

COUNT 1

STATE OF CIA				REQUIRED STATE OF NIA				ACTIONS NECESSARY									
δ	γ	β	α	d	c	b	a	S_d	R_d	S_c	R_c	S_b	R_b	S_a	R_a		
0	0	0	0	0	0	0	1	0	ϕ	0	ϕ	0	ϕ	1	0		
0	0	0	1	0	0	1	0	0	ϕ	0	ϕ	1	0	0	1		
0	0	1	0	0	0	1	1	0	ϕ	0	ϕ	ϕ	0	1	0		
0	0	1	1	0	1	0	0	0	ϕ	1	0	0	1	0	1		
0	1	0	0	0	1	0	1	0	ϕ	ϕ	0	0	ϕ	1	0		
0	1	0	1	1	0	0	0	1	0	0	1	0	ϕ	0	1		
0	1	1	0	—				—		—		—		—			
0	1	1	1	—				—		—		—		—			
1	0	0	0	1	0	0	1	ϕ	0	0	ϕ	0	ϕ	1	0		
1	0	0	1	1	0	1	0	ϕ	0	0	ϕ	1	0	0	1		
1	0	1	0	1	0	1	1	ϕ	0	0	ϕ	ϕ	0	1	0		
1	0	1	1	1	1	0	0	ϕ	0	1	0	0	1	0	1		
1	1	0	0	1	1	0	1	ϕ	0	ϕ	0	0	ϕ	1	0		
1	1	0	1	0	0	0	0	0	1	0	1	0	ϕ	0	1		
1	1	1	0	—				—		—		—		—			
1	1	1	1	—				—		—		—		—			

COUNT 1
TRUTH TABLE

FIG 2

0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
1	0	0	0
1	0	0	1
1	0	1	0
1	0	1	1
1	1	0	0
1	1	0	1

POSSIBLE SYLLABIC
ADDRESSES

FIG 1

COUNT 1FIG 3

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 1 & 1 & 1 & 1 \\
 \hline
 0 & 0 & 0 & 0 \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 1 & \phi & \phi & 1 \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$S_a = \bar{\alpha}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 0 & 0 & 0 & 0 \\
 \hline
 1 & 1 & 1 & 1 \\
 \hline
 1 & \phi & \phi & 1 \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$R_a = \alpha$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 0 & 0 & 0 & 0 \\
 \hline
 1 & 0 & 0 & 1 \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 \phi & \phi & \phi & \phi \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$S_b = \alpha \cdot \bar{\beta} \cdot \bar{\delta}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 \phi & \phi & \phi & \phi \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 1 & \phi & \phi & 1 \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$R_b = \alpha \cdot \beta$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 0 & 0 & 0 & 0 \\
 \hline
 1 & \phi & \phi & 1 \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$S_c = \alpha \cdot \beta$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 \phi & 0 & 0 & \phi \\
 \hline
 \phi & 1 & 1 & \phi \\
 \hline
 0 & \phi & \phi & 0 \\
 \hline
 \phi & \phi & \phi & \phi \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$R_c = \alpha \cdot \delta$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 0 & 0 & \phi & \phi \\
 \hline
 0 & 1 & 0 & \phi \\
 \hline
 0 & \phi & \phi & \phi \\
 \hline
 0 & \phi & \phi & \phi \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$S_d = \alpha \cdot \delta \cdot \bar{\delta}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 \phi & \phi & 0 & 0 \\
 \hline
 \phi & 0 & 1 & 0 \\
 \hline
 \phi & \phi & \phi & 0 \\
 \hline
 \phi & \phi & \phi & 0 \\
 \hline
 \end{array}
 \end{array}$$

δ

α

β

$$R_d = \alpha \cdot \delta \cdot \delta$$

COUNT 2

Fig 4

STATE OF CIA				REQUIRED STATE OF NIA				ACTIONS NECESSARY							
s	x	β	α	d	c	b	a	Sd	Rd	Sc	Rc	Sb	Rb	Sa	Ra
0	0	0	0	0	0	1	0	0	φ	0	φ	1	0	0	φ
0	0	0	1	0	0	1	1	0	φ	0	φ	1	0	φ	0
0	0	1	0	0	1	0	0	0	φ	1	0	0	1	0	φ
0	0	1	1	0	1	0	1	0	φ	1	0	0	1	φ	0
0	1	0	0	1	0	0	0	1	0	0	1	0	φ	0	φ
0	1	0	1	1	0	0	1	1	0	0	1	0	φ	φ	0
0	1	1	0	————				——		——		——		——	
0	1	1	1	————				——		——		——		——	
1	0	0	0	1	0	1	0	φ	0	0	φ	1	0	0	φ
1	0	0	1	1	0	1	1	φ	0	0	φ	1	0	φ	0
1	0	1	0	1	1	0	0	φ	0	1	0	0	1	0	φ
1	0	1	1	1	1	0	1	φ	0	1	0	0	1	φ	0
1	1	0	0	0	0	0	0	0	1	0	1	0	φ	0	φ
1	1	0	1	0	0	0	1	0	1	0	1	0	φ	φ	0
1	1	1	0	————				——		——		——		——	
1	1	1	1	————				——		——		——		——	

COUNT 2Fig 6

			δ	
	1	0	0	1
	1	0	0	1
β	0	ϕ	ϕ	0
	0	ϕ	ϕ	0
		γ		α

$$S_b = \bar{\beta} \cdot \bar{\gamma}$$

			δ	
	0	ϕ	ϕ	0
	0	ϕ	ϕ	0
β	1	ϕ	ϕ	1
	1	ϕ	ϕ	1
		γ		α

$$R_b = \beta$$

			δ	
	0	0	0	0
	0	0	0	0
β	1	ϕ	ϕ	1
	1	ϕ	ϕ	1
		γ		α

$$S_c = \beta$$

			δ	
	ϕ	1	1	ϕ
	ϕ	1	1	ϕ
β	0	ϕ	ϕ	0
	0	ϕ	ϕ	0
		γ		α

$$R_c = \gamma$$

			δ	
	0	1	0	ϕ
	0	1	0	ϕ
β	0	ϕ	ϕ	ϕ
	0	ϕ	ϕ	ϕ
		γ		α

$$S_d = \gamma \cdot \bar{\delta}$$

			δ	
	ϕ	0	1	0
	ϕ	0	1	0
β	ϕ	ϕ	ϕ	0
	ϕ	ϕ	ϕ	0
		γ		α

$$R_d = \gamma \cdot \delta$$

COUNT 3Fig 6

STATE OF CIA				REQUIRED STATE OF NIA				ACTIONS NECESSARY							
δ	γ	β	α	d	c	b	a	S_d	R_d	S_c	R_c	S_b	R_b	S_a	R_a
0	0	0	0	0	0	1	1	0	ϕ	0	ϕ	1	0	1	0
0	0	0	1	0	1	0	0	0	ϕ	1	0	0	ϕ	0	1
0	0	1	0	0	1	0	1	0	ϕ	1	0	0	1	1	0
0	0	1	1	1	0	0	0	1	0	0	ϕ	0	1	0	1
0	1	0	0	1	0	0	1	1	0	0	1	0	ϕ	1	0
0	1	0	1	1	0	1	0	1	0	0	1	1	0	0	1
0	1	1	0	—	—	—	—	—	—	—	—	—	—	—	—
0	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—
1	0	0	0	1	0	1	1	ϕ	0	0	ϕ	1	0	1	0
1	0	0	1	1	1	0	0	ϕ	0	1	0	0	ϕ	0	1
1	0	1	0	1	1	0	1	ϕ	0	1	0	0	1	1	0
1	0	1	1	0	0	0	0	0	1	0	ϕ	0	1	0	1
1	1	0	0	0	0	0	1	0	1	0	1	0	ϕ	1	0
1	1	0	1	0	0	1	0	0	1	0	1	1	0	0	1
1	1	1	0	—	—	—	—	—	—	—	—	—	—	—	—
1	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—

COUNT 3 Fig 7

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 1 & 1 & 1 & 1 \\
 0 & 0 & 0 & 0 \\
 0 & \phi & \phi & 0 \\
 1 & \phi & \phi & 1 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$a = \bar{\alpha} \bar{1}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 0 & 0 & 0 & 0 \\
 1 & 1 & 1 & 1 \\
 1 & \phi & \phi & 1 \\
 0 & \phi & \phi & 0 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$b \bar{1} = \alpha$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 1 & 0 & 0 & 1 \\
 0 & 1 & 1 & 0 \\
 0 & \phi & \phi & 0 \\
 0 & \phi & \phi & 0 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$S_b = \alpha \gamma + \bar{\alpha} \bar{\beta} \bar{\gamma}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 0 & \phi & \phi & 0 \\
 \phi & 0 & 0 & \phi \\
 1 & \phi & \phi & 1 \\
 1 & \phi & \phi & 1 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$R \bar{b} = \beta$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 0 & 0 & 0 & 0 \\
 1 & 0 & 0 & 1 \\
 0 & \phi & \phi & 0 \\
 1 & \phi & \phi & 1 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$S_c = \alpha \bar{\beta} \bar{\gamma} + \bar{\alpha} \beta$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 \phi & 1 & 1 & \phi \\
 0 & 1 & 1 & 0 \\
 \phi & \phi & \phi & \phi \\
 0 & \phi & \phi & 0 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$R_c = \gamma$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 0 & 1 & 0 & \phi \\
 0 & 1 & 0 & \phi \\
 1 & \phi & \phi & 0 \\
 0 & \phi & \phi & \phi \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$S_d = \alpha \beta \bar{\delta} + \gamma \bar{\delta}$$

$$\begin{array}{c}
 \begin{array}{|c|c|c|c|}
 \hline
 & \overbrace{}^{\delta} & & \\
 \hline
 \phi & 0 & 1 & 0 \\
 \phi & 0 & 1 & 0 \\
 \phi & \phi & \phi & 1 \\
 0 & \phi & \phi & 0 \\
 \hline
 & \underbrace{}_{\gamma} & & \\
 \hline
 \end{array}
 \end{array}$$

$$R_d = \gamma \delta + \alpha \beta \cdot \delta$$

COUNT 4 Fig 8

STATE OF CIA				REQUIRED STATE OF NIA				ACTIONS NECESSARY							
δ	χ	β	α	d	c	b	a	S_d	R_d	S_c	R_c	S_b	R_b	S_a	R_a
0	0	0	0	0	1	0	0	0	ϕ	1	0	0	ϕ	0	ϕ
0	0	0	1	0	1	0	1	0	ϕ	1	0	0	ϕ	ϕ	0
0	0	1	0	1	0	0	0	1	0	0	ϕ	0	1	0	ϕ
0	0	1	1	1	0	0	1	1	0	0	ϕ	0	1	ϕ	0
0	1	0	0	1	0	1	0	1	0	0	1	1	0	0	ϕ
0	1	0	1	1	0	1	1	1	0	0	1	1	0	ϕ	0
0	1	1	0	— — — —				— —		— —		— —		— —	
0	1	1	1	— — — —				— —		— —		— —		— —	
1	0	0	0	1	1	0	0	ϕ	0	1	0	0	ϕ	0	ϕ
1	0	0	1	1	1	0	1	ϕ	0	1	0	0	ϕ	ϕ	0
1	0	1	0	0	0	0	0	0	1	0	ϕ	0	1	0	ϕ
1	0	1	1	0	0	0	1	0	1	0	ϕ	0	1	ϕ	0
1	1	0	0	0	0	1	0	0	1	0	1	1	0	0	ϕ
1	1	0	1	0	0	1	1	0	1	0	1	1	0	ϕ	0
1	1	1	0	— — — —				— —		— —		— —		— —	
1	1	1	1	— — — —				— —		— —		— —		— —	

COUNT 4

δ			
0	1	1	0
0	1	1	0
0	ϕ	ϕ	0
0	ϕ	ϕ	0
γ			

β α

$$S_b = \gamma$$

δ			
ϕ	0	0	ϕ
ϕ	0	0	ϕ
1	ϕ	ϕ	1
1	ϕ	ϕ	1
γ			

β α

$$R_b = \beta$$

δ			
1	0	0	1
1	0	0	1
0	ϕ	ϕ	0
0	ϕ	ϕ	0
γ			

β α

$$S_c =$$

δ			
0	1	1	0
0	1	1	0
ϕ	ϕ	ϕ	ϕ
ϕ	ϕ	ϕ	ϕ
γ			

β α

δ			
0	1	0	ϕ
0	1	0	ϕ
1	ϕ	ϕ	0
1	ϕ	ϕ	0
γ			

β α

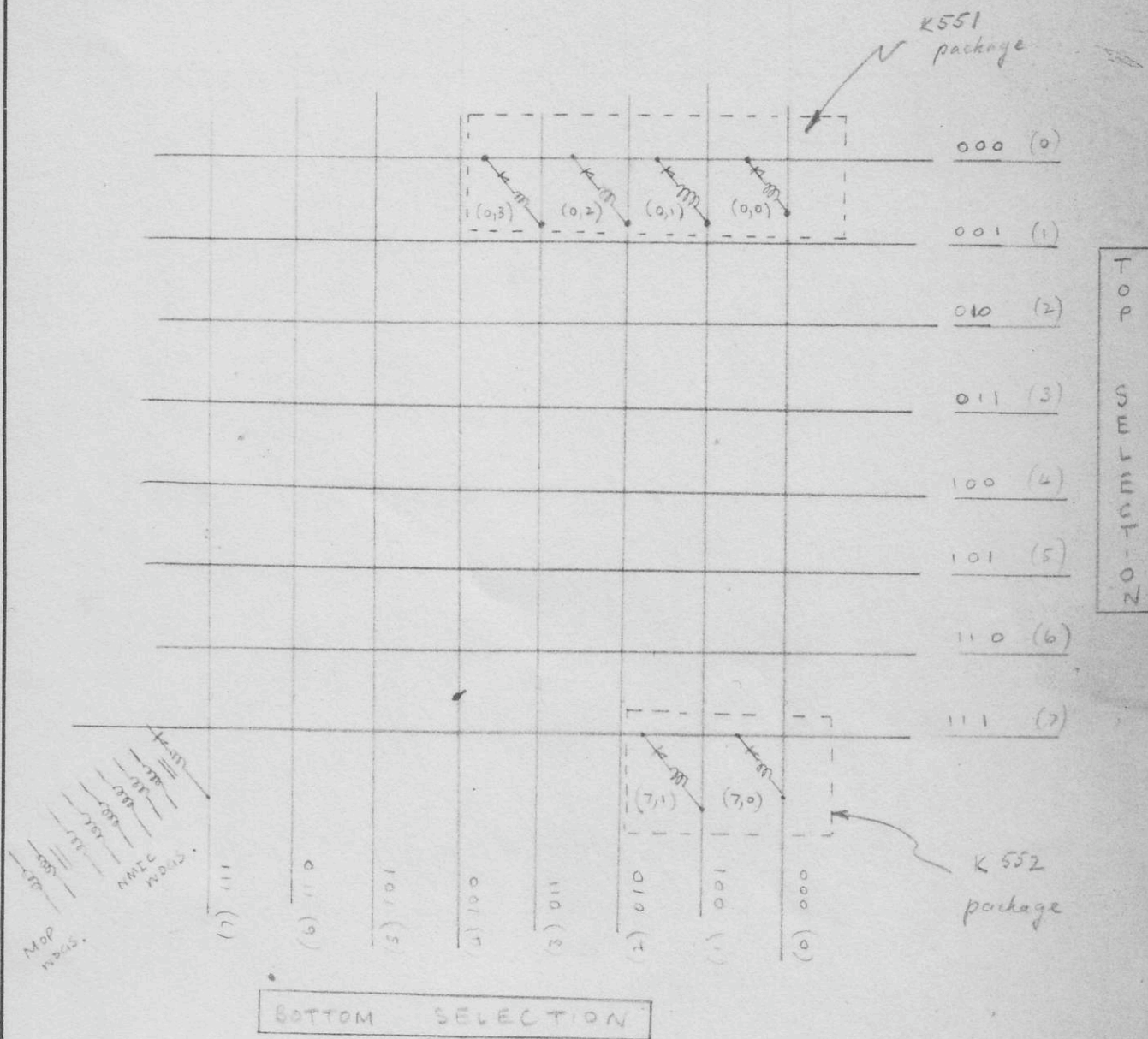
δ			
ϕ	0	1	0
ϕ	0	1	0
0	ϕ	ϕ	1
0	ϕ	ϕ	1
γ			

β α

MAIN CONTROL FUNCTION LEVELS.

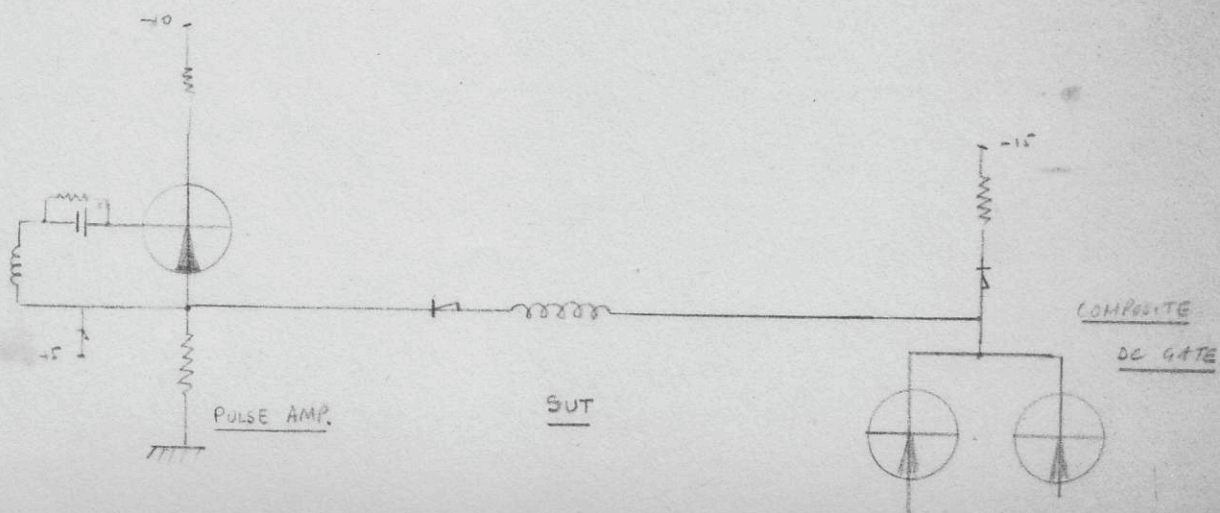
SEQUENCE	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15
S1 SUBROUTINE JUMP	1	0	0						1	1	0	1				
S2 COUNTING JUMP	1	0	1													
S3 UNCONDITIONAL JUMP.	1	0	0						1	0	1	1				
S4 SHORT LOOP JUMP	0	1	1	1	1	1	1	1								
S5 JUMP ON EQUALITY OF OPERANDS	1	0	0						0			1				
S6 JUMP ON ZERO	1	0	0						0			0				
S7 JUMP ON MACHINE STATE	1	0	0						1			0				
S8 EXIT	1	0	0	0					1	1	1	1				
S9 EXIT D	1	0	0	1					1	1	1	1				
S10 LINK	0	1	1	1	1	0	1	1								
S11 = LINK	0	1	1	1	1	1	0	0								
S12 M+Iq	0	1	1	0	0	0	0	0								
S13 M-Iq	0	1	1	0	0	0	0	1								
S14 NCq	0	1	1	0	0	0	1	0								
S15 DCq	0	1	1	0	0	0	1	1								
S16 Iq = 1	0	1	1	0	0	1	0	0								
S17 Iq = -1	0	1	1	0	0	1	0	1								
S18 Iq = 2	0	1	1	0	0	1	1	0								
S19 Iq = -2	0	1	1	0	0	1	1	1								
S20 Q TO Q	0	1	1	0	1											
S21 Qq	0	1	1	1	1	0	0	1					1	1	1	
S22 Cq	0	1	1	1	1	0	0	1					1	0	0	
S23 Iq	0	1	1	1	1	0	0	1					0	1	0	
S24 Mq	0	1	1	1	1	0	0	1					0	0	1	
S25 SET	1	1				1										
S26 = Qq	0	1	1	1	1	0	0	0								0
S27 = RQq	0	1	1	1	1	0	0	0								1
S28 = +Qq	0	1	1	1	1	0	1	0					1	1	1	
S29 = +Cq	0	1	1	1	1	0	1	0					1	0	0	
S30 = +Iq	0	1	1	1	1	0	1	0					0	1	0	
S31 = +Mq	0	1	1	1	1	0	1	0					0	0	1	
S32 DIRECT SHIFT	0	1	1	1	0											1
S33 INDIRECT SHIFT	0	1	1	1	0											0
S34 SET DIRECTOR REGISTER	0	1	1	1	1	1	0	1								
S35 FETCH DIRECTOR REGISTER	0	1	1	1	1	1	1	0								
S36 DIRECT MS FETCH	1	1				0		0								
S37 INDIRECT MS FETCH	0	1	0	0				0								
S38 DIRECT MS STORE	1	1				0		1								
S39 INDIRECT MS STORE	0	1	0	0				1								
S40 PERIPHERAL READ	0	1	0	1	0	1										
S41 " WRITE	0	1	0	1	1	0										
S42 " ERASE	0	1	0	1	1	0								1		
S43 " SKIP	0	1	0	1	1	1										
S44 " TEST	0	1	0	1	0	0										
S45 OUT	1	0	0						1	0	0	1				
S46 DUMMY (ARITHMETIC OPERATION CODE)	0	0														

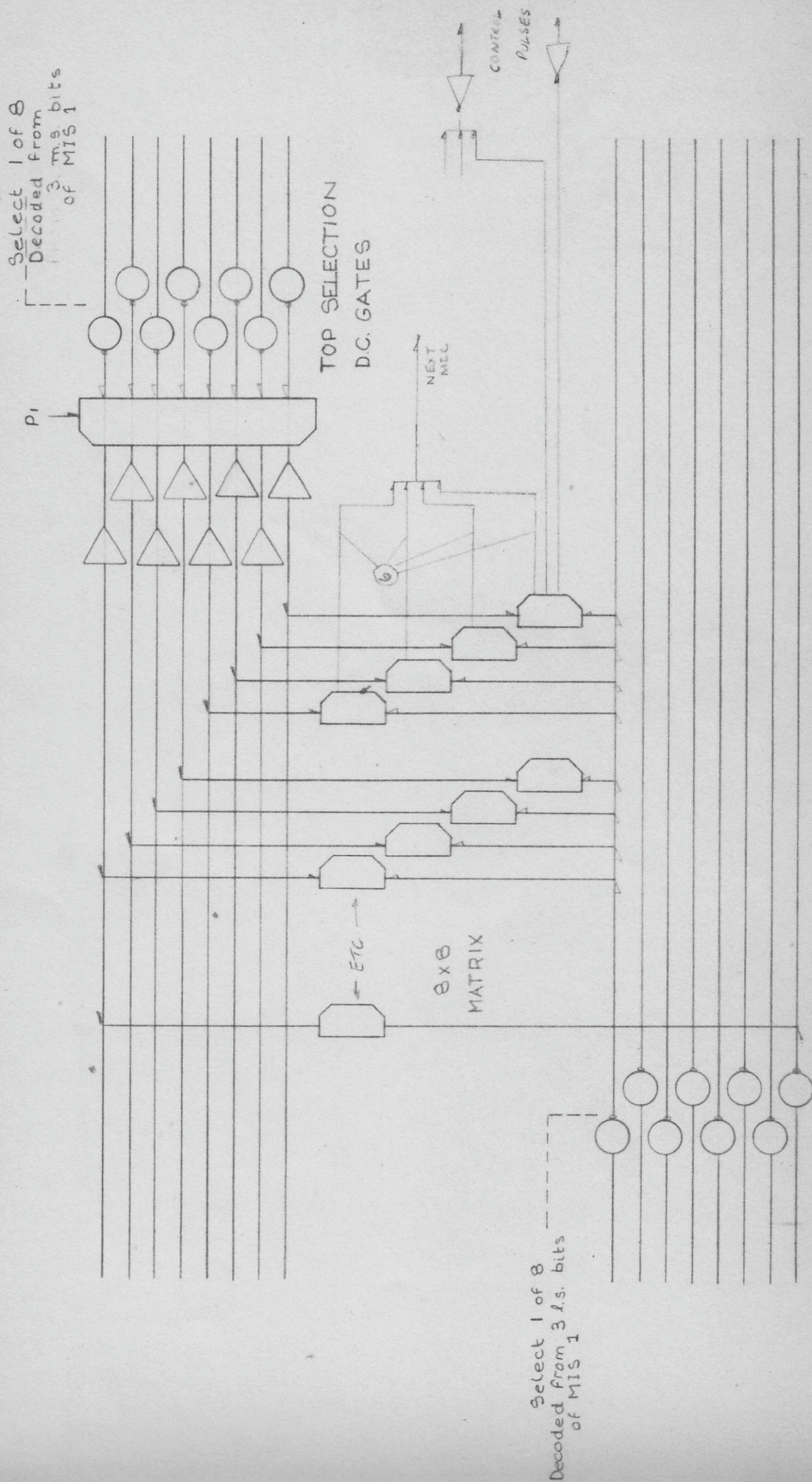
FIG 10



8x8 SUT MATRIX

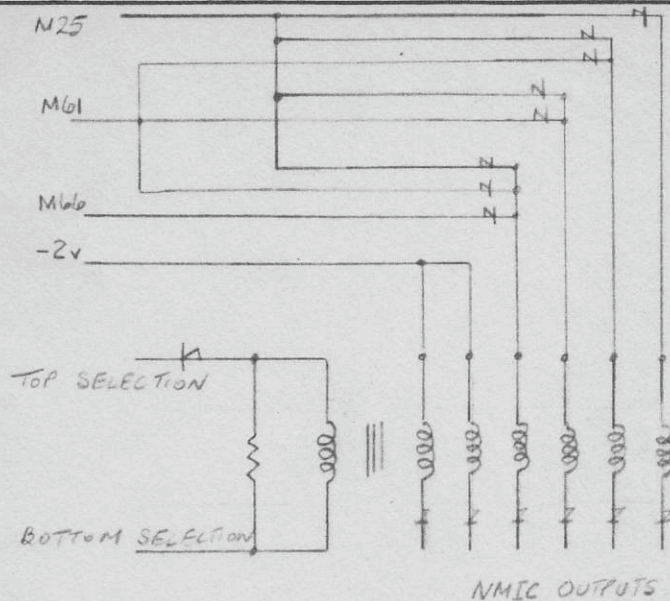
FIG 11



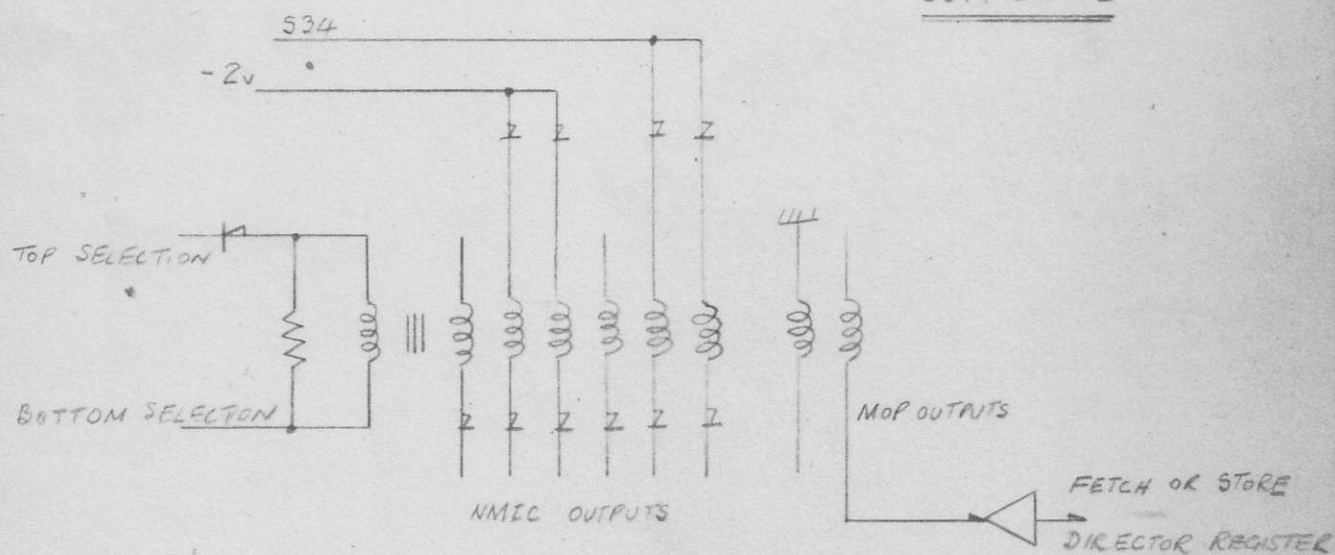


BOTTOM SELECTION
D.C. GATES

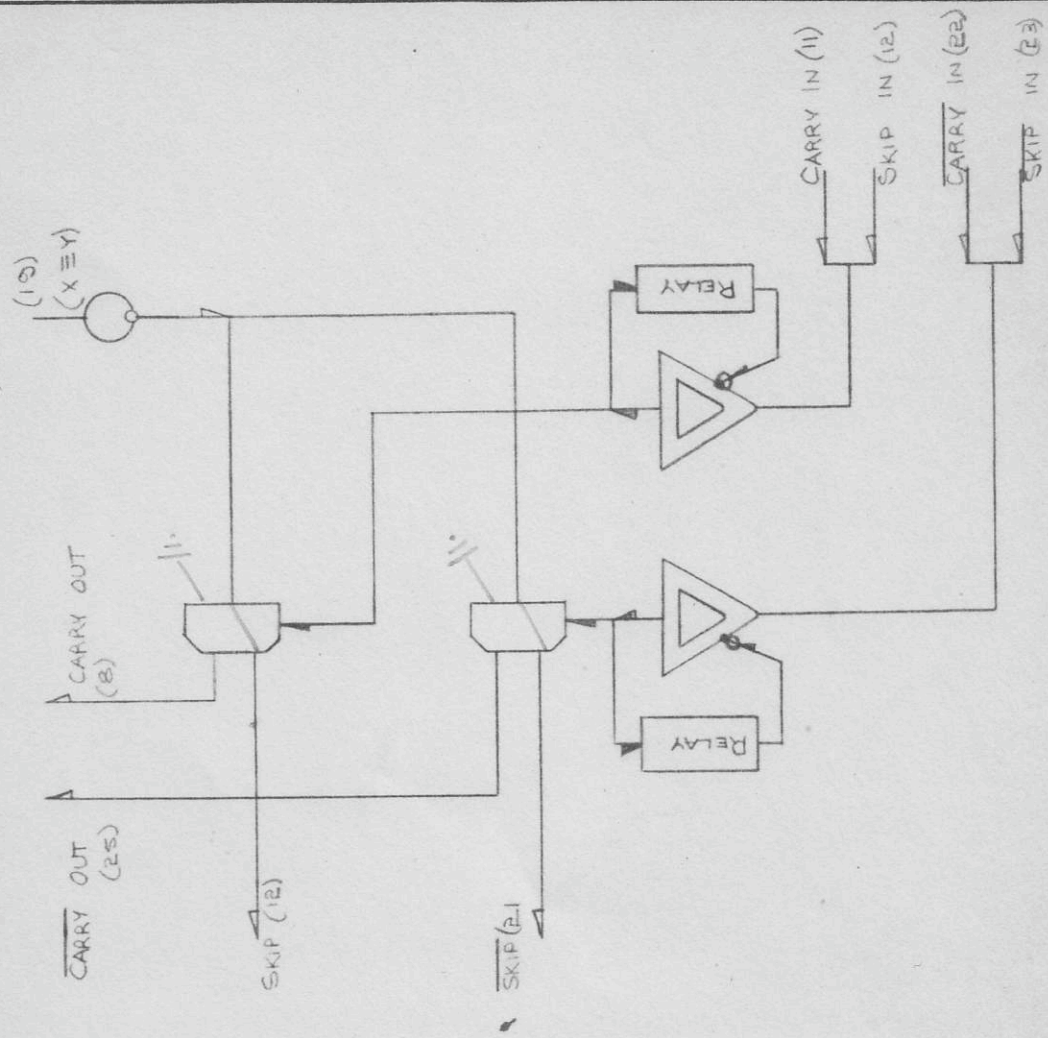
MODEL OF
SU MATRIX SELECTION

FIG 13SUT 06 P2NMIC COMPONENTS

-2v	1	1	0	0	0	0	
NOT	0	0	1	1	1	1	M25
SPIN. SPILL	0	0	1	1	1	0	M61
NIL	0	0	1	0	0	0	M66

FIG 14SUT. 62 P2





LOGICAL REPRESENTATION OF
A SKIP PACKAGE

Fig 16

CARRY OPERANDS				CARRY OUT
IN	X	Y		
0	0	0	1	0
0	0	1	0	0
0	1	0	0	0
0	1	1	1	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$$\begin{aligned} \text{SUM} &= \overline{C} (X \oplus Y) + C (X \equiv Y) \\ \overline{\text{SUM}} &= \overline{C} (X \equiv Y) + C (X \oplus Y) \\ \text{CARRY} &= X \cdot Y + C (X \oplus Y) \\ \overline{\text{CARRY}} &= \overline{X} \cdot \overline{Y} + \overline{C} (X \oplus Y) \end{aligned}$$

Bead A shorted
if $X \equiv Y$

Bead B shorted
if $X \oplus Y$

USE OF DOUBLE BEAD IN 'CARRY PROP' PACKAGES

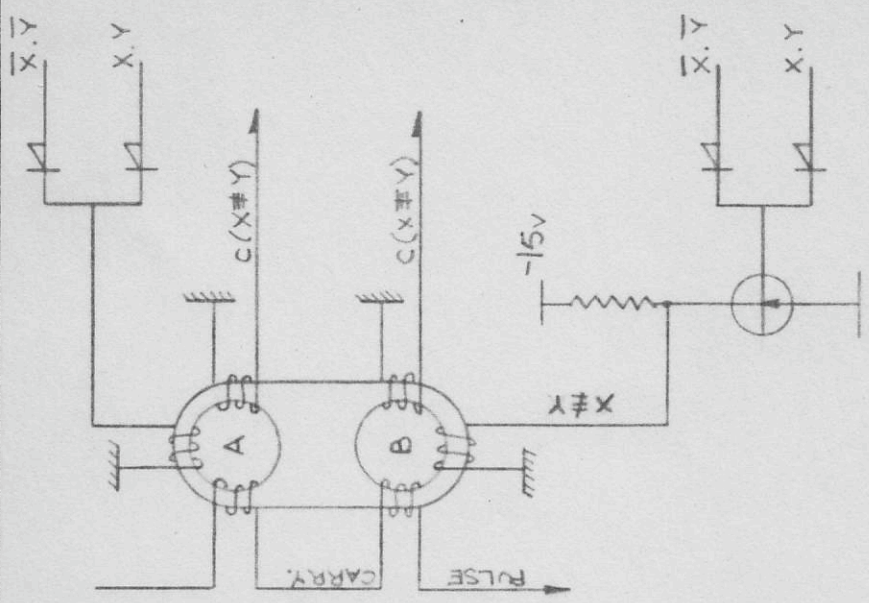
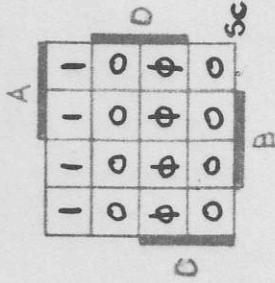
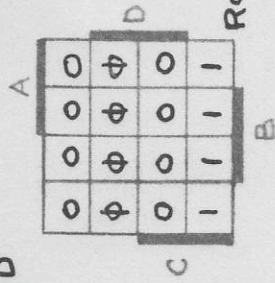


Fig 17

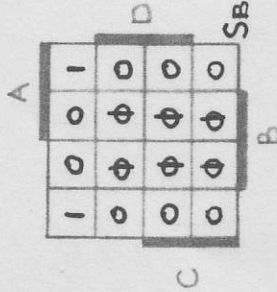
BY INSPECTION $S_D = \bar{D}$
 $R_D = D$



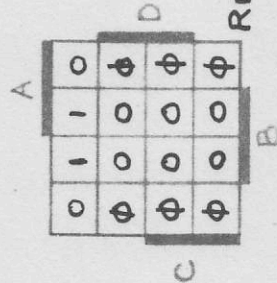
$$S_C = \bar{C} \cdot \bar{D}$$



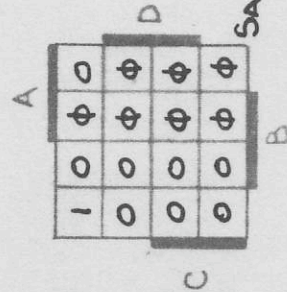
$$R_C = C \cdot \bar{D}$$



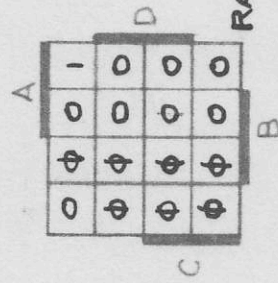
$$S_B = \bar{B} \cdot \bar{C} \cdot \bar{D}$$



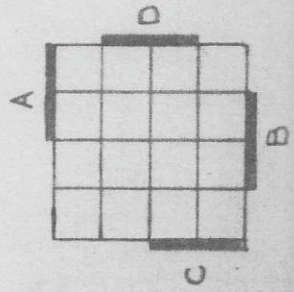
$$R_B = B \cdot \bar{C} \cdot \bar{D}$$



$$S_A = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$$



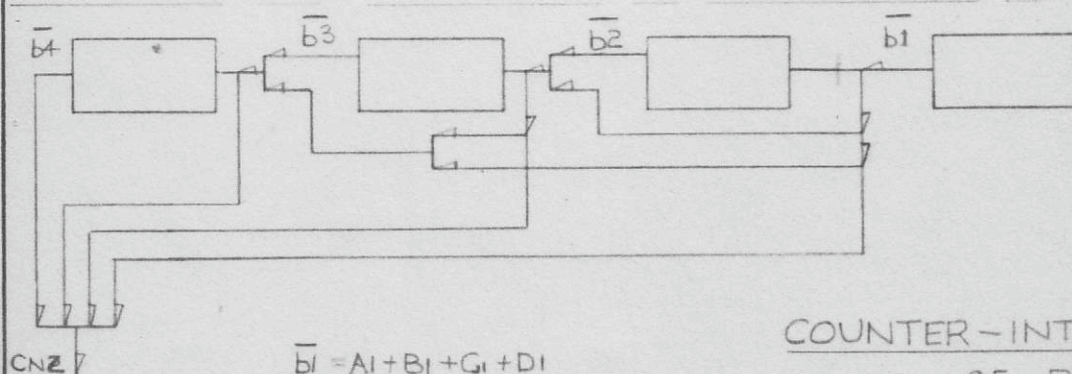
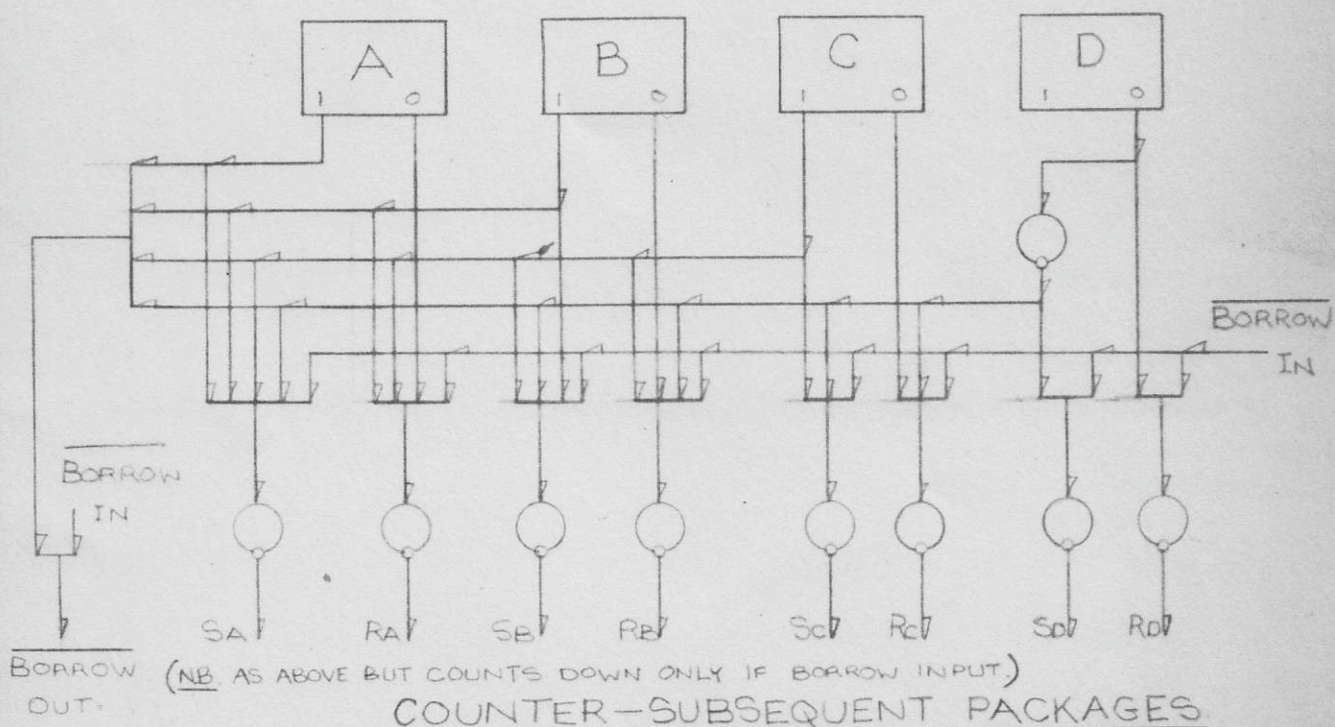
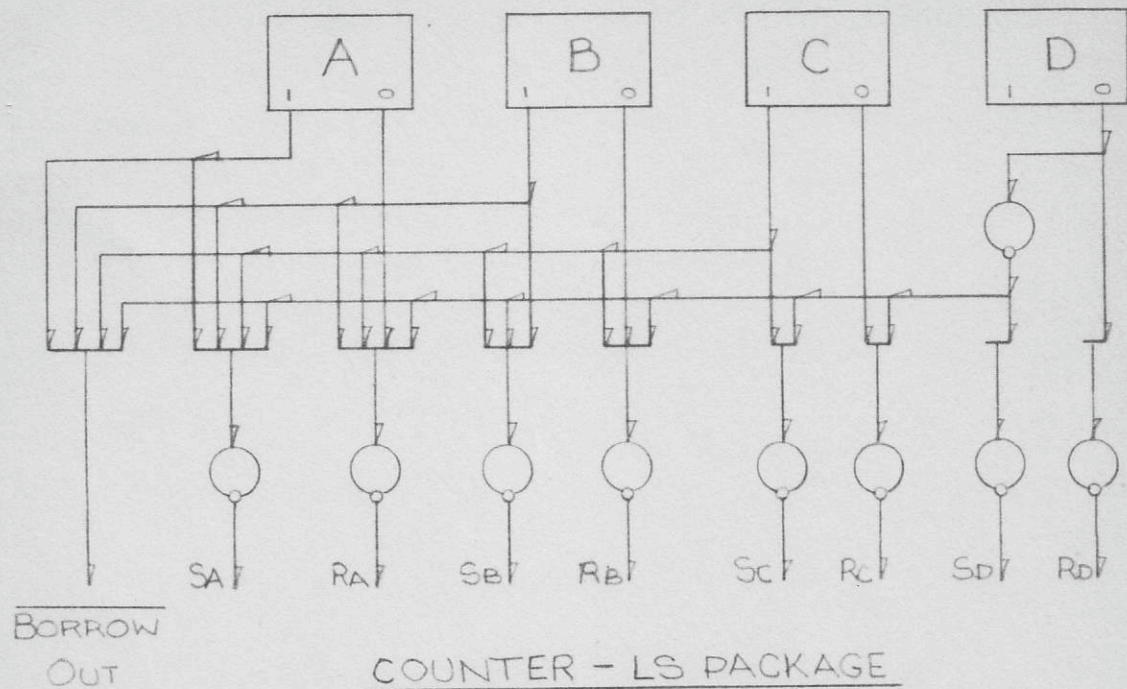
$$R_A = A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$$



$$\text{BORROW} = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$$

Inputs				Reqd. State		Actions Required								Borrow	
A	B	C	D	A'	B'	C'	D'	S _A	R _A	S _B	R _B	S _C	R _C	S _D	R _D
0	0	0	0	1	1	1	1	1	0	1	0	1	0	1	0
0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1
0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0
0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0
0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0
0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	1	1	0	1	0	1	0	1	0	0
1	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0
1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0
1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0

Fig 16



$$\bar{b}_1 = A_1 + B_1 + C_1 + D_1$$

$$\bar{b}_2 = A_2 + B_2 + C_2 + D_2 + \bar{b}_1$$

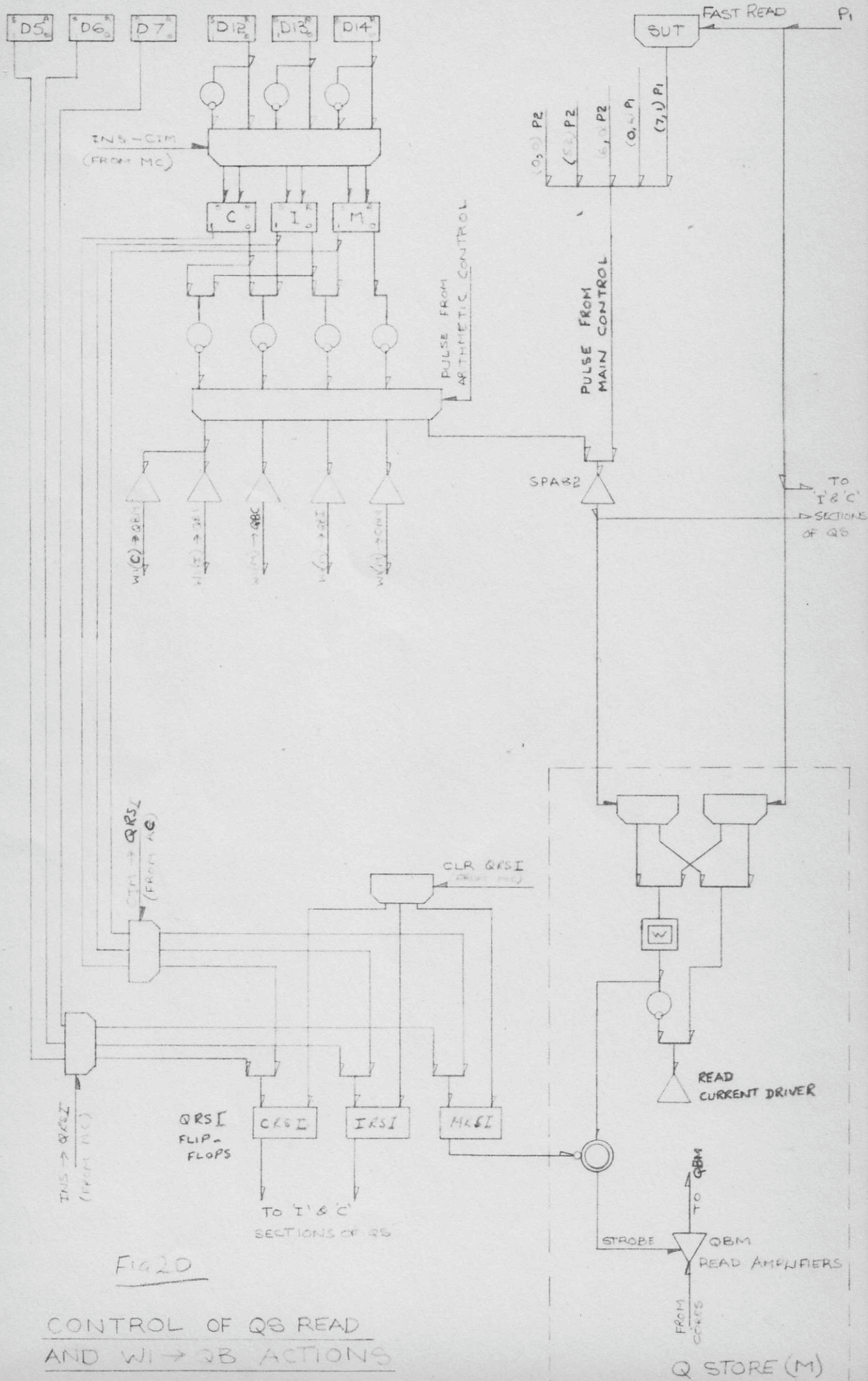
$$\bar{b}_3 = A_3 + B_3 + C_3 + D_3 + \bar{b}_2 + \bar{b}_1$$

$$\bar{b}_4 = A_4 + B_4 + C_4 + D_4 + \bar{b}_3 + \bar{b}_2 + \bar{b}_1$$

$$CNZ = \bar{b}_4 + \bar{b}_3 + \bar{b}_2 + \bar{b}_1 \quad (\text{REGISTER QBC} \neq 0)$$

(QBC NOT ZERO)

FIG 19



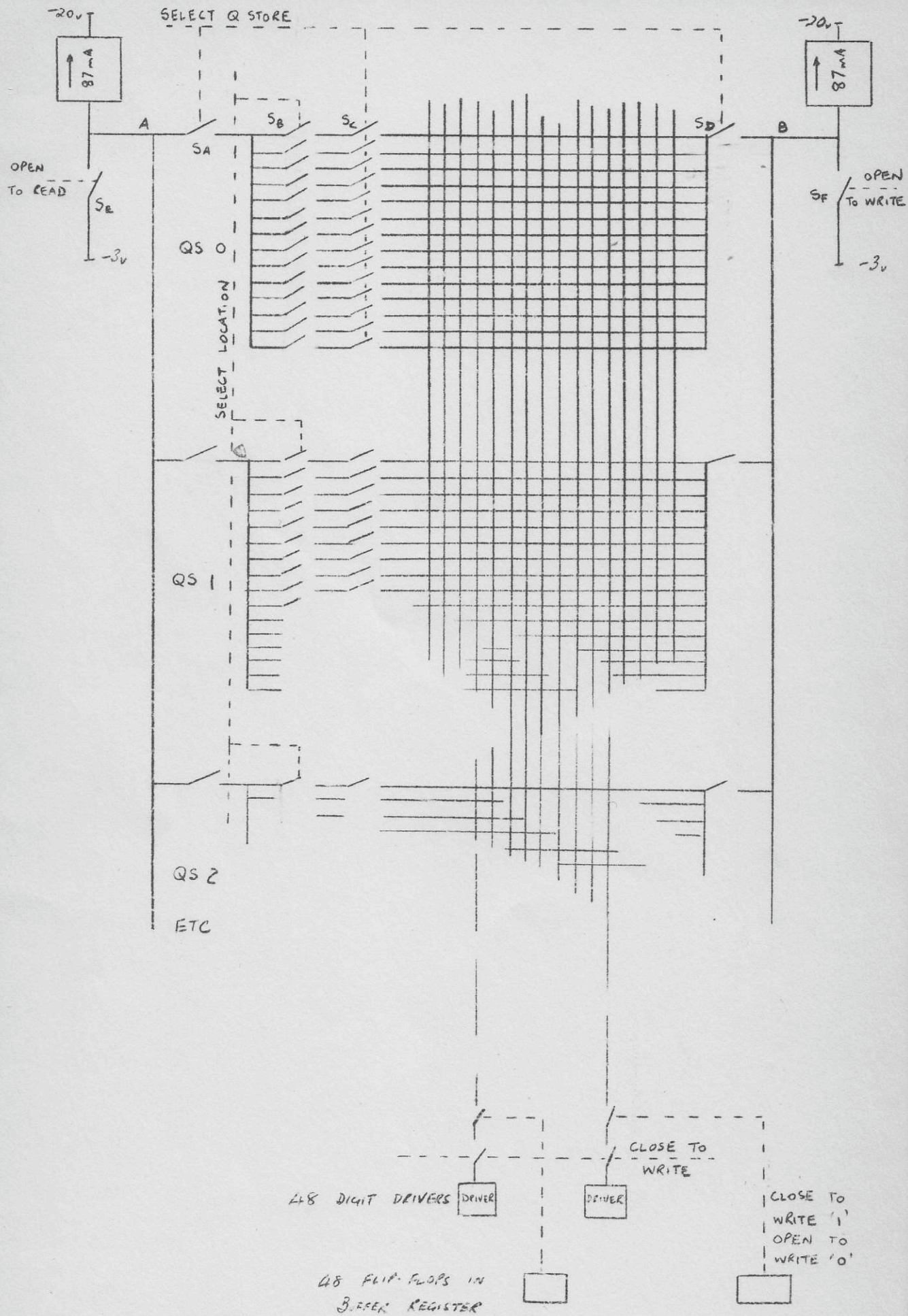
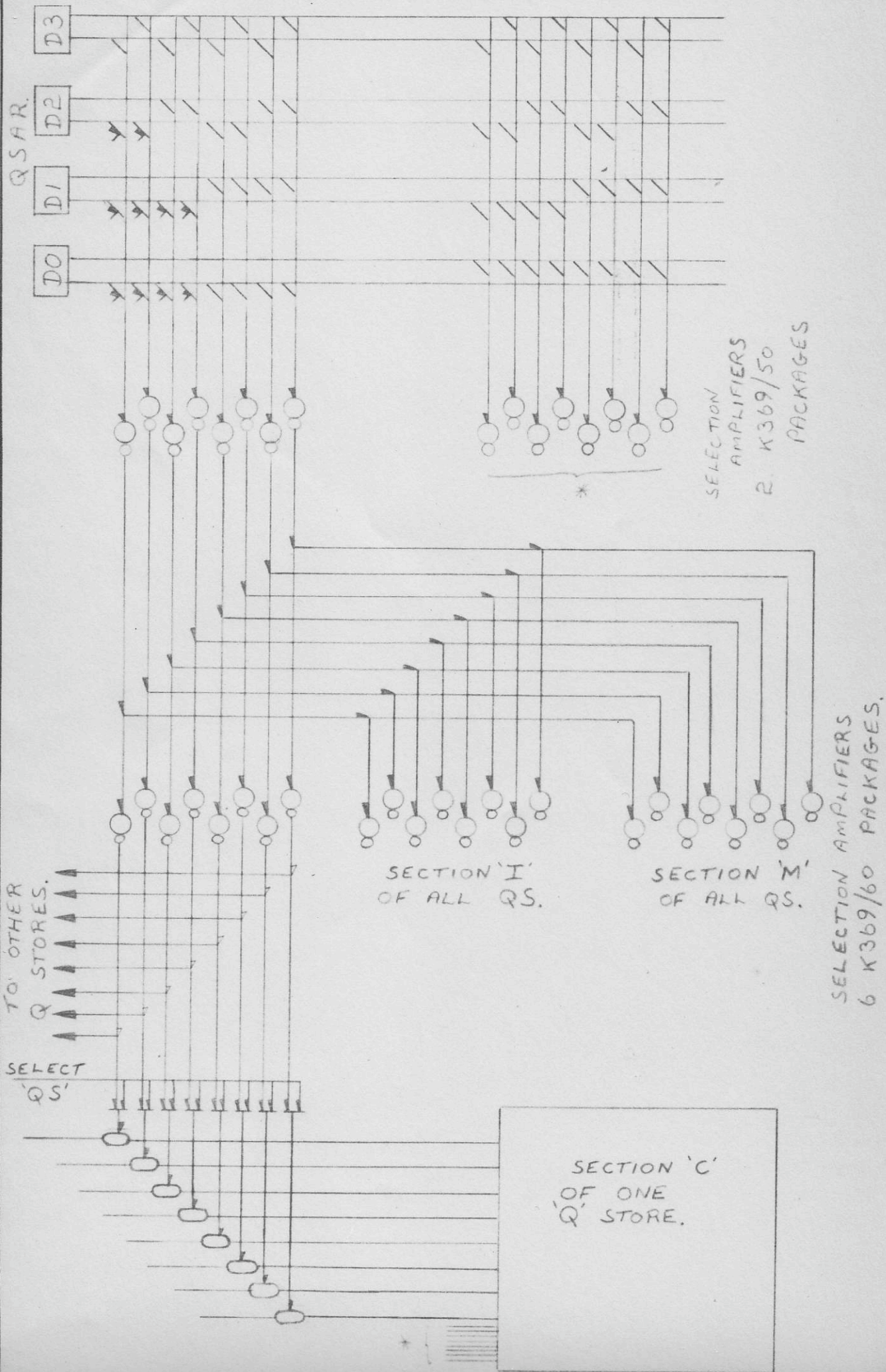
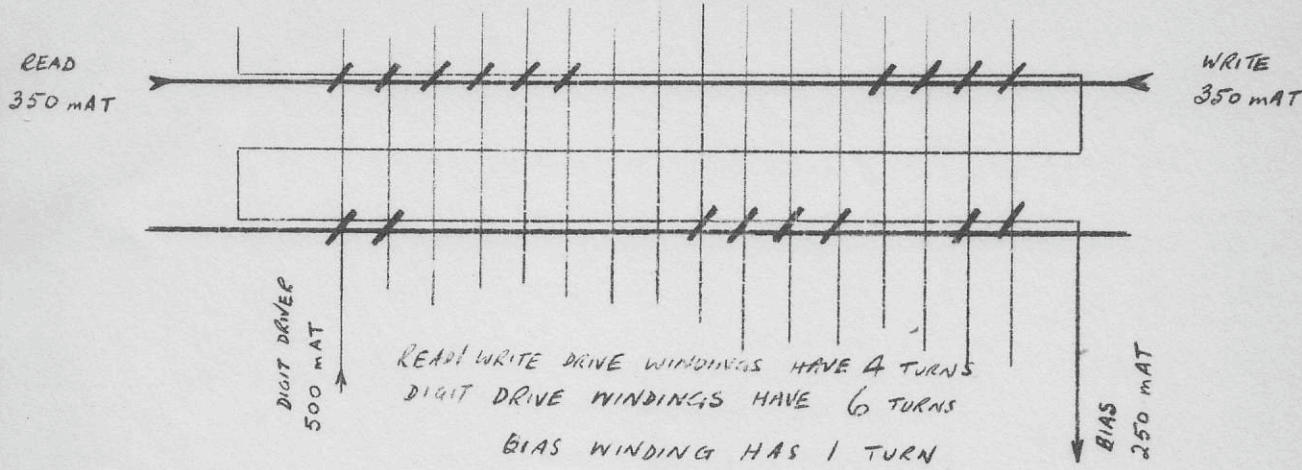


FIG 22

1 K544
PACKAGE

ADDRESS DECODING
1 K443/10
PACKAGE





DRIVE WHEN READING :

READ DRIVE	350
PLUS BIAS	250
	<u>600</u>

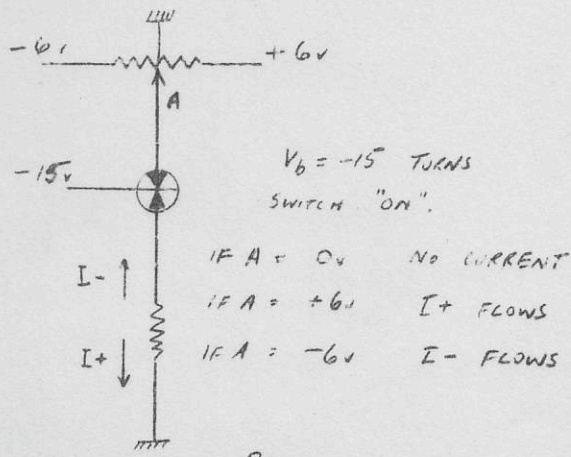
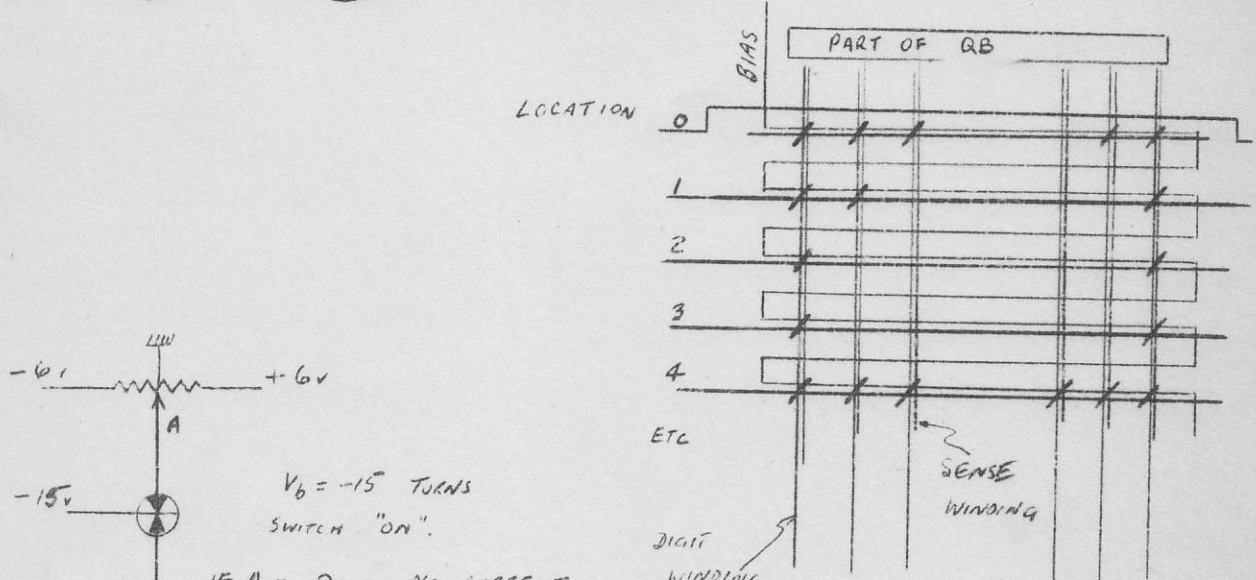
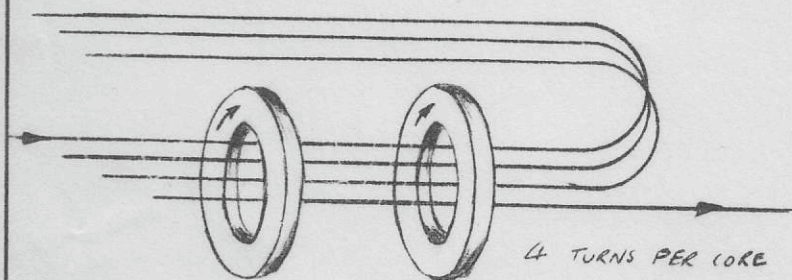
DRIVE WHEN WRITING :

WRITE DRIVE	350
PLUS DIGIT DRIVE	500
LESS BIAS	250
	<u>600</u>

Q STORE

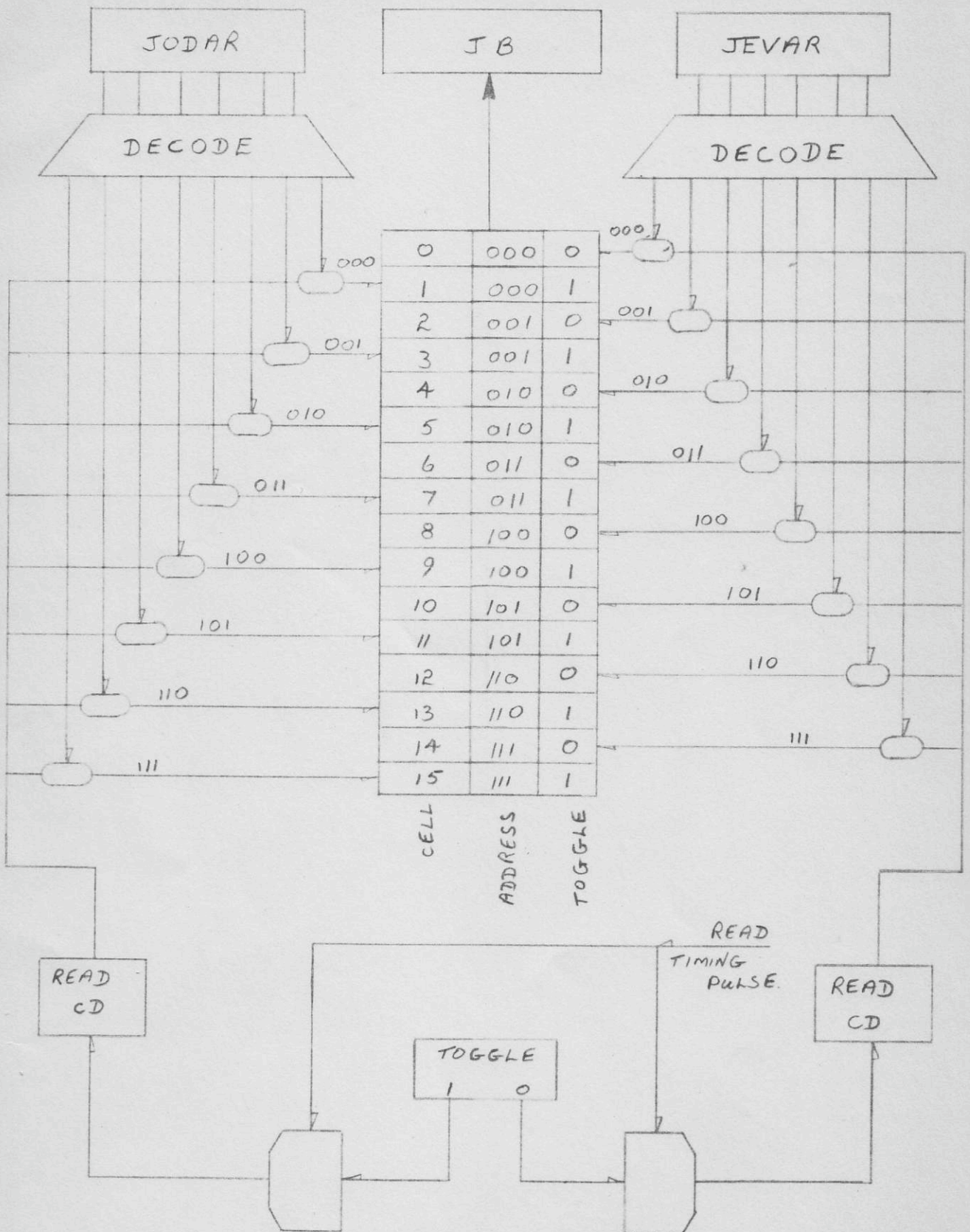
ARRANGEMENTS
FOR OVER DRIVING

FIG 21

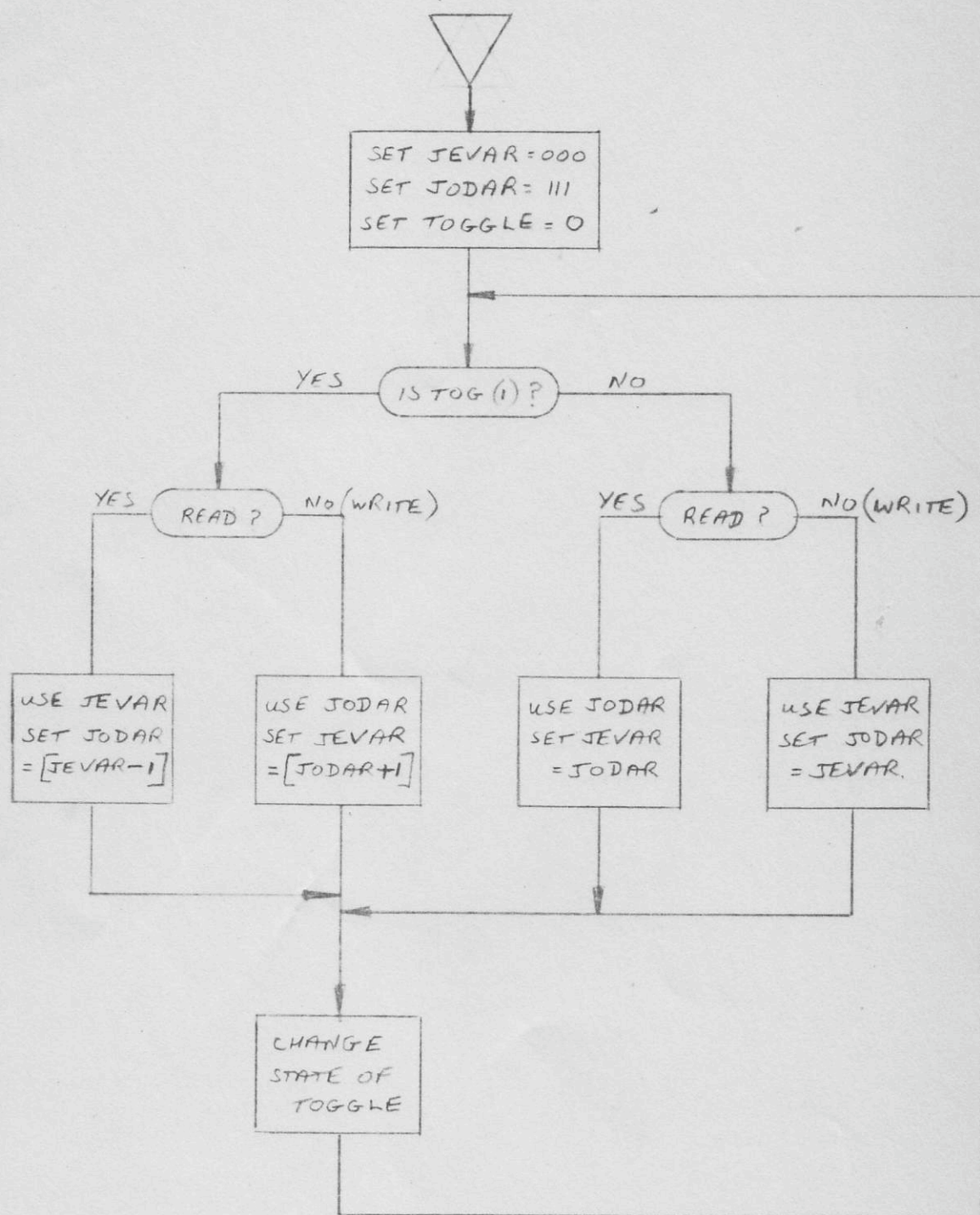


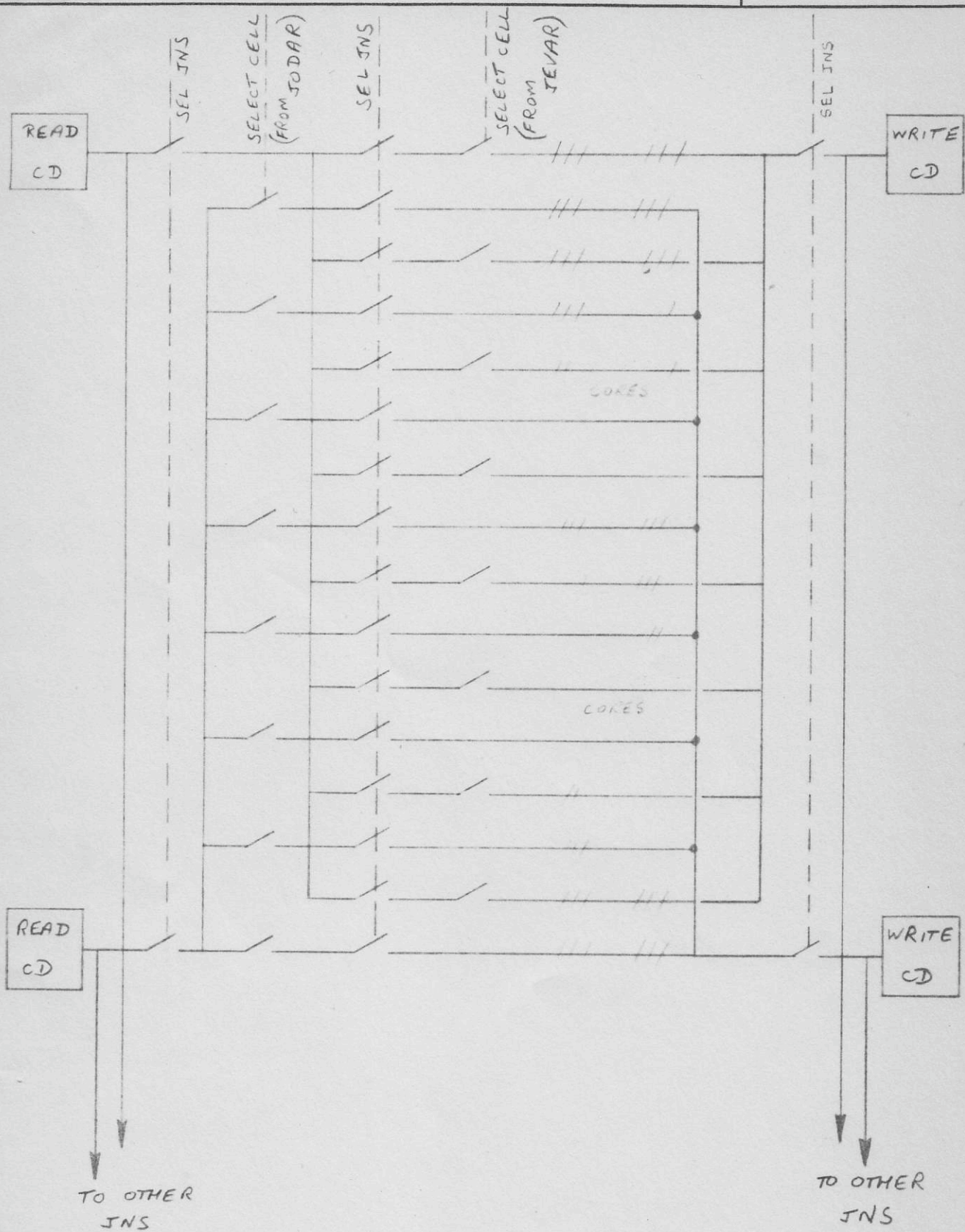
BILATERAL SWITCH

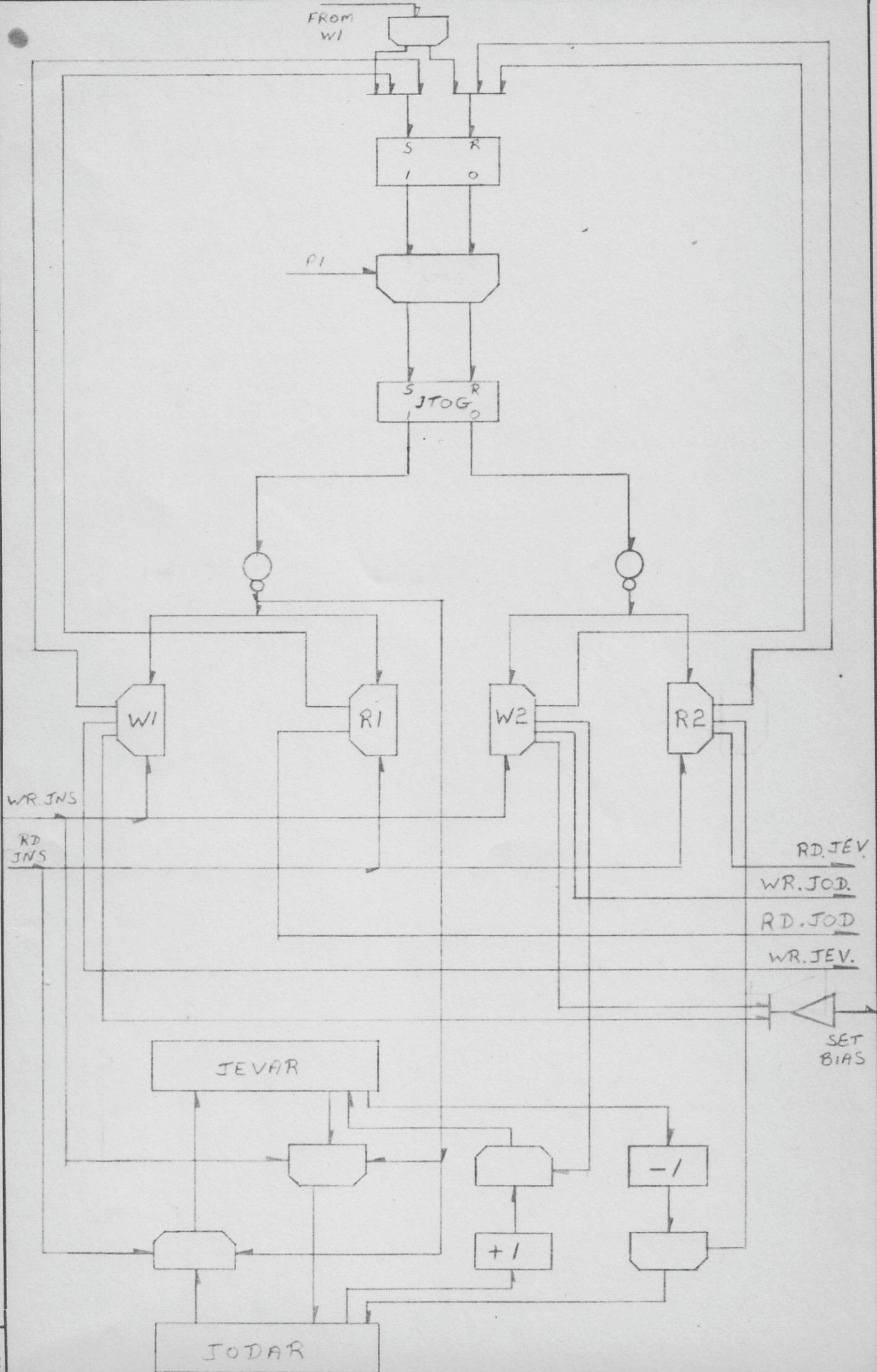
FIG 24



ARRANGEMENTS FOR
WRITE DRIVE ARE SIMILAR







+1 COUNTER

JODAR			JEVAR								
X	Y	Z	A	B	C	SA	RA	SB	RB	Sc	Rc
0	0	0	0	0	1	0	ϕ	0	ϕ	1	0
0	0	1	0	1	0	0	ϕ	1	0	0	1
0	1	0	0	1	1	0	ϕ	ϕ	0	1	0
0	1	1	1	0	0	1	0	0	1	0	1
1	0	0	1	0	1	ϕ	0	0	ϕ	1	0
1	0	1	1	1	0	ϕ	0	1	0	0	1
1	1	0	1	1	1	ϕ	0	ϕ	0	1	0
1	1	1	0	0	0	0	1	0	1	0	1

-1 COUNTER

JEVAR			JODAR								
A	B	C	X	Y	Z	Sx	Rx	Sy	Ry	Sz	Rz
0	0	0	1	1	1	1	0	1	0	1	0
0	0	1	0	0	0	0	ϕ	0	ϕ	0	1
0	1	0	0	0	1	0	ϕ	0	1	1	0
0	1	1	0	1	0	0	ϕ	ϕ	0	0	1
1	0	0	0	1	1	0	1	1	0	1	0
1	0	1	1	0	0	ϕ	0	0	ϕ	0	1
1	1	0	1	0	1	ϕ	0	0	1	1	0
1	1	1	1	1	0	ϕ	0	ϕ	0	0	1

+1 COUNTER

SB

				X
	0	ϕ	ϕ	0
Z	1	0	0	1
				Y

SB = Z.Y

RB

				X
	ϕ	0	0	ϕ
Z	0	1	1	0
				Y

RB = Z.Y

SA

				X
	0	0	ϕ	ϕ
Z	0	1	0	ϕ
				Y

SA = Z.Y.X

RA

				X
	ϕ	ϕ	0	0
Z	ϕ	0	1	0
				Y

RA = Z.Y.X

CONT

OVER LEAF

-1. COUNTER.SY

		A	
		1	0
		0	1
c		0	0
		0	0
		B	

$$SY = \overline{C} \cdot \overline{B}$$

RY

		A	
		0	1
		1	0
c		0	0
		0	0
		B	

$$RY = \overline{C} \cdot B$$

SX

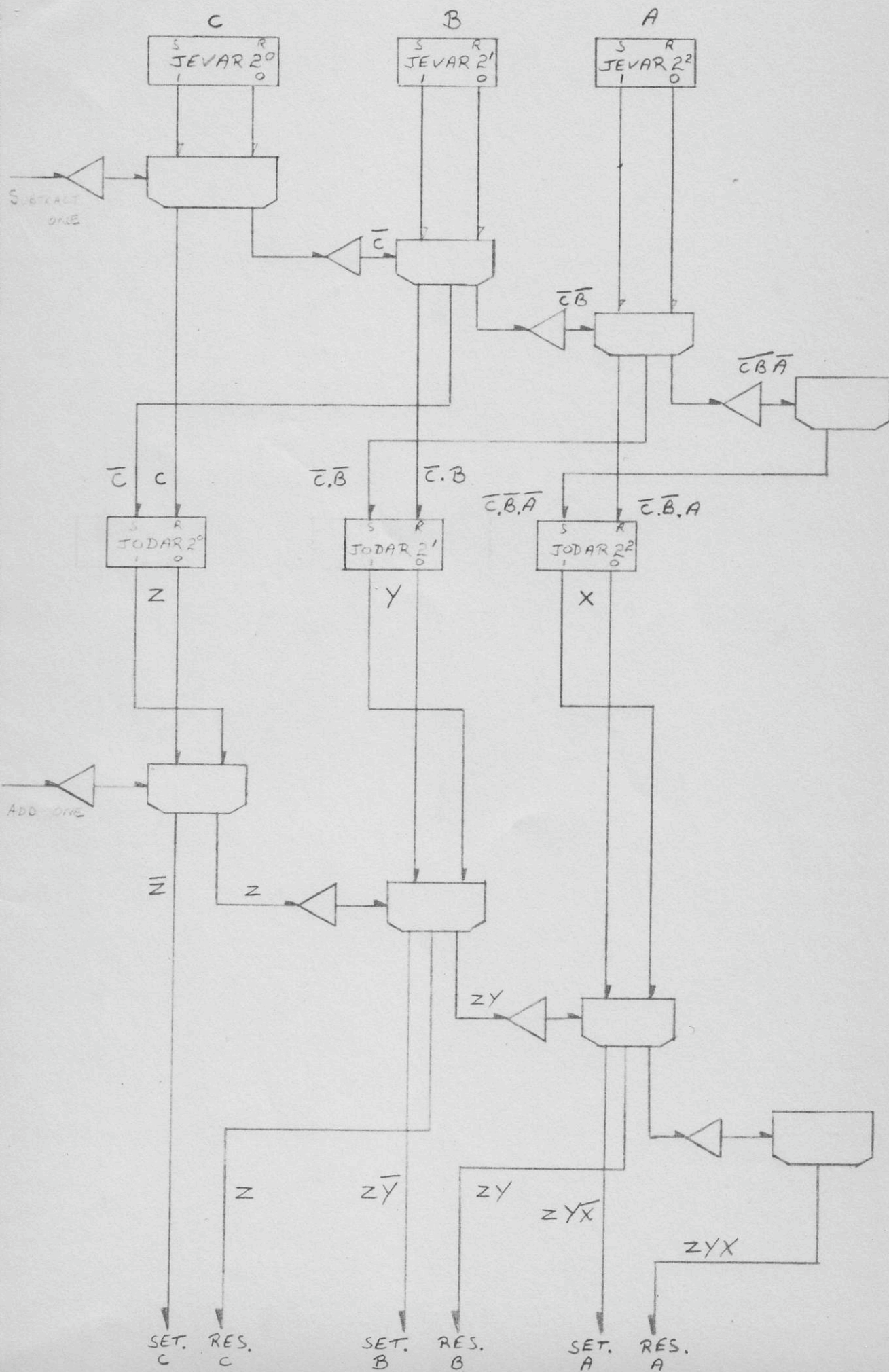
		A	
		1	0
		0	0
c		0	0
		0	0
		B	

$$SX = \overline{C} \overline{A} \overline{B}$$

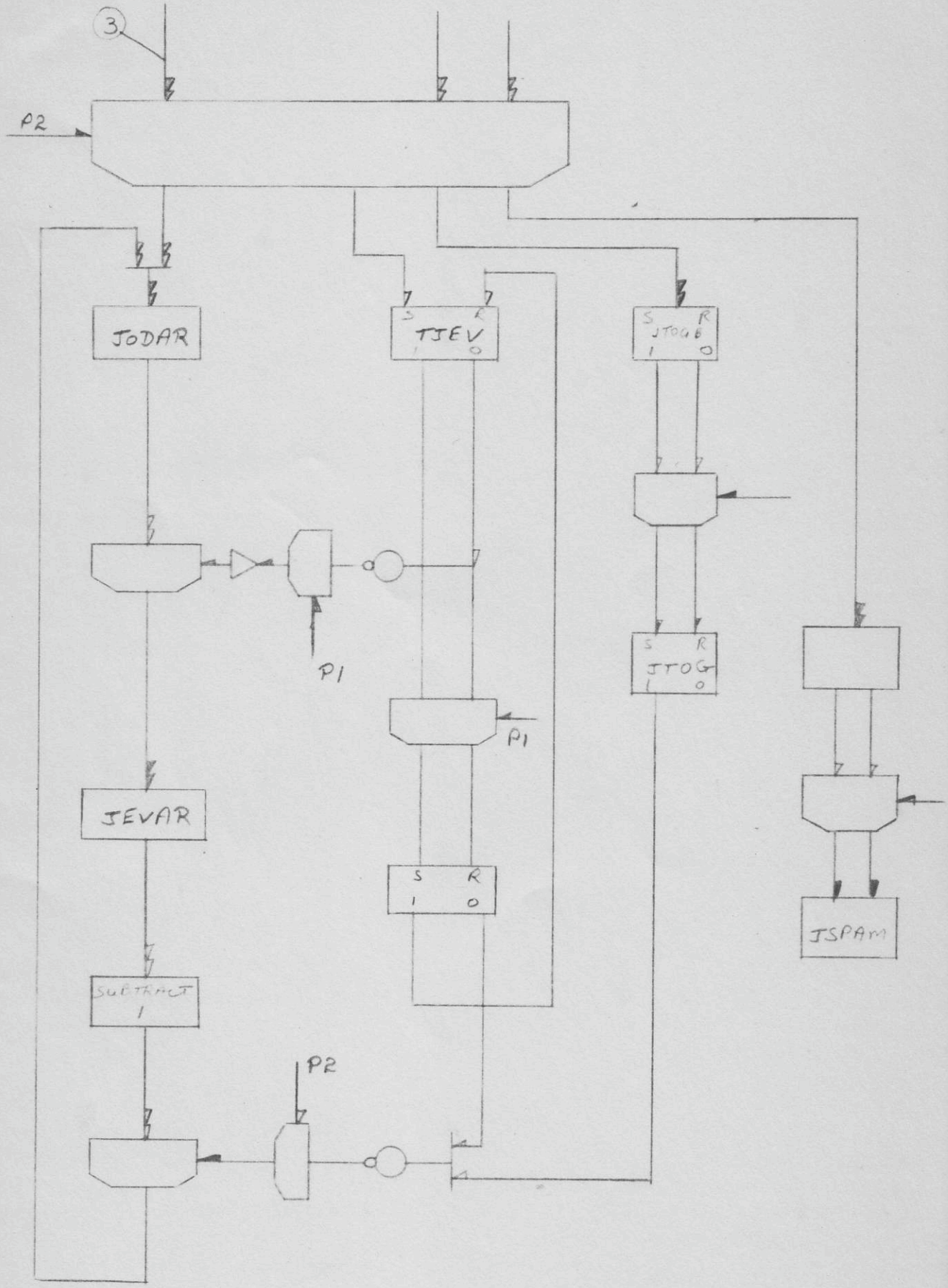
R

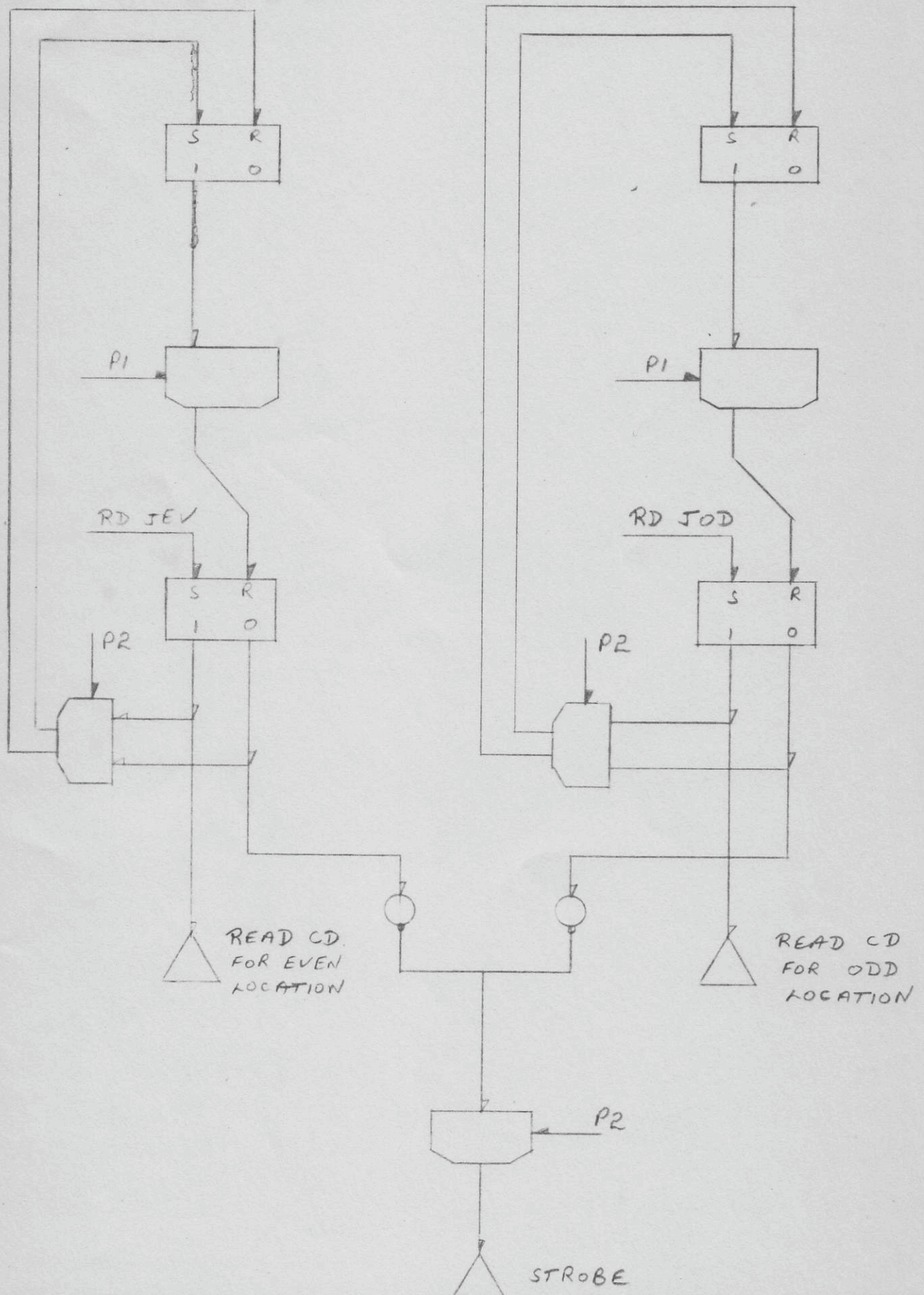
		A	
		0	0
		0	1
c		0	0
		0	0
		B	

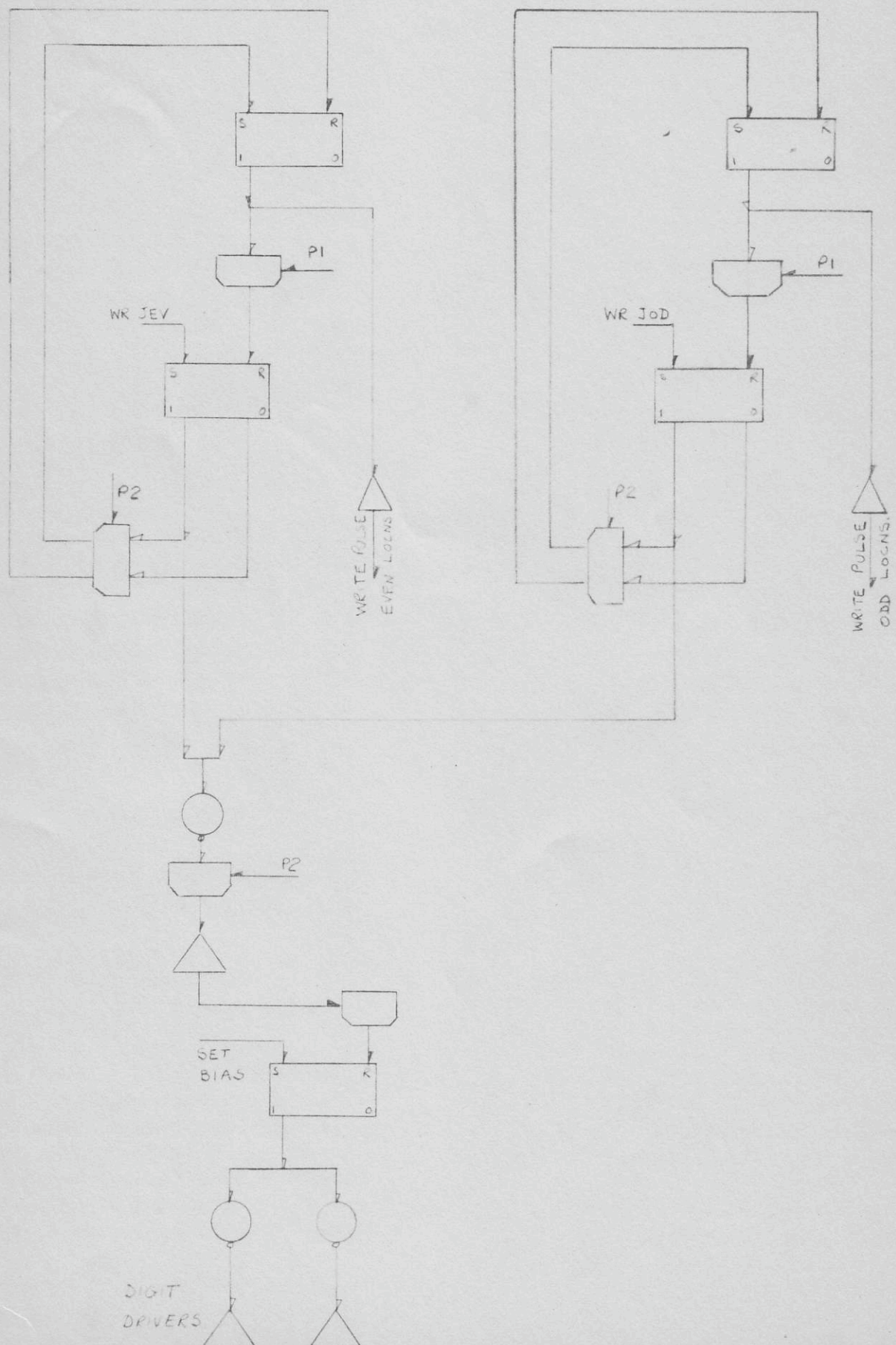
$$RX = \overline{C} \overline{B} A$$



FROM W1





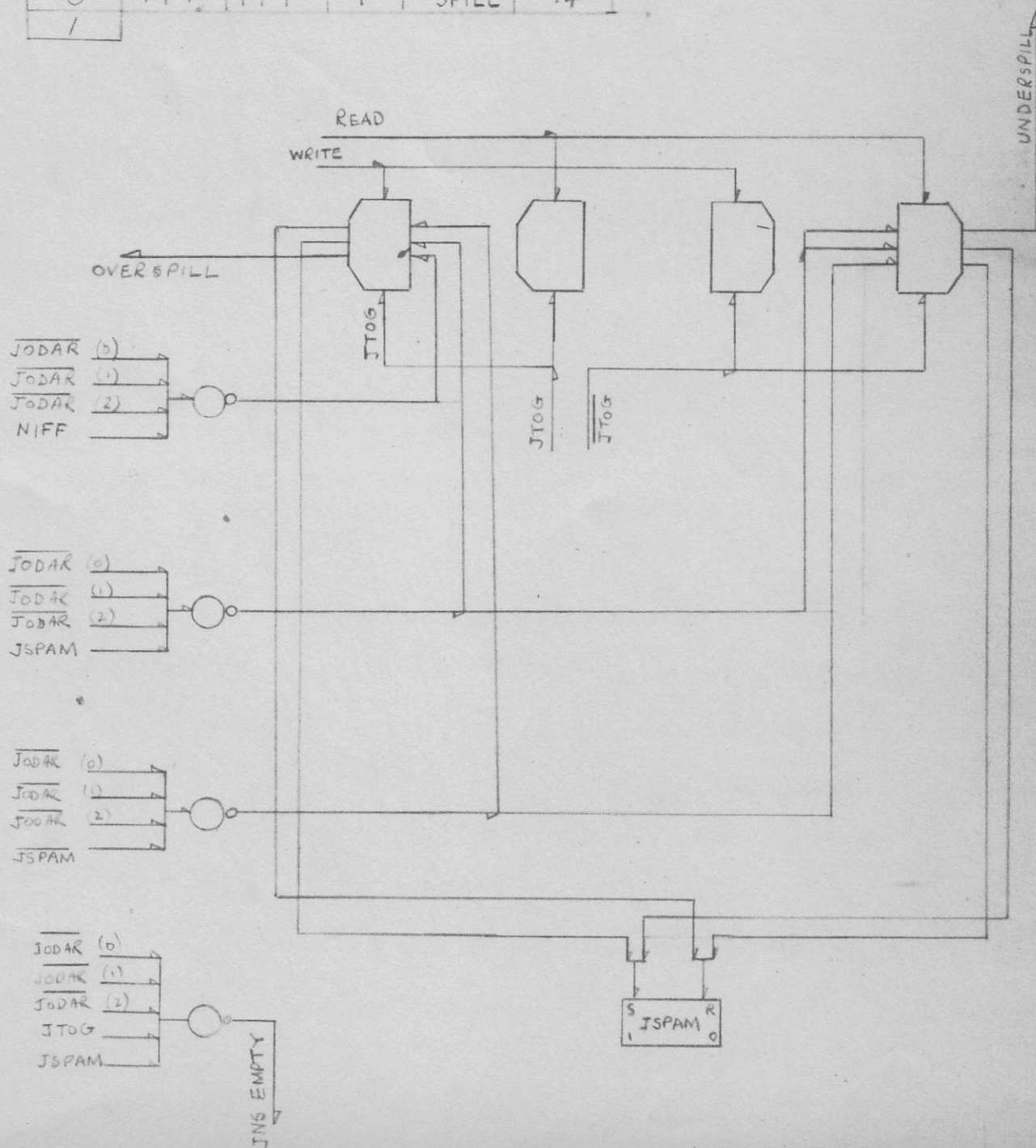


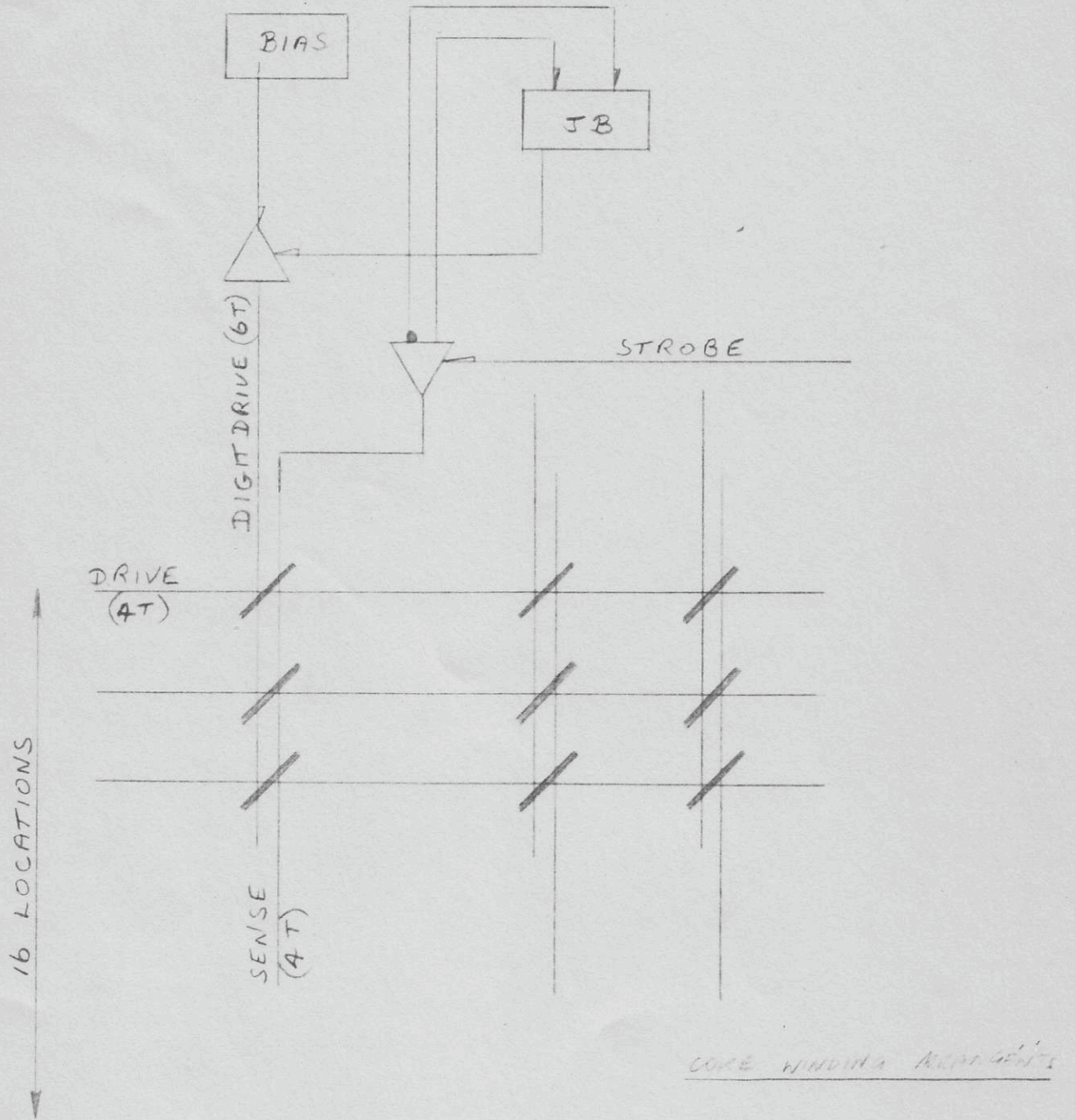
JSPAM	JEVAR	JODAR	JTOG	WRITE CELL NO	READ CELL NO
1					
0	000	111	0	0	SPILL
0	000	000	1	1	0
0	001	000	0	2	1
0	001	001	1	3	2
0	010	001	0	4	3
0	010	010	1	5	4
0	011	010	0	6	5
0	011	011	1	7	6
0	100	011	0	8	7
0	100	100	1	9	8
0	101	100	0	10	9
0	101	101	1	11	10
0	110	101	0	12	11
0	110	110	1	13	12
0	111	110	0	14	13
0	111	111	1	SPILL	14
1					

JNS EMPTY IF:
 $\overline{JTOG} \cdot \overline{JSPAM} \cdot JODAR = (111)_2$

UNDERSPILL IF:
 $READ \cdot \overline{JSPAM} \cdot \overline{JTOG} \cdot JODAR = (111)_2$

OVERSPILL IF:
 $WRITE \cdot JTOG \cdot JODAR = (111)_2$





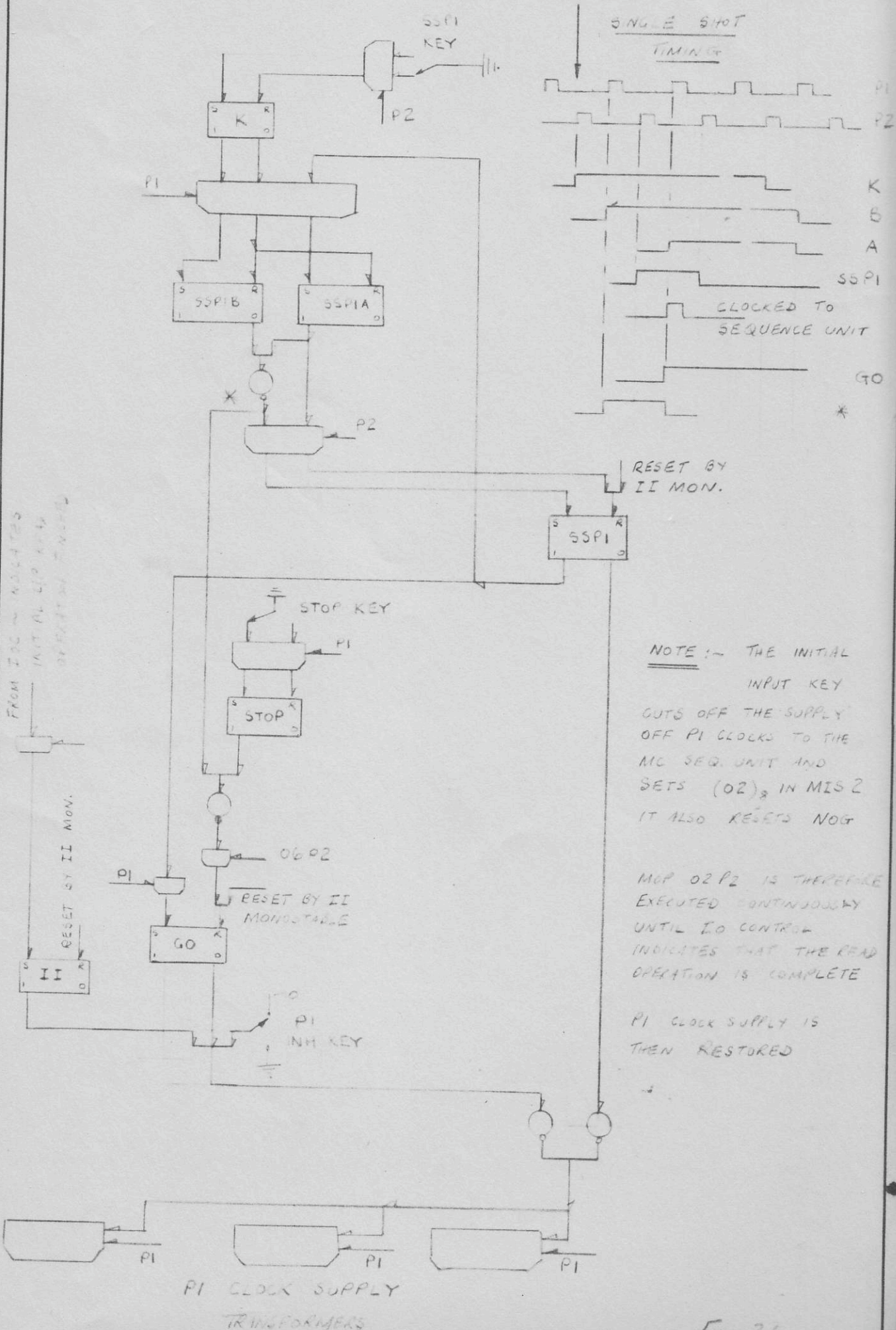


Fig 36