

THE ENGLISH ELECTRIC CO., LTD.

NELSON RESEARCH LABORATORIES

STAFFORD

MATHEMATICAL PHYSICS LABORATORY.

Telephone:—Stafford 700.

Report No. NS t 86

Date 31.10.55.

Reference

Order No.

Front Sheet.

Data Sheet 1.

Figure sheet 36/10295

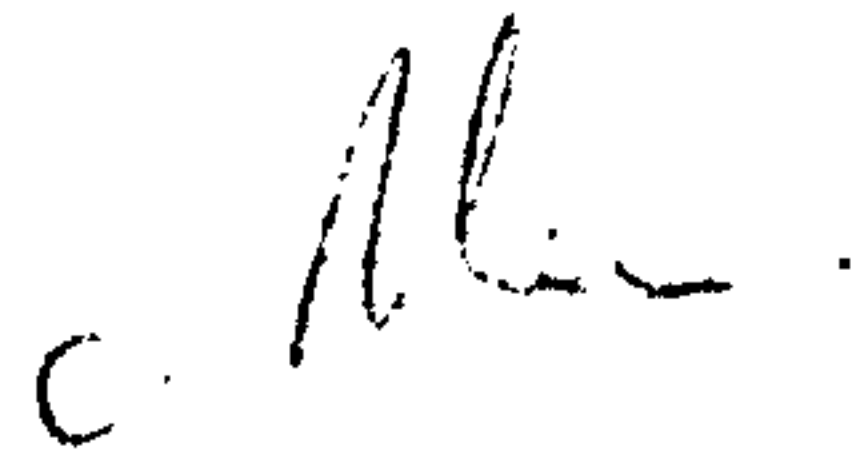
DEUCE Subroutine No. 95 (D15D)

Report by

N.P.L.

SUMMARY.

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



MATHEMATICAL PHYSICS LABORATORY.

NW

NELSON RESEARCH LABORATORIES
STAFFORD E. E. CO. LTD.

NS t 86

Sheet No.: 1

Description. First order subroutine giving double-length quotient of two double-length numbers, where the dividend is not restricted to be less than the divisor. (Programmed division).

Data. a, b, double length numbers.
p, $31 \leq p \leq 61$

Result. $c = 2^p \cdot a/b$ to nearest odd integer (Double-length).

Failure. 3 7-24 if $n + p > 61$, i.e. the answer is too large.
2 7-24 if $b = 0$.

Uses. D12D (No. 66). (Since this is used at the end, the link is planted straight into 1₃₀).

Instructions for Use.

Stores Used.	13	14	15	16	19	20	21
Contents at entry.	Link	-	-	-	-	a	b
Contents at exit.	-	-	-	-	⊗	⊗	c
Occupies.	D.L.3 m.c. 0-7, 9-13, 15- 19 , 21 and D.L.2 m.c. 0-9, 11, 13-31 for D12D (No. 66).						
Entry.	3 ₂₈						
Time.	$n + p + 9$ m.s.						
Parameters.	3 ₉ is P _{p-30} , 3 ₁₂ is P _{62-p} .						

NOTE: The divisor is first moved up relative to the dividend n places until $|a| < 2^{n+1} |b|$. If this makes $n + p > 61$ there is a failure indication.

⊗ 19 and 20 do not contain b at the end of the routine, but a shifted version of it.

D.L. 3		Track					
Card Nos.							
mc	NIS	S	D	C	W	T	
							Y
							X
							0
							1
0	3	21	28	2	0	28	2
1	3	20	12	0	0	4	3
2	3	30	13	0	0	0	4
3	3	15	14	0	0	0	5
4	3	20	26	1	1		6
5	3	23	15	0	0	4	7
6	3	15	28	0	0	9	8
7	3	3	14	0	0	1	9
8							Y
9							X
10			P_{030}				0
10	3	3	15	0	0	1	0
11	3	16	14	0	0	0	1
12			P_{02}				2
13	3	21	27	0	0	0	3
14							4
15	3	21	26	0	0	2	5
16	3	21	25	1	1		6
17	3	7	24	0	0	30	7
18	3	21	19	2	0	2	8
19	3	27	25	0	0	0	9
20	3	13	2	2	0	16	Y
21	3	13	27	0	0	0	X
22	3	20	21	2	0	1	0
23	3	21	22	2	1	2	1
24	3	14	13	0	0	0	2
25	2	19	20	2	1	3	3
26	3	29	25	0	0	1	4
27	3	24	16	0	0	6	5
28	3	13	1	0	0	2	6
29	3	15	2	17	21		7
30	2	0	0	0	0	1	8
31	3	20	27	0	0	0	9

