# PERMANENT MEMORANDUM



DATE

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SUBJECT Multiply Step and Divide Step Test Program

TO PDP Distribution List

ABSTRACT

This program is designed to test the multiply step and divide step instructions.

FROM

Lawrence Cleary

APPROVED BY Harlan E. Anderson

## Introduction

To test the multiply step and divide step instructions, a test number is put in the test word switches and written into memory. This number is then multiplied by itself. The product is then divided by the original test number. The result of this division is then compared with the original test number. If an error occurs, the program will halt at location 1066. If no error occurs, the program will continue looping. If another test number is to be used for this program, stop the program and put the new number in the test word switches.

## Operating Instructions

#1 With all sense switches down, load the reader with the test tape and push readin switch.

#2 After the tape reads in and reader stops, put the test number in the test word switches, and with a starting address of 1000 in the test address switch, press the start button.

#3 If a new test number is to be used, press the stop button and put the new number in the test word switches and press start button again.

```
1000        lat test number )      ,stores test word
1001        dac 100         )      ,in memory
1002        dac 101         )

1003        lac 100         )      ,takes absolute value
1004        spa             )      ,of test numbers
1005        cma             )
1006        dac 102         )

1007        scr 9           )      ,puts absolute factor
1010        scr 9           )      ,in IO

1011        cla                    ,clears AC

1012        mus 102         )      ,seventeen mus instructions
1013        mus 102         )      ,at the end of which the
1014        mus 102         )      ,AC has most significant
1015        mus 102         )      ,seventeen bits of the product
1016        mus 102         )      ,along with the sign bit.
```

```
1017        mus 102        )        ,The IO has the seventeen
1020        mus 102        )        ,least significant bits of
1021        mus 102        )        ,the product.
1022        mus 102        )
1023        mus 102        )
1024        mus 102        )
1025        mus 102        )
1026        mus 102        )
1027        mus 102        )
1030        mus 102        )
1031        mus 102        )
1032        mus 102        )

1033        sub 102                 ,first step of division

1034        dis 102        )        ,At the end of the add
1035        dis 102        )        ,instruction in 1056 the
1036        dis 102        )        ,IO has the quotient.
1037        dis 102        )        ,The AC has the remainder.
1040        dis 102        )
1041        dis 102        )
1042        dis 102        )
1043        dis 102        )
1044        dis 102        )
1045        dis 102        )
1046        dis 102        )
1047        dis 102        )
1050        dis 102        )
1051        dis 102        )
1052        dis 102        )
1053        dis 102        )
1054        dis 102        )
1055        dis 102        )
1056        add 102        )

1057        lac 100

1060        scr 9          )        ,puts quotient in AC and
1061        scr 9          )        ,original test number

1062        spi            )        ,takes absolute value of
1063        cma            )        ,quotient

1064        sas 100
1065        hlt
1066        jmp to start
```