

## THE ENGLISH ELECTRIC CO., LTD.

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NELSON RESEARCH LABORATORIES

STAFFORD

Report No. NS t 57

Date 16.8.55

DEUCE Subroutine No.64 (MO4/1)

Reference

Order No.

Report by N.P.L.

Front Sheet.

Data Sheet 1.

Figure sheet S6/10158

SUMMARY.

The attached document contains details of a DEUCE Subroutine which has been prepared and tested by N.P.L.

C. Robinson.

MATHEMATICAL PHYSICS LABORATORY.

NW

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NS t 57

Sheet No. : 1

Description.

This first order subroutine for signed multiplication with shift and round-off is faster than MO4 (No.5) if  $0 \leq s \leq 4$ .

Data.

a, b, and s the shift  $0 \leq s \leq 16$

Result.

$c = 2^s ab$

Instructions for Use.

Stores Used.	13	14	16	$21_2$	$21_3$
Contents at Entry.	Link	b	a	-	-
Contents at Exit.	-	b	a	Remainder plus $2^{31}$ .	c

Occupies.

m.c. 8-17, 27, 28 and 30.

Entry.

m.c. 8

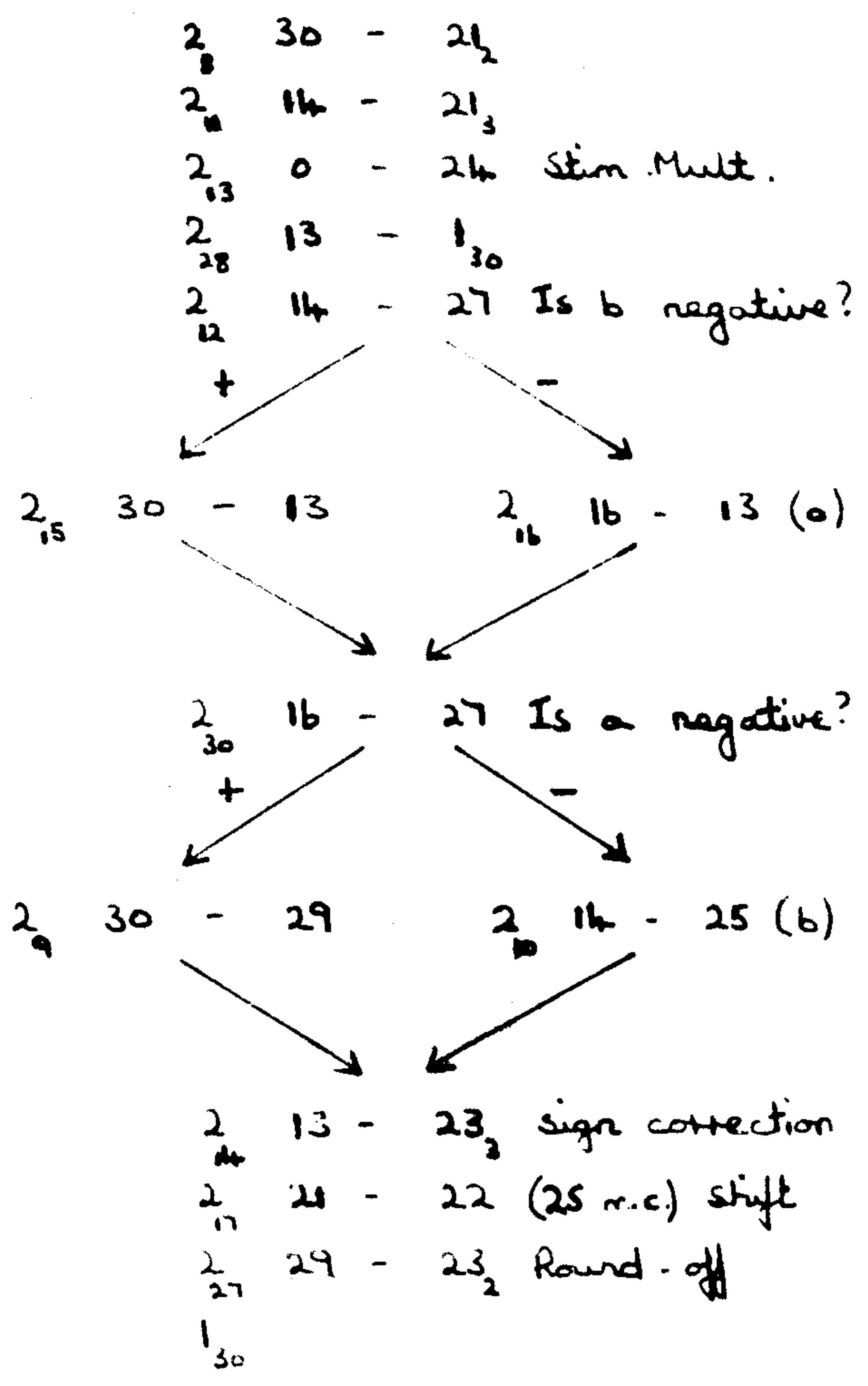
Time.

$2\frac{3}{4}$  m.s. if  $0 \leq s \leq 4$  ;  $3\frac{3}{4}$  m.s. if  $5 \leq s \leq 16$

Parameters.

Add  $(41 - 2s)$  as Wait No. to m.c. 17 unless  $s = 0$  in which case alter destination to 21.

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	2	30	21	0		1	Y
9	2	30	29	0		3	X
10	2	14	25	0		2	0
11	2	14	21	0		0	1
12	2	14	27	0		1	2
13	2	0	24	0		13	3
14	2	13	23	1		1	4
15	2	30	13	0		13	5
16	2	16	13	0		12	6
17	<del>2</del>	<del>21</del>	<del>22</del>	1	W-25	8	7
18							8
19							9
20							Y
21							X
22							0
23							1
24							2
25							3
26							4
27	1	29	23	1		1	5
28	2	13	1	0		14	6
29							7
30	2	16	27	0		9	8
31							9



FLOW DIAGRAM AND CODING FOR SUBROUTINE  
 NO 44 (MO6/1). Fast signed multiplication.

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