Z.501/22

THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES
STAFFORD
MATHEMATICAL PHYSICS LABORATORY.

Telephone:—Stafford 700.

Report No. NS t 14
Date 2.4.55
Reference
Order No.

Front Sheet.
Data Sheet 1.
Figure sheet S6/10017

DEUCE Subroutine No. 19 (B01)

Report by
C. Robinson.

SUMMARY.

The attached document contains working details of a DEUCE subroutine for altering a basic instruction word.

The subroutine, prepared at N.P.L., and tested at N.R.L. is a literal translation of the corresponding ACE Pilot Model Subroutine.

C. ROBINSON.
MATHEMATICAL PHYSICS LABORATORY.

NW

Description. This subroutine, which is always stored in DL1, constructs the required instruction from a basic instruction stored in TS13 and a Wait No. in TS14. It is particularly useful when using more than one D.L. as a continuous store.

If the basic instruction is N, A-B, c, W, T, and the Wait No. in TS14 is (32a + b), than the instruction formed and obeyed in m.c. 30 is

N (A+a)-B, c, W+b, T if the subroutine is entered in 1_{24} (Fetch)

N A-(B+a), c, W+b, T if the subroutine is entered in 1_{23} (Store)

N A-B, c, W+b, T if a = 0 is which case the subroutine may be entered in 1_{26} (Modify)

Thus 'Fetch' transfers $(A+a)_{W+b}$ to B, and 'Store' transfers A to $(B+a)_{W+b}$

Instructions for Use.

Stores Used.	13	14	
Contents at entry.	I	$(32a+b)P_{17}$	for "Fetch" or "Store"
		bP_{17}	for "Modify"
Contents at exit.	I_1	aP_5	for "Fetch"
		aP_{10}	for "Store"
		bP_{17}	for "Modify"

where I_1 is the appropriate modified instruction.

Occupies. D.L.1 m.c. 16, 21, 23-28

Constants available. 13-0 in 1_{28}

D.L.		Track					
Card Nos.							

mc	NIS	S	D	C	W	T		
								Y
								X
								0
								1
0								2
1								3
2								4
3								5
4								6
5								7
6								8
7								9
8								Y
9								X
10								0
11								1
12								2
13								3
14								4
15								5
16	1	24	14	l	0	8		6
17								7
18								8
19								9
20								Y
21	1	24	14	l	0	3		X
22								0
23	1	14	25		0	0		1
24	1	14	25		0	1		2
25	1	23	14	l	1	21		3
26	1	14	25		0	0		4
27	1	23	14	l	4	24		5
28	0	13	0		0	0		6
29								7
30								8
31								9

Instruction I in TS13
Wait number in TS14

"FETCH" "MODIFY" "STORE"

I_{24} 14 - 25
I_{27} 23 - 14 (21mc)
I_{21} 24 - 14 (4mc)

I_{23} 14 25
I_{25} 23 - 14 (21mc)
I_{16} 24 - 14 (9mc)

I_{26} 14 - 25
I_{28} 13 - 0
Q_{30}

Next instruction Quasi 30

Flow Diagram and Coding for Subroutine B01
Fetch, Store and Modify.

Date
File Ref.
Sheet Ref. S6/10017