1. IDENTIFICATION

1.1 Digital-7-60-N

1.2 Type 34 Display Test

1.3 April 28, 1965
2. **ABSTRACT**

The test program causes a variety of patterns to be displayed on the Type 34 CRT to aid an operator's efforts to maintain and align the display. With one exception, the operator is able, by means of the switch register, to go from pattern to pattern specifying parameters without having to restart the program.

3. **REQUIREMENTS**

3.1 Storage

The program occupies 10518 registers; locations 1, 100-144, and 200-1232.

3.2 Subprograms and/or Subroutines (Not Applicable)

3.3 Equipment

Standard PDP-4/7. Type 34 Oscilloscope Display. Type 370 Light Pen optional.

3.4 Miscellaneous (Not Applicable)

4. **USAGE**

4.1 Loading

4.1.1 Set the address switches to the starting address (17770 or 7770) of the RIM Loader.

4.1.2 Place the binary program tape in the reader.

4.1.3 Press START.

4.2 Calling Sequence (Not Applicable)

4.3 Switch Settings

4.3.1 ACS bits 0-2 select the pattern to be displayed according to the octal number contained in them as follows: (individual routines are explained in Section 6.)

<table>
<thead>
<tr>
<th>Octal</th>
<th>Pattern Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Blank screen; no operation.</td>
</tr>
<tr>
<td>1</td>
<td>Vertical line.</td>
</tr>
<tr>
<td>2</td>
<td>Horizontal line.</td>
</tr>
<tr>
<td>3</td>
<td>Diagonal line.</td>
</tr>
<tr>
<td>4</td>
<td>Horizontal segmented sweep.</td>
</tr>
<tr>
<td>5</td>
<td>Vertical segmented sweep.</td>
</tr>
<tr>
<td>6</td>
<td>Blank screen; no operation.</td>
</tr>
<tr>
<td>7</td>
<td>Blank screen; no operation.</td>
</tr>
</tbody>
</table>

The only pattern not selectable by these switches is the axial point plotter, which is separate from the others and must be entered by manually starting at address 100.
4.3.2 Axial Point Plotter

Starting at address 100 causes the program to immediately halt so that the following settings can be made before pressing CONTINUE:

ACS bit 0 = 1 to plot on X-axis from coordinate in ACS bits 8-17.
ACS bit 0 = 0 to plot on Y-axis from coordinate in ACS bits 8-17.

Changes in ACS bits 8-17 may be made while program is displaying, with immediate results.

4.3.3 Horizontal and Vertical Segmented Sweep Patterns

ACS bits 9-17 select the segments of the CRT face to be illuminated by the chosen sweep pattern.

<table>
<thead>
<tr>
<th>Bit a 1</th>
<th>Selects Segment Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(see diagram 11.1)</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
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<tr>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

4.3.4 Light Pen Pattern

The letter P appears on the screen when ACS 0 − 17 = 0.

4.4 Start Up and/or Entry

4.4.1 Preliminary Procedures

Initial settings of 34 Display controls:

1. Vertical sensitivity 1v/cm
2. Horizontal sensitivity 1v/cm
3. Sensitivity verniers Adjust to suit*
4. Horizontal display Horizontal amp only
5. Vertical input switch DC
6. Horizontal input switch Any
7. Sweep time/cm Any
8. Trigger controls Any

*The exact setting of sensitivity and position controls should be such that the patterns produced by the program fill the CRT reticle entirely. The horizontal, vertical, and diagonal line patterns are programmed to pass through the center of the CRT and barely touch the extremities of the reticle grid.
Set the switch register to the desired initial operating conditions before entering the program.

4.4.2 Entry

For axial plotting, set the address switches at 100. For all other patterns, set the address switches at 200. Press START.

4.4.3 Restart

Restarting is normally unnecessary as provisions have been made to transfer from pattern to pattern while the program is in progress by merely changing the setting of ACS0-2, the only exception being the manual transfer to or from the axial plotting mode.

### 4.5 Errors in Usage

<table>
<thead>
<tr>
<th>Address</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Not an error halt. Occurs to allow operator time to set initial conditions for Axial Plot Program.</td>
</tr>
<tr>
<td>730</td>
<td>DCF has failed to clear Display flag, or DSF always skips.</td>
</tr>
<tr>
<td>734</td>
<td>Display flag has failed to cause an interrupt.</td>
</tr>
</tbody>
</table>

### 4.6 Recovery from Such Errors

<table>
<thead>
<tr>
<th>Address</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Set initial conditions into ACS (4.3) and press CONTINUE.</td>
</tr>
<tr>
<td>730</td>
<td>No recovery. Program must be restarted.</td>
</tr>
<tr>
<td>734</td>
<td>Press CONTINUE to resume program.</td>
</tr>
</tbody>
</table>

*The exact setting of sensitivity and position controls should be such that the patterns produced by the program fill the CRT reticle entirely. The horizontal, vertical, and diagonal line patterns are programmed to pass through the center of the CRT and barely touch the extremities of the reticle grid.

**The intensity should be adjusted so that the unintensified beam just disappears from view.

****It may be desirable, when using the sweep patterns to check the continuity of the phosphor coating, to defocus the beam and increase the intensity. Be sure to return the intensity to its former level.
6.1.1 Axial Plotting Mode

This program beginning at address 100 immediately executes a HLT instruction to allow the operator time to set up the AC switches for desired initial conditions. Upon continuing, these switches are examined. Program control branches to either an X-plot routine or a Y-plot routine (PLOX or PLOY) depending upon the polarity of ACS 0. Each routine loads its "active" coordinate register with the coordinate in ACS 8-17 and clears the other coordinate register. The point so referenced is then displayed and control is returned to the beginning of the program.

6.1.2 Dispatch

The dispatch routine (BEG) is entered at address 200. SR bits 0-2 are examined and program control is transferred to the subroutine responsible for the display of the pattern named by the number in these switches. If this number is 0 and all other ACS are 0 as well, control is transferred to the Light Pen subroutine. Return from all pattern subroutines except the Light Pen subroutine is accomplished automatically at the termination of a single pattern display or when all switch conditions have been met (segmented sweep). The Light Pen subroutine relinquishes program control only when the ACS register becomes nonzero. The return from pattern subroutines is to the dispatch routine where the same pattern subroutine is entered without a noticeable break if SR bits 0-2 are unchanged. A change in these bits causes a new subroutine to be entered and a new pattern displayed.

6.1.3 Vertical Line Subroutine (VLT)

This subroutine plots all points having an X-coordinate of 1000, beginning with X = 1000, Y = 0 and ending with X = 1000, and Y = 1777. After plotting the last point, the dispatch routine is reentered. The line displayed bisects the center.

6.1.4 Horizontal Line Subroutine (HTS)

This subroutine plots all points having a Y-coordinate of 1000, beginning with X = 0, Y = 1000 and ending with X = 1777, Y = 1000. After plotting the last point, the dispatch routine is reentered. The line displayed bisects the center.

6.1.5 Diagonal Line Subroutine (DLT)

This subroutine plots all points having equal X- and Y-coordinates, beginning with X = 0, Y = 0 and ending with X = 1777, Y = 1777. After plotting the last point, the dispatch routine is reentered. The line displayed bisects the center.
6.1.6 Common Line Pattern Subroutine (COM)

This subroutine is common to VLT, HTS, and DLT and accomplishes the actual incrementation of the coordinates and decides whether or not the pattern is complete.

6.1.7 Segmented Sweep Routines

6.1.7.1 General

The Segmented Sweep Routines provide a means of checking the uniformity of the phosphor coating on the CRT. In order to facilitate checking, the CRT reticle is divided into nine overlapping segments, (see diagram 11.1). Vertical or horizontal lines are swept over a segment several times causing the phosphor to remain illuminated. The SR bits 9-17 specify which segments are to be swept. If more than one switch is "on," the segments are illuminated in order. The sweep routines can also be used to check for AC ripple and decoder network deficiencies. The line which sweeps a segment contains every fourth point only. Thus, individual points are visible and the wake of the sweep has a ribbed appearance. Uneven trace spacing indicates improper adjustment of the decoder network. If the line appears wavy, ripple is present somewhere in the display circuitry. These conditions may be present concurrently. The sweep routines use a set of subroutines to do the actual sweeping. Description of these subroutines follow the description of the sweep routines.

6.1.7.2 Horizontal Segment Sweep Routine (HST)

The Horizontal Segment Sweep Routine first initializes the segment counter to segment 1. The program then sets the line and point increments for the plot subroutines. The segment counter contains all 0's except for one bit, the position of which determines the current segment (see diagram 11.1), before each sweep, the segment counter is ANDed with the contents of the switches. If the AC then contains 0, the program skips the segment, rotates the counter left one space, and tests again. After illuminating segment 9, the program returns to the dispatch routine.

When a given segment is selected, the AC contains the contents of the segment counter after the AND operation. The program then determines whether the segment is in the left, middle, or right portion of the screen.

The segment is then illuminated by using the plot subroutine four times to sweep right, left, right, left over the segment. If the adjacent segment on the right is to be illuminated, the program uses the plot subroutines a fifth time, sweeping to the right. This last sweep ends at the leftmost boundary of the adjacent segment to provide a smooth transition from one segment to the next.

If the adjacent segment is not to be illuminated, the segment counter is rotated until another segment is illuminated, or SR 9-17 = 0 and returns to the dispatch routine.

6.1.7.3 Vertical Segmented Sweep Routine (VST)

Except for the following differences, this program is the same as the horizontal sweep routines.
The segments are swept down, up, down, up and the smooth transition is to the segment below.

Since the vertical program sweeps the sections in a different order (1, 4, 7, 2, 5, 8, 3, 6, 9), the segment counter is either rotated left three spaces or right five spaces, depending on the number of the current segment.

6.1.7.4 Plot Subroutines

These subroutines can display a vertical line which sweeps either from left to right or from right to left. Similarly, a horizontal line can be swept upward or downward. The subroutine requires four parameters: the end points of the line and the boundaries of the sweep. Furthermore, two rates must be specified, the point rate and the line rate. The point rate determines the distance between displayed points on the line. For example, a point rate of 1 plots every point on the line; 4, every fourth point.

The line rate similarly determines the distance between displayed lines—again, 1 plots every line; 4, every fourth line. Only one bit of a rate number may be 1. After the six parameters are set, a JMS is executed. The JMS address determines the direction of the sweep and the orientation of the line.

6.1.8 Light Pen Routine (PEN)

This routine displays the letter P on the CRT. The light pen is used to sense this display. If the pen is operating correctly the program will complete the display by adding the letters EN and will continue to display the word PEN until the pen no longer sees light. When the program is first entered, the Light Pen flag is cleared by DCF and the Light Pen Skip flag instruction DCF is executed. If a skip occurs, the program halts at address 730, indicating that the DCF instruction failed to clear the flag or that DSF always skips. A loop responsible for the display of P is then entered. As part of this loop, the switch register is checked to determine that this register has remained in a 0 state. This allows the operator to exit from the Light Pen routine, and display other patterns at any time.

Actual display of the letter P is delegated to a subroutine (P), which in turn calls upon a line drawing routine (LINE) to trace the elements of the figure. The loop is re-entered after the P is drawn and a program flag (SKIP) is interrogated to determine if an interrupt due to the light pen sensing light has occurred. If no light pen interrupt has occurred, the Light Pen flag is sensed to see if one was attempted. A halt at location 734 indicates to the operator that the pen saw light and sets its flag, but that no interrupt resulted; otherwise, the loop recycles.

When an interrupt due to the light pen occurs, program control shifts to a subroutine (PENSE) which sets a program flag (SKIP) and returns control to the point of interruption.

6.2 Examples and/or Applications
6.2.1 Horizontal and Vertical Patterns
These patterns are useful for determining raster position and symmetry. The lines should be straight, just touch the edge of the reticle grid, and pass through the center of the screen.

6.2.2 Diagonal Line Pattern
This pattern is useful in the evaluation of decoder network operation and the detection of dropped, picked up, or interchanged bits. Proper operation yields a straight line, one point in width, proceeding from the lower left to the upper right of the reticle grid.

6.2.3 Horizontal and Vertical Segmented Sweep
SR 9-17 select any of nine segments on the screen to be checked as shown in diagram 11.1. Each segment selected is illuminated in turn by a vertical line moving horizontally or by a horizontal line moving vertically across the screen four or five times.

6.2.3.1 Uniformity of Phosphor Coating
Nonuniform or burnt-out spots on the screen will appear as burnt-out spots.

6.2.3.2 Ripple
If the lines appear wavy, ripple is present somewhere in the display circuitry.

6.2.3.3 Decoder Network
If the line traces are spaced unevenly, the decoder network is not functioning properly.

6.3 Scaling (Not Applicable)

7. METHODS
(see Section 6.1.)

8. FORMAT (Not Applicable)

9. EXECUTION TIME
Time between plots can be lengthened by the placement of a suitable LAM instruction in register 1176 (TIME + 1). The present contents, LAM-1, can be replaced by LAM-N where N > 1. Each increment will increase time between displays by 4.25 μsec.*

*24μsec for PDP-4.
10. PROGRAM

10.4 Program Listing

TYPE 34b DISPLAY TEST FOR PDP-4/7

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<thead>
<tr>
<th>RPS</th>
<th>760601</th>
<th>DCP</th>
<th>760702</th>
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</thead>
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<td>760501</td>
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<table>
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<tr>
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<td>454</td>
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</tbody>
</table>
TYPE 348 DISPLAY TEST FOR PDP-4/7

DCF=700702
DF=700701

1/ JMP SERVE

100/ ROUTINE TO PLOT A POINT ON EITHER AXIS
    PAP,
        HLT                                        /BIT 0 UP, VARY X COORDINATE
        JMS TIMEK
        LAS                                        /LOAD X REGISTER WITH ZERO
        SPTA FSLA
        JMP PLOX,
        DYL                                        /PLOT COORD. IN AS 8-17
        LAS
        DYS
        JMP PAP+1

PLOX:
    DYL                                        /LOAD Y REGISTER WITH ZERO
    LAS
    DYS
    JMP PAP+1

2001 DISPATCH ROUTINE

BEG,
    IOF
    JMS CLEAR
    LAS
    SNA
    JMP PEN
    RTL
    RTL
    AND (7
    TAD (JMP DISPATCH
    DAC +1
    HLT
    DISPAT,
        JMP BEG+2
        JMP VLTCOM
        JMP HTSCOM
        JMP DLTCOM
        JMP HST
        JMP VST
        JMP BEG+2
        JMP BEG+2
        JMP VLTCOM
        JMP HTSCOM
        JMP DLTCOM
        JMP HST
        JMP VST
        JMP BEG+2
        JMP BEG+2
        VRTCUM,
        JMS VLT
        JMP BEG+2
        HISCU,
        JMS HTS
        JMP BEG+2

Digital-7-60-N
Page 12
DLTCOM, JMS DLT
JMP BEG+2

/VERTICAL LINE TEST
VLT, @
LAW 1000
DYL
CLA
DYS
JMS COM
JMP -2
JMP I VLT

/HORIZONTAL LINE TEST
HTS,
@
LAW 1000
DYL
CLA
DYS
JMS COM
JMP -2
JMP I HTS

/DIAGONAL LINE TEST
DLT,
@ CLA
DYL
CLA
DYS
JMS COM
JMP DLT+2
JMP I DLT

/COMMON LINE TEST ROUTINE
COM,
@ NOP
NOP
TAU 11
AND 1777
SNA
TSZ COM
JMP I COM

/HORIZONTAL SWEEP TEST
HST,
LAC 11
DAG SEG
LAS
AND S+EG
SNA
JMP I XH
LAC P4
DAG X+MN

/UNFINISHED LINE
/FINISHED LINE

/INITIALIZE SEGMENT INDICATOR
/CURRENT SEGMENT NOT REQUESTED
/SFT Y LIMITS FOR TOP THREE
/REQUESTED SEGMENT NOT IN TOP THREE
/SPT Y LIMITS FOR MIDDLE THREE

GUH, LAC P6
DAC Y+MX
LAC SEG
AND (7)
SNA
JMP GUH
LAC P2
DAC YMN
LAC P3
DAC YMX
LAC SEG
AND (7/3)
SNA
JMP GUH
LAC P1
DAC YMN
LAC P3
DAC YMX
LAC SEG
AND (111)
SNA
JMP LH
LAC SEG
AND (222)
SNA
JMP MH
JMP RH
LAC SEG
RALVOLL
AND (777)
SNA
JMP SEG
JMP HST+1

/REQUESTED SEGMENT IN LEFT THREE

!/REQUESTED SEGMENT NOT IN MIDDLE THREE
/SPT Y LIMITS FOR MIDDLE THREE

IXH,

/REQUESTED SEGMENT IN MIDDLE THREE
/REQUESTED SEGMENT IN RIGHT THREE

/LAST SEGMENT DISPOSED OF
/CHECK NEXT HORIZ. SEQUENTIAL SEG

/ROUTINE TO CONTROL ILLUMINATION OF LEFT SEGMENT

LM,

LAC P1
DAC X+MN
LAC P3
DAC X+MX
JMS PHT
JMS PLF
JMS PHT
JMS PLF
LAS
AND (777)
RALVOLL
AND SEG
SNA
JMP IXH

/SPT X LIMITS

/SWEEP RIGHT
/SWEEP LEFT
/SWEEP RIGHT
/SWEEP LEFT

/CHECK NEXT SEGMENT
ROUTINE TO CONTROL ILLUMINATION OF MIDDLE SEGMENT

MH,
LAC LNS NEXT SEQUENTIAL SEGMENT ILLUM.
CMAX
ADD P2
DAC XMX
JMS PRT
JMP IXH /Sweep Right

ROUTINE TO CONTROL ILLUMINATION OF MIDDLE SEGMENT

MH,
LAC P2
DAC XMN /SPT X LIMITS
LAC P5
DAC XMX
JMS PRT
JMS PLF
JMS PRT /Sweep Right
JMS PLF /Sweep Left
LAS
AND (777
RARVCLL
AND SEG
SNA
JMP IXH /CHECK NEXT SEGMENT
LAC LNS NEXT SEQUENTIAL SEGMENT ILLUM.
CMAX /RESET X LIMIT
ADD P4
DAC XMX
JMS PRT
JMP IXH /Sweep Right

ROUTINE TO CONTROL ILLUMINATION OF RIGHT SEGMENT

RH,
LAC P4
DAC XMN /SPT X LIMITS
LAC P6
DAC XMX
JMS PRT
JMS PLF
JMS PRT /Sweep Right
JMS PLF /Sweep Left
JMP IXH /CHECK NEXT SEGMENT
/ROUTINE TO CONTROL ILLUMINATION OF TOP SEGMENT
TV,
LAC P6
DAC YMX
LAC P4
DAC YMN
JMS PDN
JMS PUP
JMS PDN
JMS PUP
LAS
AND (777
CALL
RTH
RAH
AND SEG
SNA
JMP IXV
LAC P5
DAC YMN
JMS PDN
JMS PUP
JMS PDN
JMS PUP
LAS
AND (777
CALL
RTH
RAH
AND SEG
SNA
JMP IXV
LAC P3
DAC YMN
JMS PDN
JMP IXV

/ROUTINE TO CONTROL ILLUMINATION OF MIDDLE SEGMENT
MV,
LAC LNS
CMA
AUD P5
DAC YMX
LAC P2
DAC YMN
JMS PDN
JMS PUP
JMS PDN
JMS PUP
LAS
AND (777
CALL
RTH
RAH
AND SEG
SNA
JMP IXV
LAC P3
DAC YMN
JMS PDN
JMP IXV

/SFT Y LIMITS FOR TOP SEGMENT
/SWEEP DOWN
/SWEEP UP
/SWEEP DOWN
/SWEEP UP
/SWEEP DOWN
/SWEEP DOWN
/SWEEP UP
/SWEEP UP
/SWEEP DOWN
/SWEEP UP
/SWEEP DOWN
/SWEEP UP
/SWEEP DOWN
/SWEEP DOWN
/ROUTINE TO CONTROL ILLUMINATION OF BOTTOM SEGMENT
BY,
LAC LNS
CHW
ADD P3
DAC YMX
LAC P1
DAC YMN
JMS PDN
JMS PUR
JMS PDN
JMS PUR
JMP IXV

/SWEEP DOWN
/SWEEP UP
/SWEEP DOWN
/SWEEP UP

/SWEEP DIRECTION INDICATOR TO "RIGHT"

/SWEEP RIGHT HAND LIMIT

/SWEEP DIRECTION INDICATOR TO "LEFT"

/SWEEP LEFT HAND LIMIT

/SWEEP EXECUTE

/SWEEP RETURN

/SWEEP DISPLAY A POINT

/SWEEP RETURN
JMP +4
LAC RHS
TAV Y
JMP PH+2
LAC X
CMA
ADU X END
SAU LAM
JMP LPH
LAC DIR
RALYCALL
LAC LNS
SZL
CMA
ADU X
SAU LAM
CLA
DAL
DAC X
JMP PH+1

ROUTINE TO CONTROL UPWARDS PLOTTING

ROUTINE TO CONTROL DOWNWARDS PLOTTING

ROUTINE TO EXECUTE VERTICAL SWEEPING
/DISPLAY A POINT
/END OF LINE
/unfinished line
/RESET X COORDINATE
/DISPLAY NEXT POINT

/RESET Y COORDINATE
/START NEXT LINE

/LIGHT PEN ROUTINE
PEN,  DF
DSF
JMP PENNY
WLT
DSF
JMP +3
NXP
HLT
LSA
SLA
JMP REG.
DZM S*SKIP
TUN
JMS P
10Z SKIP
JMP PENNY
JMS EN
DF
JMP PEND

PENSE,  DF
DSF

/DFM FAILED TO CLEAR DISPLAY FLAG
/DISPLAY FLAG FAILED TO CAUSE INTERRUPT
JMP +2
JMP PEN+3
LAM
DAC SKIP
LAC 0
RAL
LAC SAC
JMP 10

/HOUTINE TO DRAW THE LETTER P

P
NZM X
LAW 400
DAC Y
JMS LINE
000777
TSZ X
JMS LINE
100577
LAW 776
DAC Y
JMS LINE
200000
LAW 376
DAC X
JMS LINE
300001
JMP 1 P

/HOUTINE TO DRAW EN

EN
LAW 777
DAC Y
LAW 600
DAC X
JMS LINE
101177
LAW 400
DAC Y
JMS LINE
300000
TSZ Y
JMS LINE
000776
TSZ X
LAW 600
DAC Y
JMS LINE
101177
LAW 1777
DAC X
LAW 777
DAC Y
JMS LINE 200400
TSZ Y
LAW 1776
DAC X
JMS LINE 700777
LAW 776
DAC Y
JMS LINE 200400
JMP 1 EN

ROUTINE TO DRAW A LINE

LAC 1 LINE
RIL
RIL
AND (7
RALYCLL
TAU (LAC EXEC
DAC P PICKUP
XCT PICKUP
DAC X+ADJ
TSZ PICKUP
XCT PICKUP
DAC Y+ADJ
LAC 1 LINE
TSZ LINE
AND (1777
DAC E+ND0K
LAC YADJ
THD
LAC (CHEX+1
SNL
TAD (1
DAC CHEX
LAC X
DXL
LAC Y
DYS
LINEM

JMS TIMEK
LAC X
TAD XADJ
DAC X
NXL
LAC Y
TAD YADJ
DAC Y
DYS
XCT I CHEX
AND (1777
SAD ENDOCK
JMP I LINE
JMP LINER

CHEX

0
LAC Y
LAC X

EXEC

0
1
1
1
0
LAM LAM
0
1
1
1
LAM LAM
LAM
LAM
LAM
LAM
LAM

/ INTERRUPT ROUTINE
SERVE,
DAC S+AC
DSF
JMP +2
JMP PENSE
JMS CLEAR
LAC 0
RAL
LAC SAC
JUN
JMP I 0

/ CLEAR FLAGS ROUTINE
CLEAR,  n
IOUT 3302 /PMP-7 CLEAR ALL
CLUF
RHF
PCF
KHF
TCF
700704 /INC
CPUCF
LSCF
LPFCF
OKHF
NUP
NUP
NUP
JMP I CLEAR

/TIME DELAY
TIMEK,  0
LAM-1
DAC CLEAR
ISZ CLEAR
JMP -1
JMP I TIMEK

/VARIABLES
LNS,  2
PIS,  4
P1,  0
P2,  460
P3,  574
P4,  1204
P5,  1520
P6,  1774

VARIABLES
START
11. DIAGRAM
Segmented Sweep Program

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12. REFERENCES (Not Applicable)