NELSON RESEARCH LABORATORIES
STAFFORD E. E. CO. LTD.

DEUCE Programme No. 49. (ZP05/1)

Synchronise Display (One Card).

SUMMARY.

The attached document contains working details of a DEUCE Programme which ensures that m.c.0 of a subsequent programme corresponds to the first row of delay lines displayed on the monitor screen.

This (a) assists the location of particular delay line storage positions when testing programmes.

(b) enables visual programme surgery to be applied.

(c) ensures correct alignment of display in programmes using the screen as a form of output.

The result of the programme is similar to that of DEUCE Programme No. 18 (ZP05) but the new programme uses only one card.

The programme was prepared and tested at N.R.L., Blackheath.

DEUCE Programme No. 49. (ZP05/1).

Synchronise Display (One Card).

OPERATING INSTRUCTIONS.

1. Place the "Synchronise Display" card immediately after the initial card of the main programme.

2. Clear I.D. and switch display to [illegible].

3. Press initial input key:
   Routine feeds in and stops at 30-A X
Display shows two consecutive rows of ones which are in m.c's 31 and 0.

4. Give single-shots until the rows are in top and bottom positions of display.

5. Set something other than zero on I.D. and give a further single-shot.

6. The main programme then reads in automatically with m.c.0 corresponding to the top line on display.

It will be found that the double and quadruple store display as well as the delay lines will be in order with m.c.0 at the top. Similarly the display switched to T.S. Count shows on the top row the contents of T.S. Count in m.c.0.

7. The routine clears all stores except D.L.2. The I.D. may be cleared, if necessary, whilst the main programme is running in.

N.B. If the desired condition with the two rows of ones in the top and bottom positions of display is not obtained at the first attempt, up to fifteen further attempts may be made. After this the programme will break down, entering a fast loop; further single-shots will not then affect the position of the rows on display.

MATHEMATICAL PHYSICS LABORATORY.

METHOD.

Input to the machine depends upon the result of obeying 0-0 X. (m.c.0).

The routine ensures that 0-0 X enters T.S. Count in the m.c. defined by the top row of display.

At each single-shot the routine modifies the instruction which places the two rows of ones in D.L.A. When source 0 is non-zero, read is stimulated, the modified instruction is shifted up so that its modified wait number becomes a timing number; and it is then obeyed, taking its next instruction from that m.c. of D.L.8 (assumed to be clear) which corresponds to the top row of display.

The programme employs initial input instructions on rows Y, X, 0, 1 which;

(a) places rows 2 to 8 inclusive in D.L 2, m.c's 0-6.

(b) places row 9 in both m.c's. of D.S.21.

When an instruction is modified by adding to the wait number and then shifting up 9 places to form a new instruction, overflow may affect the "GO" digit of the new instruction.

To overcome this difficulty a word of the form $(2\ I + P_1)$ is planted into both m.c's of D.S.21.

The instruction 22_2-0 1 then sends I (GO) into T.S. Count; the "GO" digit coming from 21_3.

After modification to the wait number, $(2\ I + P_1)$ is shifted up 9 places to form a word of the form $2\ I'$. Ones are then sent to 21_3 so that the instruction 22_2 - 0 1 sends I' (GO) into T.S. Count; the "GO" digit again coming from 21_3.

It is over modification to the wait number, causing spill into the timing number, which causes the programme to break down after 16 circulations of the two rows of ones in display.

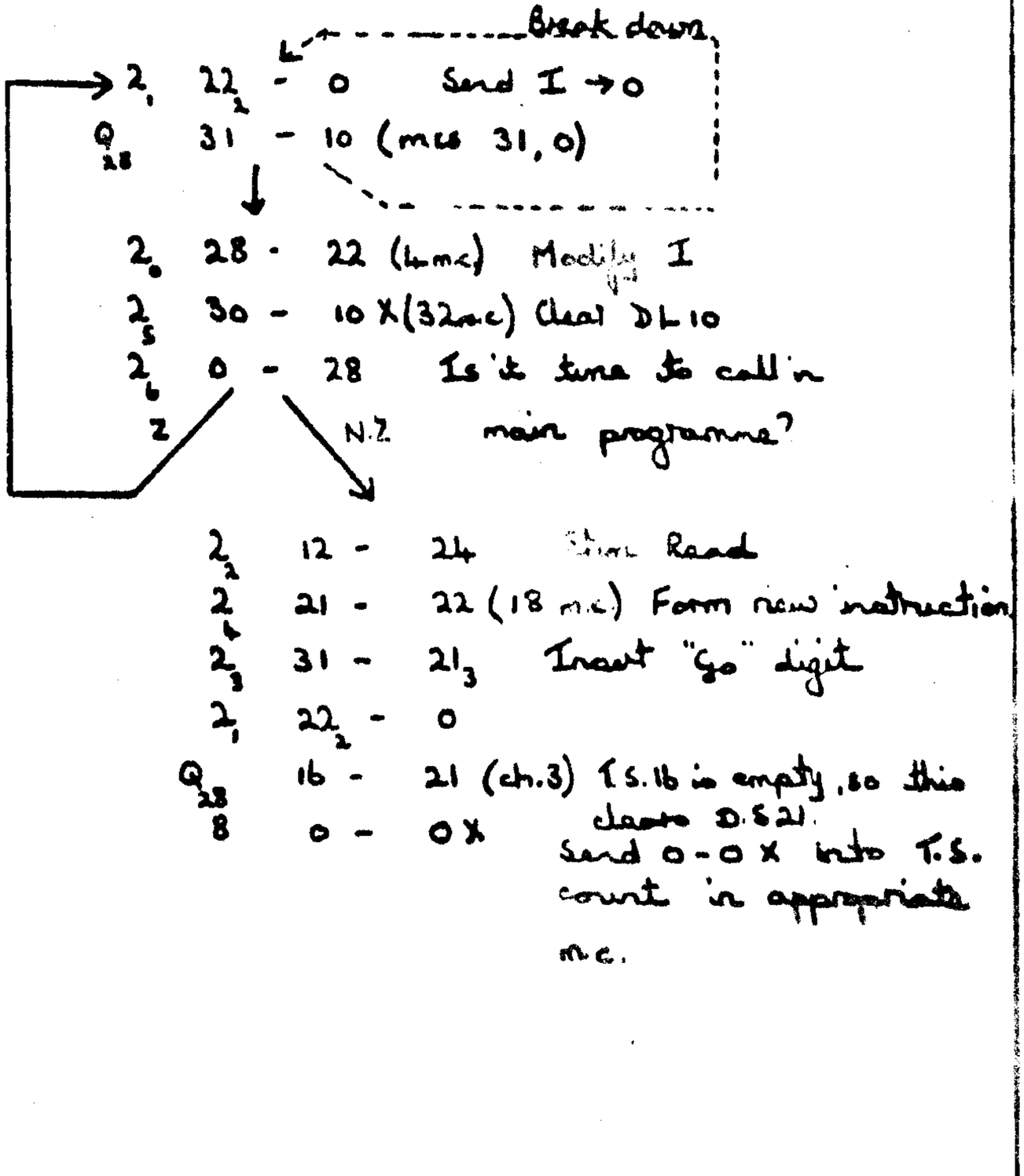
T. D. Westrup.

D.L. 2 Track

Card Nos.

TRIG	NOS	S	D	C	W	T		
	0	0	2	1	29	28	X	Y
	2	0	2		30	31	X	X
	2	0	2		3	28	X	0
	2	0	21	2	1	24	X	1
0	2	28	22	1	0	3		2
1	0	22	0	1	25	25		3
2	2	12	24		0	0		4
3	2	31	21		0	28		5
4	2	21	22	1	2	29		6
5	2	30	10	1	0	31	X	7
6	2	0	28		0	25		8
7	11	31	10	0	6			9
8								Y
9								X
10								0
1								
12								2
13								3
14								4
15								5
16								6
17								7
8								8
19								9
20								Y
21								X
22								0
23								1
24								2
25								3
26								4
27								5
28								6
29								7
30								8
1								9

to $21_{2,8}$ P_{31}



FLOW DIAGRAM AND CODING FOR PROGRAMME NO 49 (ZP06/1) Synchronise Display.

Date

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