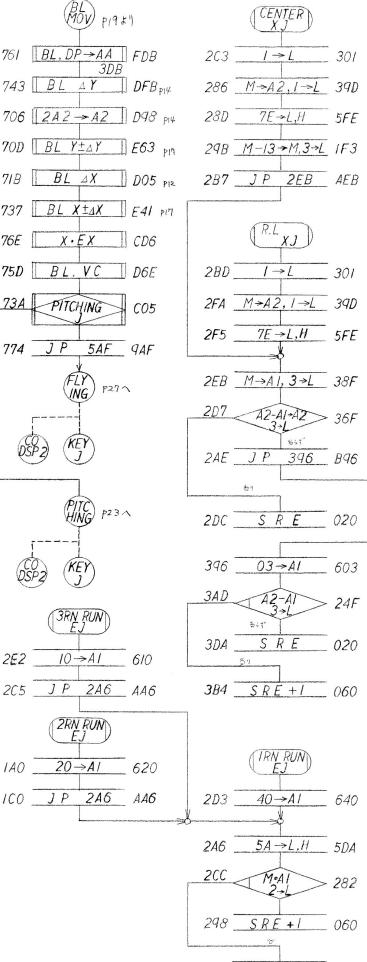
71B

737

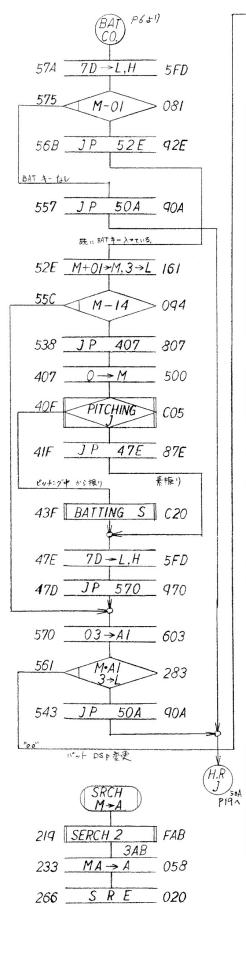
76E







281 SRE 020



506 1C→A1 61C 50D BIT PICK UP F7D 51B M-10 090 15-14 1 537 JP 47B 87B 47B NOP 000 477 <u>35 > A1</u> 635 46F SRCH M-A EIQ 45F _____A3___710 43E JP 545 945 56E M-0C > 080 <Trigh at 55D JP 47C 87C 47C <u>OE -> AI</u> 60E 479 SRCH M→A E19 473 <u>35→A3</u> 735 467 <u>56→A/</u> 656 $44F \quad 2B \rightarrow A2 \quad 6AB$ 4IE JP 545 945 53A M-08 088 574 JP 470 870 470 <u>34 → A1</u> 634 461 SRCH M->A E19 443 <u>0E→A3</u> 70E 406 JP 545 945

 $\begin{pmatrix} A \neq M \\ X.EX \end{pmatrix}$

24D A->MA 054

X · EX CD6

SRE 020

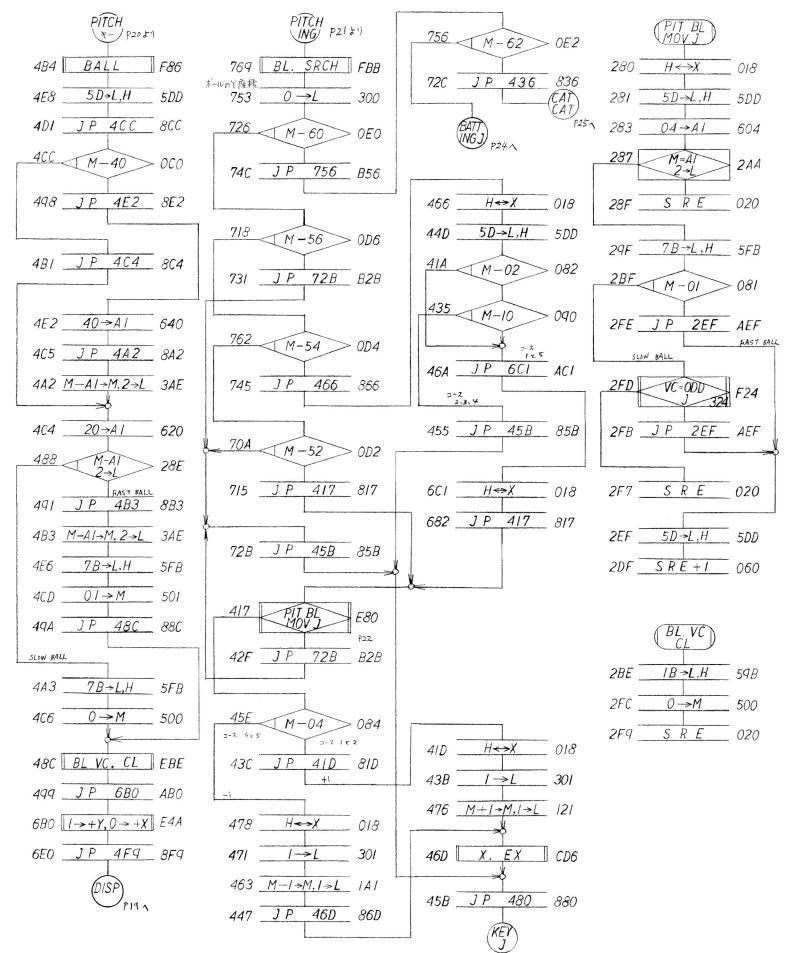
21A

235

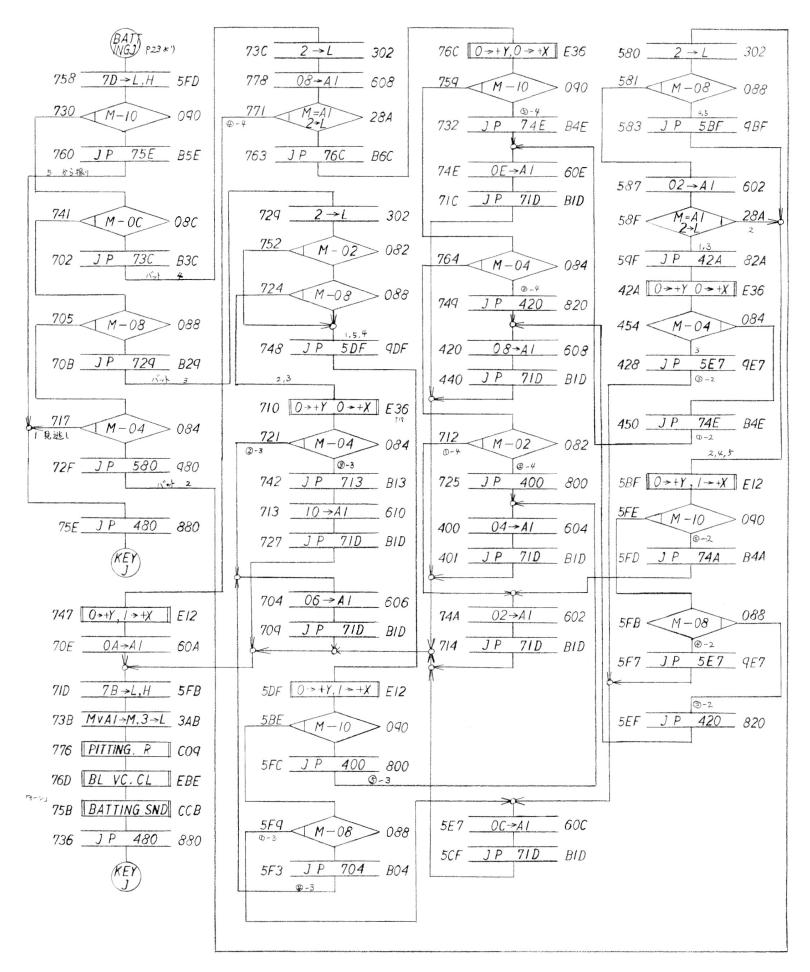
569 M-04 084 Nit 1 553 JP 4BD 8BD 4BD BATTING S C20 4FA J P 40D 80D 40D 0D - AI 60D 41B SRCH M→A EI9 437 34→A3 734 46E JP 545 945 526 10→A1 610 54C SRCH M-A EIG 518 0D→A3 70D 531 60→A1 660 562 <u>2A→A2</u> 6AA 545 A-M X. EX E4D 150A P192

22/31 BAT COUNT

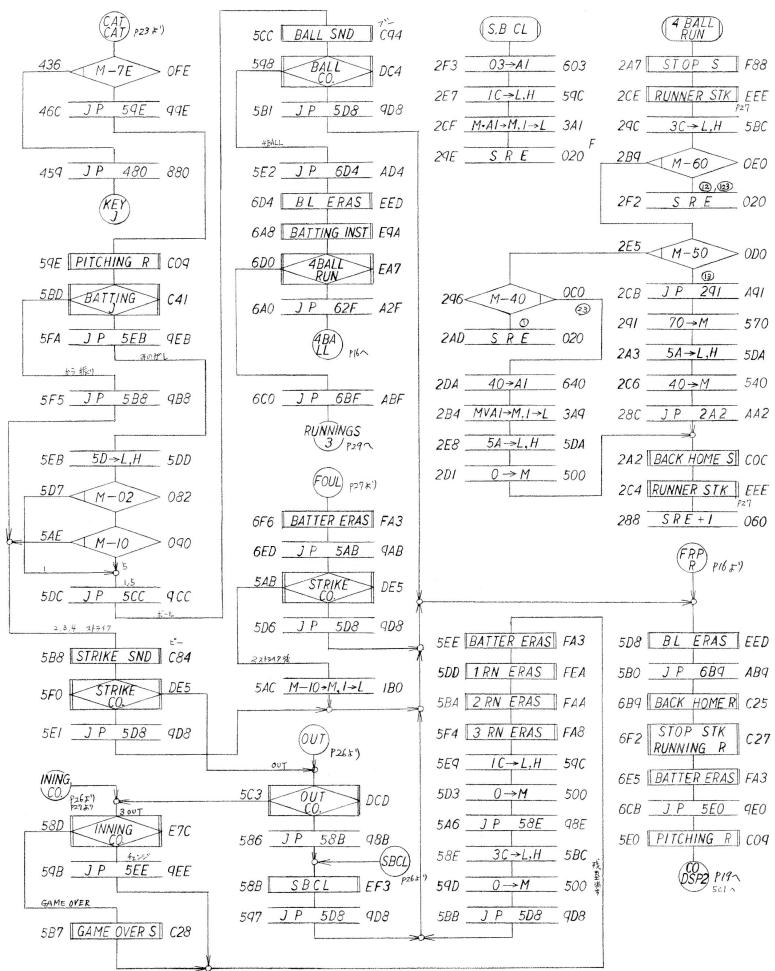
23/31 PITCH KEY, PITCHING



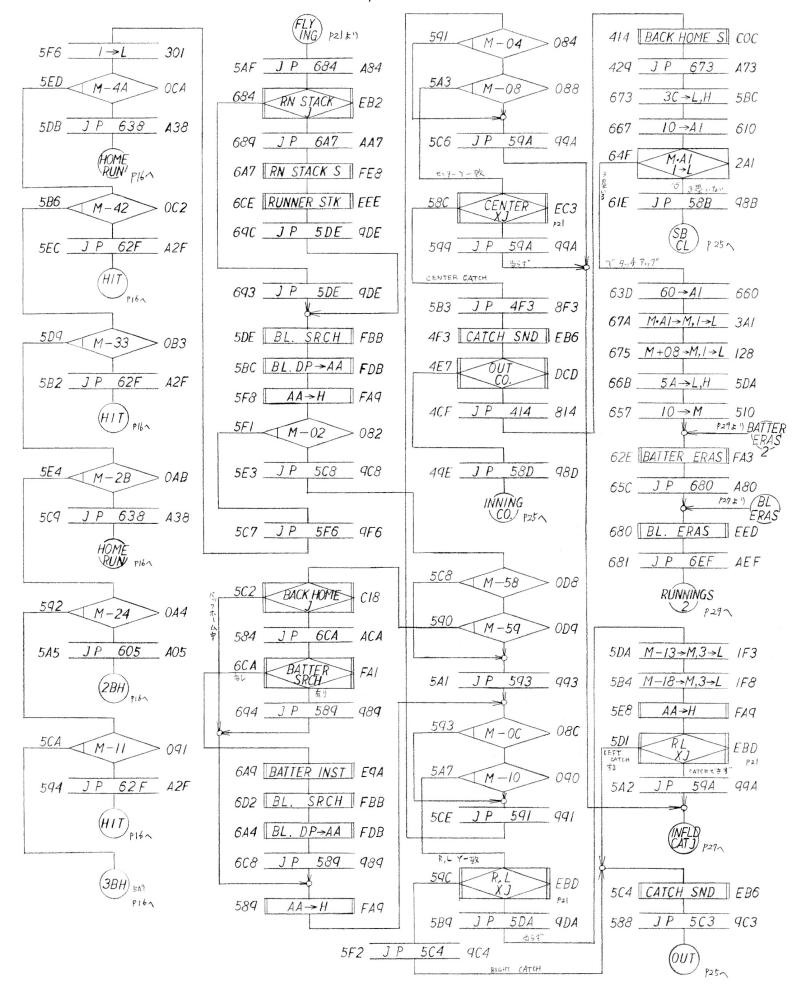
24/31 BATTING J



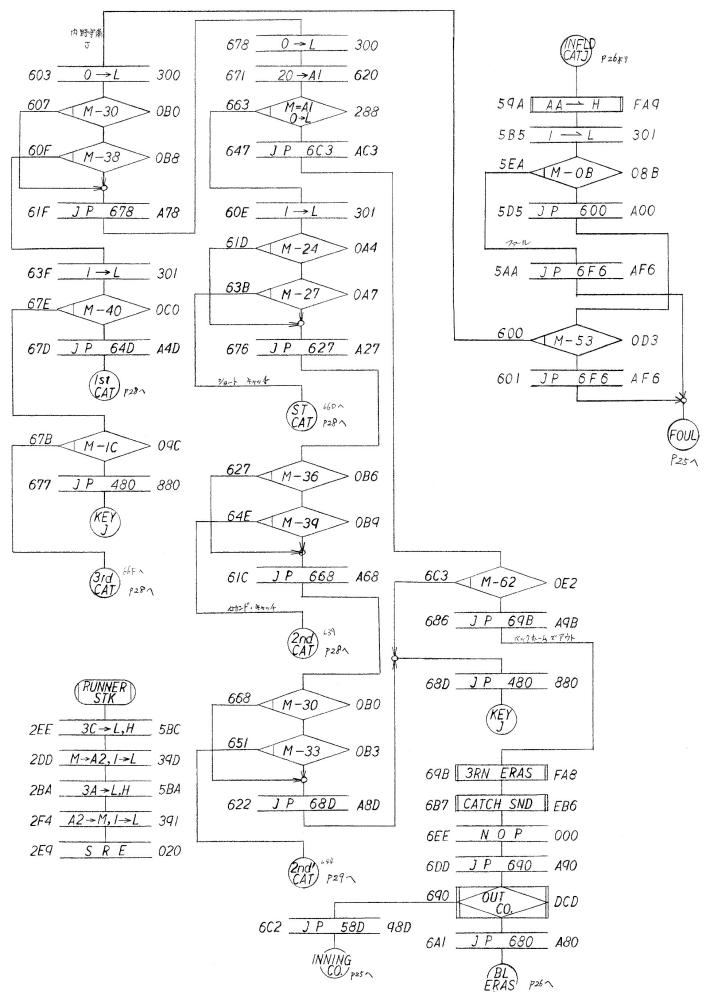
25/31 CATCHER CATCH



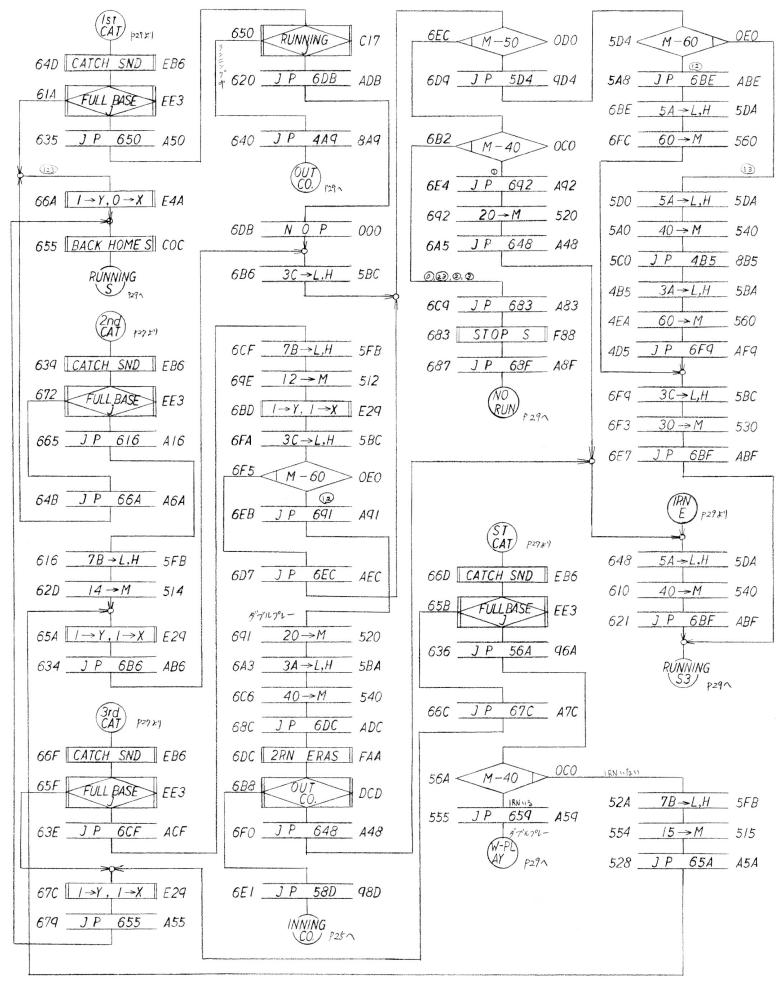
26/31 FLYING



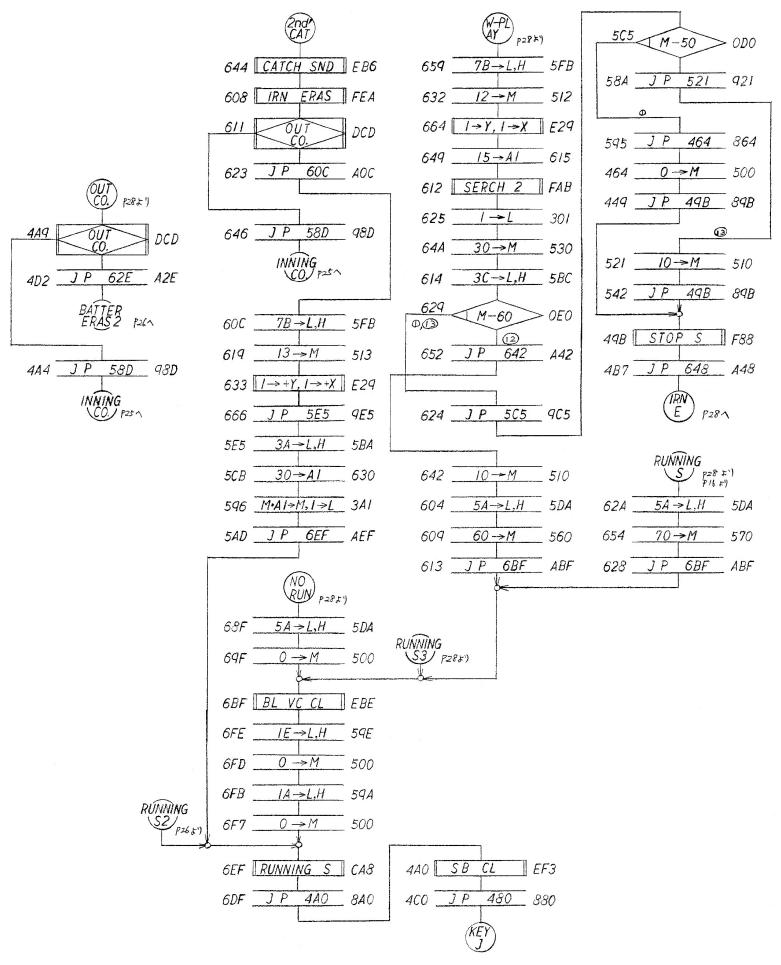
27/31 INFIELD CATCH J



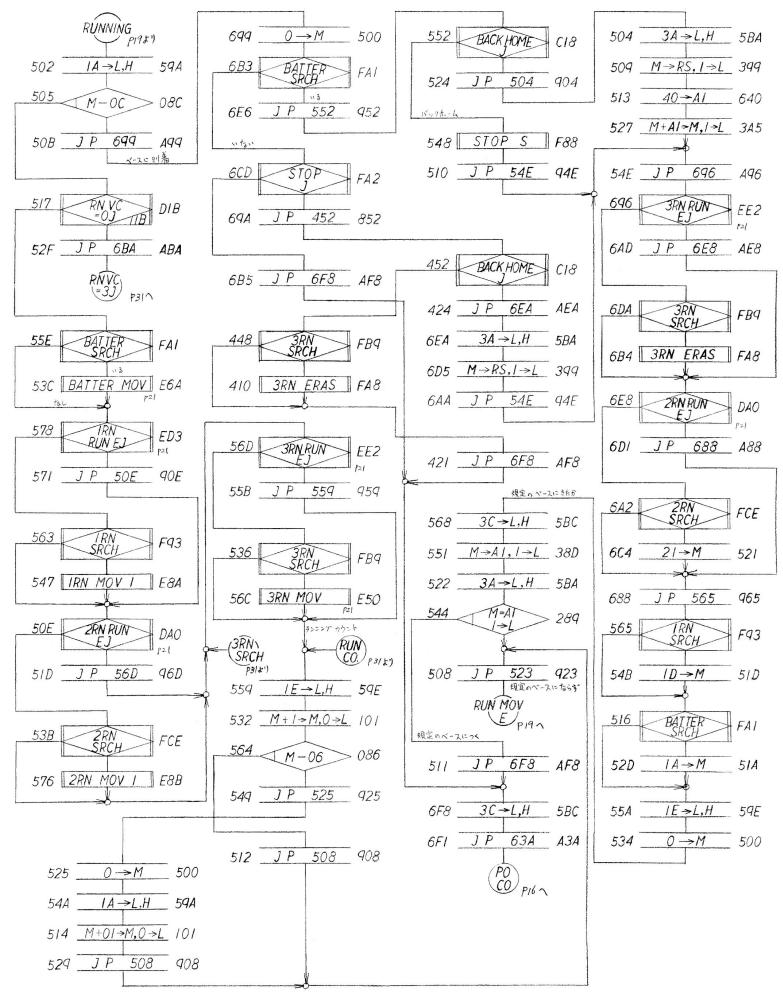
28/31 INFIELD CATCH 1, RUNNING E 1

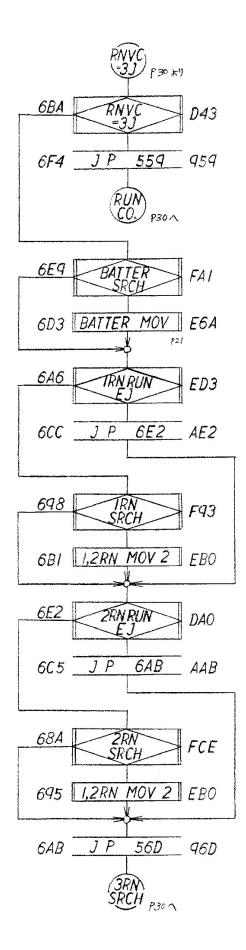


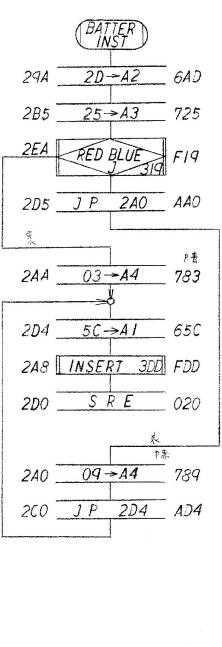
29/31 INFIELD CATCH 2, RUNNING E2

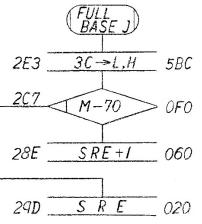


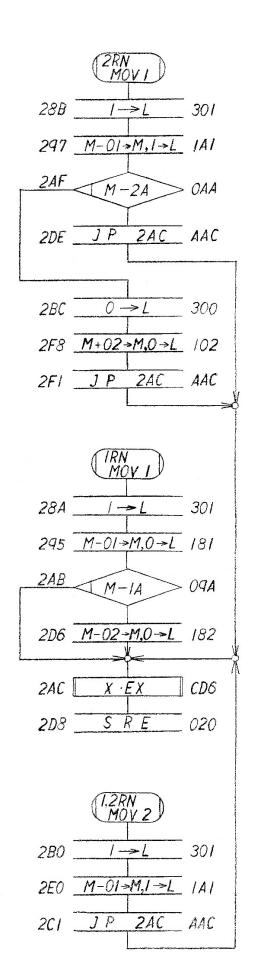
30/31 RUNNING 1











 $3({}^{6}_{7}X)$ $2({}^{4}_{5}X)$ L $O(f^{O}X)$ $1(\frac{2}{3}x)$ H 0 1 2 3 4 5 6 7 8 Q. A В C D E Γ 10 11 12 13 14 15 16 17 18 BALL DP (AA) RANDOM CO Y 19 B 23 RUNNIG 3年以前の R RUNNER I R 100 R 1 4 RUNNER CO2 $\begin{array}{c} N | N | N | \\ BALL DIRE \\ CTION \\ \hline RED PO \\ I O \\ \hline I$ BALL VELC. 13 BALL CO H HOME IN (期待位) BLUE PO RN В 10 S 0 R R TAMING A COURTER AND A COURT AND A CO F 5 4 3 2 KEY 2 (S2) BATER BAT MODE FKIL 5 I D BAT I E KEY 1/5T PUDDLE CO RUNNER CO 沉用 汎用 I F TIME CO SOUND (IF NEW KEY)

RAM (7 bit (H:L) address x 7 bit data) Mapping

DISP

Data RAM (Flags & Counters)

LITE. 13	L[2:1]	3	2	1	0
H[5:1]	Registers	A4[7:1]	A3[7:1]	A2[7:2]	A1[7:1]
19h	Random counter	Ball data pointer (I	Prohibited to use)	Y coordinate	
1911		nnh	0 H[4:0]	0h	nnh
1ah		(No use)	Base running possible	Runners existed	Runner counter 2
		0h	RN 2RN 3RN 0 0 0 0 1RN 2RN 3	BRN 0 0 0 0	nnh
1bh		Ball velocity	Ball direction	(No use)	Ball counter
		0 0 V[3:0] Fast	0 0 0 0 0 +Y +X	0h	nnh
&	Flags	Blue Point (Binary Coded Decimal)	Red Point (Binary Coded Decimal)	ers at scoring position	SBO
	&	2nd digit[2:0] 1st digit[3:0]	nd digit[2:0] 1st digit[3:0] 1RN 2RN 3	BRN 0 0 0 0	0 S[1:0] B[1:0] O[1:0]
1dh	Counters	Bat Swing Position counter	Key 2 (S2/)	Flags 1	Inning & bottom/top
		0 0 BSP[4:0]	5 F 5 4 3 2 	itch Runner St Batt Home ing stack op ing run	0 0 Inning[3:0] Bottom
1eh		Puddle counter	Key 1 (S1/)	Flags 2	Runner counter
		nnh	J = U = U = U = U = U = Bat = Rep I = C = C = C = C = C = C = C = C = C =	ack Game Kie Kie Game over 2 1	nnh
1fh		Time counter	General purpose flags	Key/Switch input	Sound
	nnh		x x x x x x x	nnh	nnh