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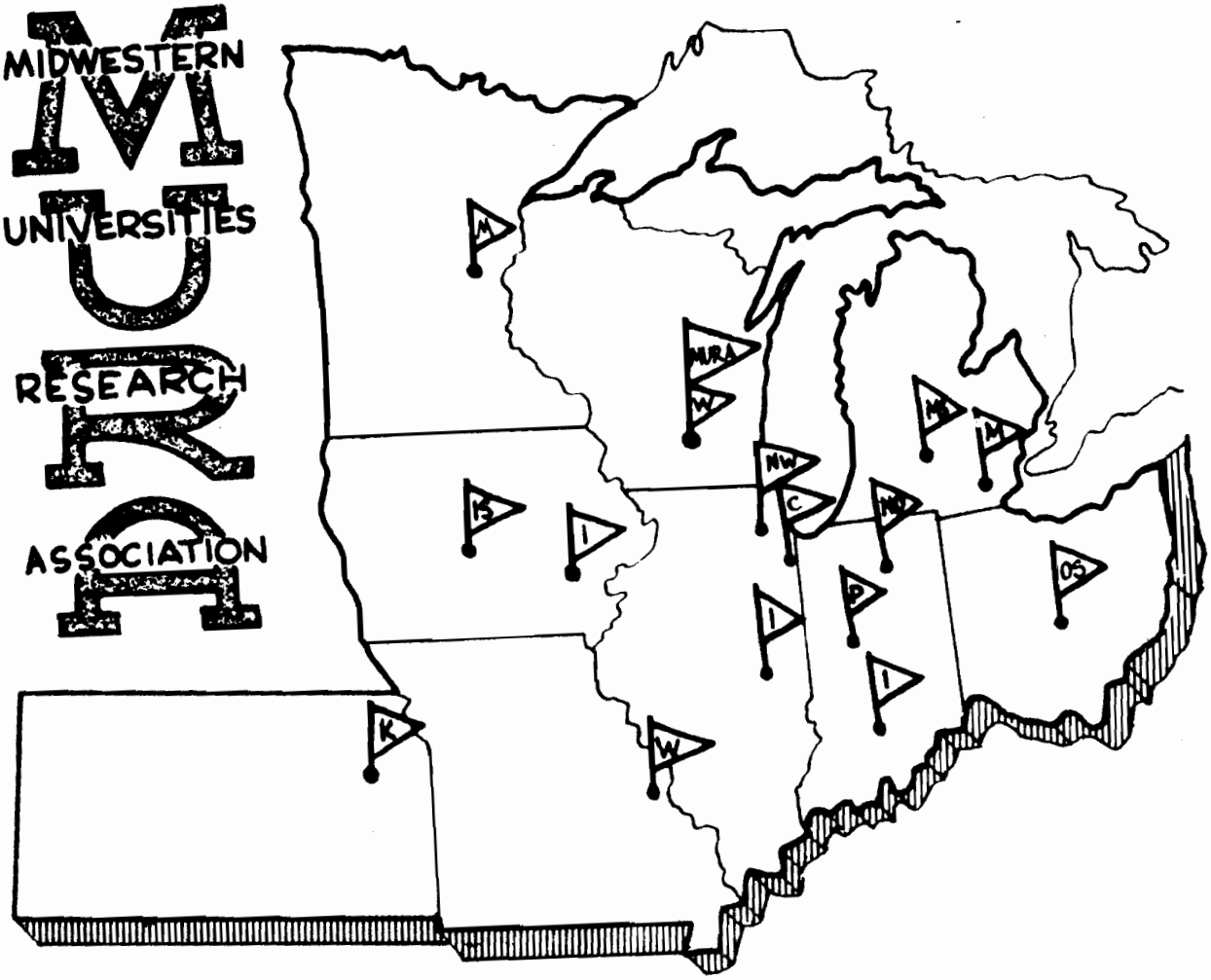


**REPORT** SCOPE GRID PLOTTER, MU SC01

**NUMBER** 401
Internal
IBM

| APPROVED BY |
| --- |
| M. Storm |

## IDENTIFICATION

Scope Grid Plotter, MU SC01

M. R. Storm - February 25, 1958

Midwestern Universities Research Association, Madison, Wisconsin

## PURPOSE

To display a grid of equally spaced horizontal and vertical lines on the 740 CRT UNIT with every $m^{th}$ horizontal and every $n^{th}$ vertical line heavy.

## RESTRICTIONS

The film frame is not advanced by this routine.

## METHOD

The lines are produced via axes generating words. The spacing between lines is specified in the calling sequence where x is the number of positions (in terms of raster coordinates) between vertical lines and y is the corresponding spacing for horizontal lines. Every $m^{th}$ horizontal line is traced heavier as well as every $n^{th}$ vertical line. Any of the parameters m, n, x and y may be zero in which case the associated function will not be performed. Arbitrary starting points may be given by specifying i and j whereby the grid will be traced starting with the lines x = i and y = j.

NOTE: This routine is identical to MU SCP9, except for the feature that lines x = i and y = j are always heavy.

## USAGE

Calling Sequence:

UA SAP

| Loc. | Instruction |
| --- | --- |
| $\alpha$ | TSX SC01, 4 |
| $\alpha + 1$ | PZE n, 0, x |
| $\alpha + 2$ | PZE m, 0, y |
| $\alpha + 3$ | PZE j, 0, i |
| $\alpha + 4$ | return |

MURASS

| Loc. | Instruction |
| --- | --- |
| $\alpha$ | B TSX A 4 |
| $\alpha + 1$ | C 0 n 0 x |
| $\alpha + 2$ | C 0 m 0 y |
| $\alpha + 3$ | C 0 j 0 i |
| $\alpha + 4$ | return |

| Space Required: | UA SAP | MURASS |
|---|---|---|
| 53 words program at | SCO1 | A |
| 2 words temporary at | COMMON | B |

## CODING INFORMATION

Timing: Approximately 120 milliseconds are required to plot a 256 x 256 grid.

```
      REM SCOPE GRID TWO                                                MU   SC01
01    WTV                   SELECT CRT                                 SC01  0001
      SXD SC01+47,1         SAVE X1                                    SC01  0002
      SXD SC01+49,2         SAVE X2                                    SC01  0003
      CAL SC01+50           VERTICAL LINE BIT                          SC01  0004
      SLW COMMON+1                                                     SC01  0005
      STO COMMON            E IS +                                     SC01  0006
      LDQ COMMON            E IN MQ                                    SC01  0007
      CAL 3,4               STARTING POSITIONS                         SC01  0008
      TQP SC01+11           TEST E                                     SC01  0009
      ALS 18                                                           SC01  0010
      TXI SC01+11,4,-1      ADVANCE X4                                 SC01  0011
      PDX -2,1              I OR J TO X1                               SC01  0012
      CAL 1,4               COORDINATE WORD                            SC01  0013
      TZE SC01+46                                                      SC01  0014
      STD SC01+21           SET LINE COUNTER                           SC01  0015
      LXA SC01+11,2         INDEX FOR BORDER                           SC01  0016
      PXD 0,1               START LINE COPY LOOP                       SC01  0017
      TQP SC01+48           VERTICAL OR HORIZONTAL                     SC01  0018
      ARS 18                                                           SC01  0019
      STA COMMON+1          HORIZONTAL                                 SC01  0020
      CPY COMMON+1          PLOT LINE                                  SC01  0021
      TXI SC01+22,1,**      ADVANCE LINE COUNTER                       SC01  0022
      LDQ COMMON                                                       SC01  0023
      TXH SC01+34,2,-4                                                 SC01  0024
      TNX SC01+33,2,1       OUT FOR HEAVY LINE                         SC01  0025
      TXL SC01+16,1,1023    TEST FOR END                               SC01  0026
      TQP SC01+31           PROCESS HORIZONTAL                         SC01  0027
      TOV SC01+28           OVERFLOW OFF                               SC01  0028
      LXD SC01+47,1         RESTORE X1                                 SC01  0029
      LXD SC01+49,2         RESTORE X2                                 SC01  0030
      TRA 3,4                                                          SC01  0031
      CLA SC01+51                                                      SC01  0032
      TXI SC01+4                                                       SC01  0033
      TXL SC01+25,2,0       NO HEAVY LINES                             SC01  0034
      CAL SC01+52                                                      SC01  0035
      TQP SC01+37                                                      SC01  0036
      ARS 18                                                           SC01  0037
      ACL COMMON+1          WIDEN LINE                                 SC01  0038
      CPY COMMON+1                                                     SC01  0039
      SLW COMMON+1                                                     SC01  0040
      CPY COMMON+1                                                     SC01  0041
      CPY COMMON+1                                                     SC01  0042
      CAL 1,4                                                          SC01  0043
      PAX 0,2               HEAVY LINE COUNTER                         SC01  0044
      TXL SC01+22,2,0                                                  SC01  0045
      TXI SC01+22,2,1                                                  SC01  0046
      TQP SC01+31           NO VERTICAL LINES                          SC01  0047
      TXI SC01+27           NO HORIZONTAL LINES                        SC01  0048
      STD COMMON+1                                                     SC01  0049
      TXI SC01+20                                                      SC01  0050
      OCT 100000000000                                                 SC01  0051
      OCT 600000000000                                                 SC01  0052
      OCT 000001000000                                                 SC01  0053
```