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NELSON RESEARCH LABORATORIES

STAFFORD  
LONDON COMPUTING SERVICE.

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Reference

Order No.

Telephone:—Stafford 700.

Front Sheet  
Data Sheets 1-2  
Figure Sheet S6/10799.

DEUCE Subroutine No. 204 (B08)

Report by  
P.J. LordinSUMMARY

The attached document contains details of a DEUCE Subroutine to fetch consecutive tracks to consecutive DL's as instructed by a codeword, which has been prepared and tested by London Computing Service.

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LONDON COMPUTING SERVICE

Description.

The subroutine is entered with a codeword to fetch track T to DL D.

If  $D \neq 1$  it re-enters itself with the codeword modified to fetch  $T - 1$  to  $D - 1$ .

If  $D = 1$  it enters the program just read at 1<sub>30</sub>

Data.

A codeword  $TxP1 + DxP17$  (+ P32 if pseudo-stoppers are required for program testing - see below ( $0 \leq T < 256$  and  $1 \leq D < 11$ )).

Uses.

- (a) 3 mcs of the previous program
- (b) 12<sub>29-31</sub> (this is merely suggested as convenient - see below)
- (c) 1<sub>30</sub> of the fetched program for the link

Result.

Tracks T to T-D+1 are put into DL's D to 1 (in that order) and the final version of the codeword, i.e.  $(T-D+1)xP1 + P1$  is left on the OPS lights.

Instructions for Use.

Stores Used.	13	14	15	16	11
Contents at entry	-	-	-	codeword	-
Contents at exit	-	-	15xP5	(T-D)xP1	Track T-D+1

Entry

1<sub>30</sub>  
This is most conveniently achieved by keeping the following link instructions permanently in DL12:

12 <sub>29</sub>	1 15 - 30	0 0
12 <sub>30</sub>	1,15 - 31	0 29
12 <sub>31</sub>	1 11 - 1(1)	30 29

In addition a program to be followed by a fetched program must use 3 mcs to end as follows:-

codeword	- 16
12	- 1 (32 mcs)
1 <sub>30</sub>	

Occupies

Track 15/15

Obeys in DL1 (and obliterates itself)

Link punched in 1<sub>30</sub> of each program that it is used to fetch. In other words every fetched program must start in 1<sub>30</sub>. (If more than one point of entry to a program were required a link would have to be written on the drum before fetching it, but this requirement can always be avoided by planting, with the previous program, parameters that are used by the fetched program).

Failure Indication

1, 24-27(GO) means that the subroutine is attempting to obey a codeword with a P31. (A later version of this subroutine will use such codewords specially).

- Program Testing Facilities. These can be used during testing to read a program section one track at a time or stop just before a particular transfer or go back to the beginning of any required section. Each codeword to be obeyed is displayed on the OPS lights.
- Pseudo-Stoppers. A codeword with a P32 is a pseudo-stopper. Before obeying a pseudo-stopper the machine will stop at 1, 1-1X and carry on after a one shot. A P32 on the ID will turn any codeword being obeyed into a pseudo-stopper.
- Pseudo-Request-Stop. If a codeword about to be obeyed is on the ID it will be turned into a pseudo-stopper.
- Pseudo-External-Track. After stopping at a pseudo-stopper and calling CONT TIL manually a one shot will replace the codeword to be obeyed with the contents of the ID.
- Clock Track. This subroutine incorporates a "P31-clock-track" which may be synchronised with by using SET OR SYNC CLOCK TRACK.
- Notes.
- (a) This program is a first order subroutine in so far as it leads out at 130.
  - (b) The program testing facilities can be cut out by changing the timing number of mc 2 from 0 to 24.
  - (c) If D = 12, DL's 12, 10-1 are filled and the track that goes to DL11 is lost. Any link instructions in DL12 are overwritten.

March, 1957.

D.L.		Track 15/15		Card Nos.			
mc	NIS	S	D	C	W	T	Y
	1	0	-	1	26	25	X
	1	0	-	1	30	31	X
	1	9	-	24	0	29	X
0	1	23	-	14	1	6	16
1	1	1	-	13	0	2	
2	1	16	-	15	0	0	
3	1	0	-	30	0	1	
4	1	0	-	14	0	0	
5	1	24	-	14	1	15	18
6	1	8	-	24	0	0	
7	1	2	-	24	0	19	
8	1	13	-	27	0	0	Y
9	1	13	-	14	0	5	X
10	1	14	-	27	0	0	0
11	1	8	-	24	0	0	1
12	1	26	-	28	0	31	2
13	1	13	-	29	0	11	3
14	1	13	-	29	0	12	4
15	1	27	-	26	0	0	5
16	1	24	-	27	0	29(1)	6
17	1	13	-	16	0	0	7
18	1	1	-	13	0	3	8
19	1	1	-	15	0	1	9
20	1	11	-	1	1	0	31
21		15P <sub>5</sub>					X
22	1	1	-	13	0	1	0
23	1	14	-	25	0	2	1
24	1	0	-	31	0	2	2
25	1	25	-	25	0	0	3
26	1	1	-	1	0	11	X
27		13	-	0	0	0	5
28	1	28	-	26	0	11	6
29	1	0	-	13	0	12	7
30	1	16	-	13	0	2	8
31							9

