Z.501/22

THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES
STAFFORD
MATHEMATICAL PHYSICS LABORATORY.

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Report No. NS t 16
Date 2.4.55
Reference
Order No.

Front Sheet.
Data Sheet 1.
Figure sheet S6/10019

DEUCE Subroutine No. 21. (PO6D)	Report by A. Gilmour.

SUMMARY

The attached document contains details of a DEUCE subroutine for converting a double length binary number to decimal and punching it out on a card together with sign.

The subroutine was originally prepared at N.P.L., has been tested on the N.P.L. DEUCE at Blackheath and has been copied into all instruction delay lines and tested in each.

A. GILMOUR.

MATHEMATICAL PHYSICS LABORATORY.

NW

Description. Converts double length binary number to decimal and punches on card together with sign. First order subroutine.

Data.

a the binary number given to p binary places. $|a| < 10$, $44 \leq p \leq 59$

$a = 2^{32}a_1 + a_2$.

S the number of decimal digits in the result $(S \leq 19)$

Result.

a is converted to decimal form and punched on card with sign (Y positive, X negative) in DEUCE column 1 and S decimal digits in DEUCE columns 2 to (S+1). The decimal point lies between columns 2 and 3.

TIME: 2 m.s before Y-row single shot
$\frac{2}{3}$ m.s. after 9-row " "

Instructions for Use.

Stores used.	13	14	15	16	17_1	17_3	19	20	21	TCB
Contents at entry.	Link	-	-	-	-	-	-	-	a	OFF
Contents at exit.	-	-	-	-	-	-	-	-	-	OFF

Occupies. D.L. 2_{0-31} and 3_{0-25}

Entry in. 3_{19}

Parameters. $\frac{1}{2} \times 10^{-(S-1)}$ to 60 b.p. in 3_{10}

P_{S+2} in 3_{24}

(2p-88) as wait number in 3_6

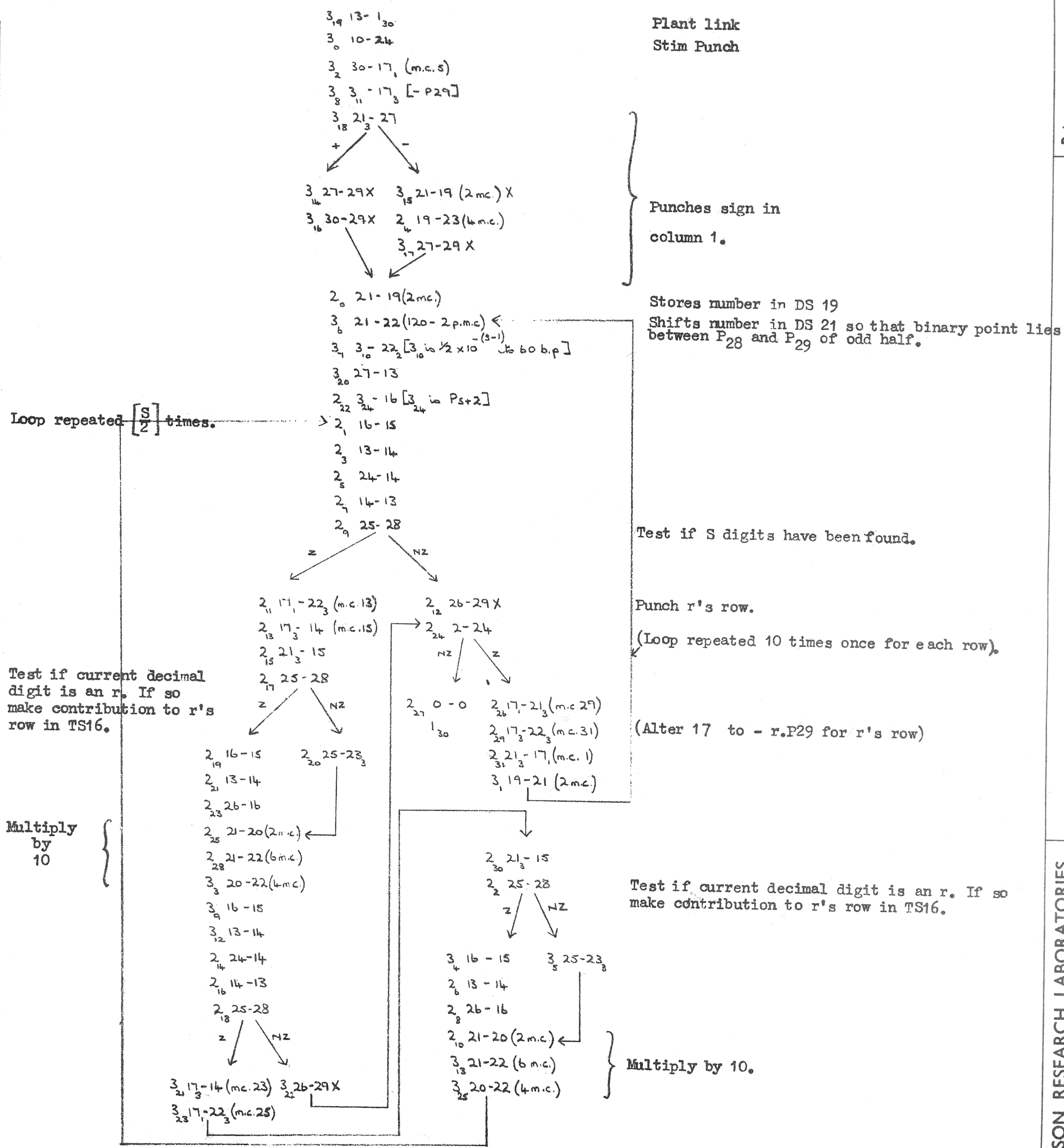
Constants available. -P29 in 3_{11}

Waste instruction. 1 0-0 0 1 in 2_{27}

Clear Punch. There is no instruction to clear the punch in the subroutine. The waste instruction in 2_{27} may be used for this purpose if required.

D.L. 2 Track — Card Nos. | D.L. 3 Track — Card Nos.

mc	NIS	S	D	C	W	T		mc	NIS	S	D	C	W	T		
																Y
																X
																0
																1
0	3	21	19	d	0	4		0	3	10	24		0	0		2
1	2	16	15		0	0		1	3	19	21	d	0	3		3
2	3	25	28		0	0		2	3	30	17		1	4		4
3	2	13	14		0	0		3	3	20	22	l	1	4		5
4	3	19	23	l	8	11		4	2	16	15		0	0		6
5	2	24	14		0	0		5	2	25	23		0	3		7
6	2	13	14		0	0		6	3	21	22	l	2p-88	31		8
7	2	14	13		0	0		7	3	3	22		1	11		9
8	2	26	16		0	0		8	3	3	17		1	8		Y
9	2	25	28		0	0		9	3	16	15		0	1		X
10	3	21	20	d	0	1		10		$\frac{1}{2}\times10^{-(s-1)}$ to 60 b.p.						0
11	2	17	22		0	0		11		− P29						1
12	2	26	29		0	10	X	12	2	13	14		0	0		2
13	2	17	14		0	0		13	3	21	22	l	5	10		3
14	2	24	14		0	0		14	3	27	29		0	0	X	4
15	2	21	15		0	0		15	2	21	19	d	0	19	X	5
16	2	14	13		0	0		16	2	30	29		0	14	X	6
17	2	25	28		0	0		17	2	27	29		0	13	X	7
18	3	25	28		0	1		18	3	21	27		1	26		8
19	2	16	15		0	0		→ 19	3	13	1		9	11		9
20	2	25	23		1	3		20	2	27	13		0	0		Y
21	2	13	14		0	0		21	3	17	14		0	0		X
22	2	3	16		0	9		22	2	26	29		0	0	X	0
23	2	26	16		0	0		23	2	17	22		0	5		1
24	2	2	24		0	0		24		Ps+2						2
25	2	21	20	d	0	1		25	2	20	22	l	3	6		3
26	2	17	21		1	1		26								4
27	1	0	0		0	1		27								5
28	3	21	22	l	0	5		28								6
29	2	17	22		0	0		29								7
30	2	21	15		1	2		30								8
31	3	21	17		0	0		31								9



Date

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Sheet Ref. S6/10019

Coding and Flow Diagram for subroutine PO6D.
Punch double length number.

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