S.R.43

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Front Sheet.

Data Sheet 1.

Figure Sheet S6/10025.

DEUCE Subroutine No. 26 (M01/1)

Report by
C. Robinson.

SUMMARY.

The attached document contains working details of a DEUCE Subroutine for signed multiplication of two single length numbers. It is slightly faster than M01.

The subroutine has been prepared, tested, copied into all instruction delay lines and tested in each, at N.R.L.

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Description. Fast, Signed Multiplication without shift or round off. The coding is slightly faster than M01, allowing entry two minor cycles later.

Data. a, b the single length numbers to be multiplied.

Result. c = ab.

Instructions for Use.

Stores Used.	13	14	16	21
Contents at Entry.	Link	b	a	-
Contents at Exit.	-	b	a	c

Occupies. m.c. 20-25, 27-31.

Entry. m.c. 20.

Time. 2 major cycles 10 minor cycles.

D.L. 2 Track

Card Nos.

nic	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								6
17								7
18								8
19								9
20	2	30	24		0	1		Y
21	2	30	13		0	1		X
22	2	14	13		0	0		0
23	2	14	21		0	0		1
24	2	14	27		0	3		2
25	2	0	24		0	1		3
26								4
27	1	13	23		0	1		5
28	2	13	1		0	1		6
29	2	0	0		0	28		7
30	2	16	25		0	27		8
31	2	16	27		0	20		9

2_{20} $30 - 21_2$ Prepare DS21

2_{23} $14 - 21_3$

2_{25} $0 - 24$ Multiply

2_{28} $13 - 1_{30}$

2_{31} $16 - 27$ If a is negative

\+ −

2_{21} $30 - 13$ 2_{22} $14 - 13$ store b in 13

2_{24} $14 - 27$ If b' is negative

\+ −

2_{29} $0 - 0$ 2_{30} $16 - 25$ add a into 13

2_{27} $13 - 23_3$ and subtract the sign correction from the unsigned product.

1_{30} LINK

Mod f. M0/1/5

2_{17} $13 - 23_3$

2_{26} $1_{30} - 13$

1_{26}

Flow diagram and coding for subroutine M1/1.
Signed Multiplication.

Date

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