THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES
STAFFORD
MATHEMATICAL PHYSICS LABORATORY.

Telephone:—Stafford 700.

Report No. NS t 107
Date 5.1.56.
Reference
Order No.

Front Sheet.
Data Sheet 1.
Figure sheet S6/10389

DEUCE Subroutine No. 117 (P13F/2)

Report by
N.G. Dowell

SUMMARY.

The attached document contains details of a DEUCE Subroutine for punching a vector of floating numbers in a manner convenient for tabulation. The subroutine has been prepared and tested at N.R.L., Blackheath.

N G Dowell

MATHEMATICAL PHYSICS LABORATORY

NW

Description. Converts a floating vector to decimal and punches one element per card in the manner of P13F/1. Punching is continuous when the size of the elements allow but a pause is introduced if a particular element needs a long period for conversion.
Second Order.

Data. $x_1, x_2, \ldots, x_n$ in s.f.b. in D.L. $A_{m,m+1,\ldots,m+2n-1}$

$(n \leq 16)$

s the number of significant decimal digits required per element.

Uses. 13 - 0 in 1_{28} Subroutine P13F/1 in D.L's B, B+1, B+2, B+3.

Result. $x_1, \ldots, x_n$ converted to decimal and punched one per card in a floating field i.e. decimal point between cols. 12 & 13.

Failure. See P13F/1 (No. 112).

Error. Rounded-off after s significant digits.

Instructions for Use.

Stores Used.	13	14	15	16	18_0	19_2	19_3	20	21
Contents at Entry.	Link	-	-	-	-	n	-	-	-
Contents at Exit.		-	-	-	-	0	-	-	-

Occupies. 1_{28}, B, B+1, B+2, B+3, C_{0-11}

Entry. C_{10}

Time. As for P13F/1, plus 3 m.s.

Parameters.

P13F/2 Add $(B+3)\ P_2$ to C_9
Add $AP_5 + (n-2)\ P_{17}$ to C_3

P13F/1 Add $(19-s)\ P_{17}$ to $(B+1)_{22}$
Put $2^{31}\ 10^{1-s}$ in B_{12}
Put $|b_1|$ in $(B+3)_1$
Put b_u in $(B+3)_4$

Constants available. See P13F/1

Waste Instructions. C_7 (1 0-0 0 22) This may be clear punch if desired.

NOTE. b_1 and b_u must be carefully chosen (see P13F/1) to achieve maximum speed.

D.L. 6 Track

Card Nos.

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

B = 2 C = 6

b_{10} 13 - 1_{31}

b_1 b_3 - 13 [b A - 21 d (m-2) 0]

→ b_5 28 - 25 (2 m.c)

b_8 13 - 18_0

1_{28} 13 - 0

Q_{30} $(A_{n,m+1} - 21_{2,3})$

b_0 19_2 - 13

b_2 27 - 26

b_4 13 - 27

+ ↓ → −

b_6 13 - 19_2 b_7 0 - 0 or 9 - 24

b_9 b_{11} - 13 1_{31} LINK

S_{14} P13 F/1

1_{30} $(b_{11}$ 18_0 - 13)

FLOW DIAGRAM AND CODING FOR SUBROUTINE No 117 (P13 F/2)

Punch floating vector in a floating field. (continuously)

Date DEC. 1955

File Ref.

Sheet Ref. 56/10384

NELSON RESEARCH LABORATORIES, THE ENGLISH ELECTRIC CO.. LTD. STAFFORD, ENGLAND