GT40-42-44

INSTRUCTION TEST #1

MD-11-DDGTA-C

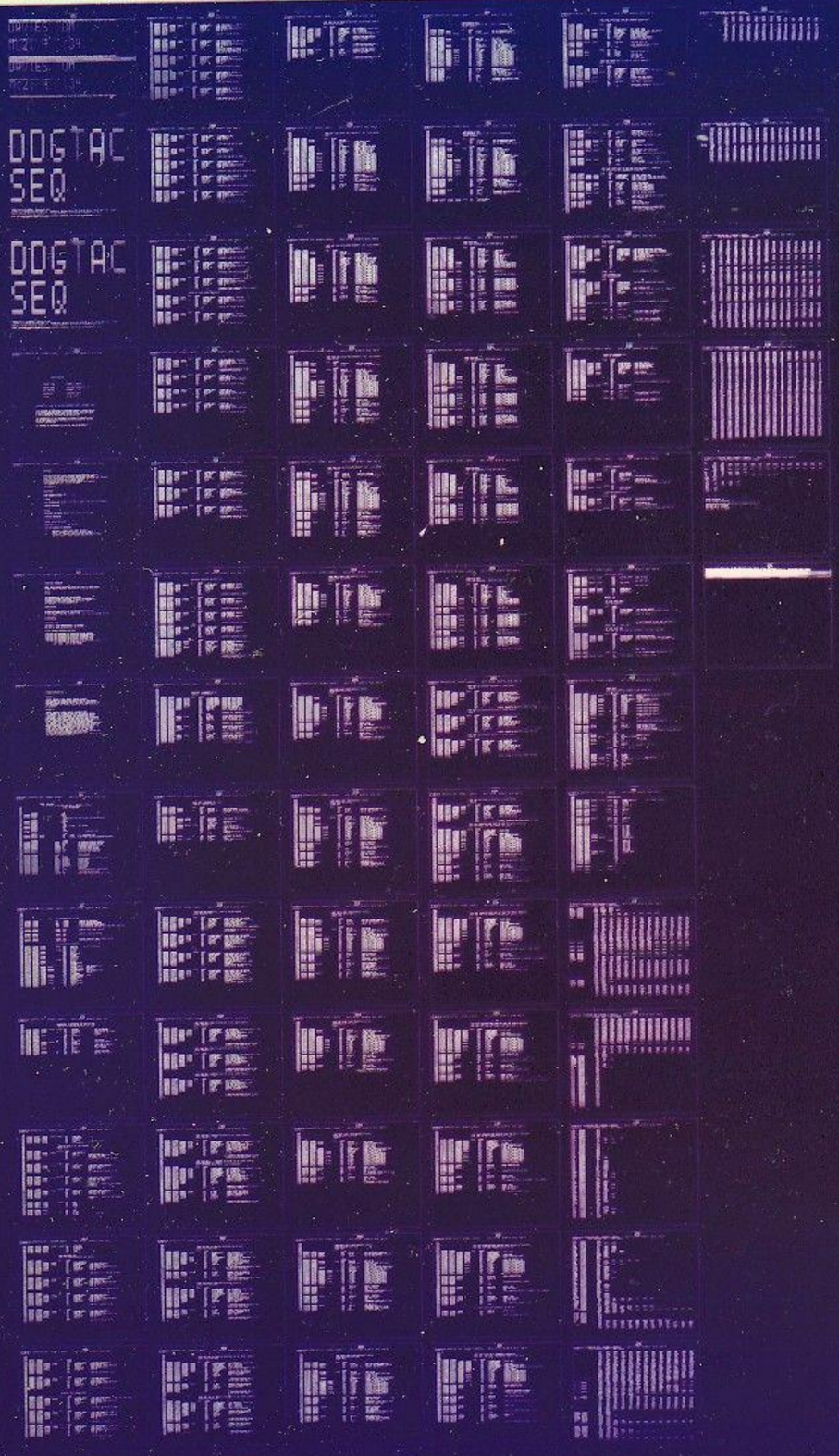
EP DDGTA C DL A

OCT 1976

FICHE 1 OF 1

digital

Made in U.S.A.

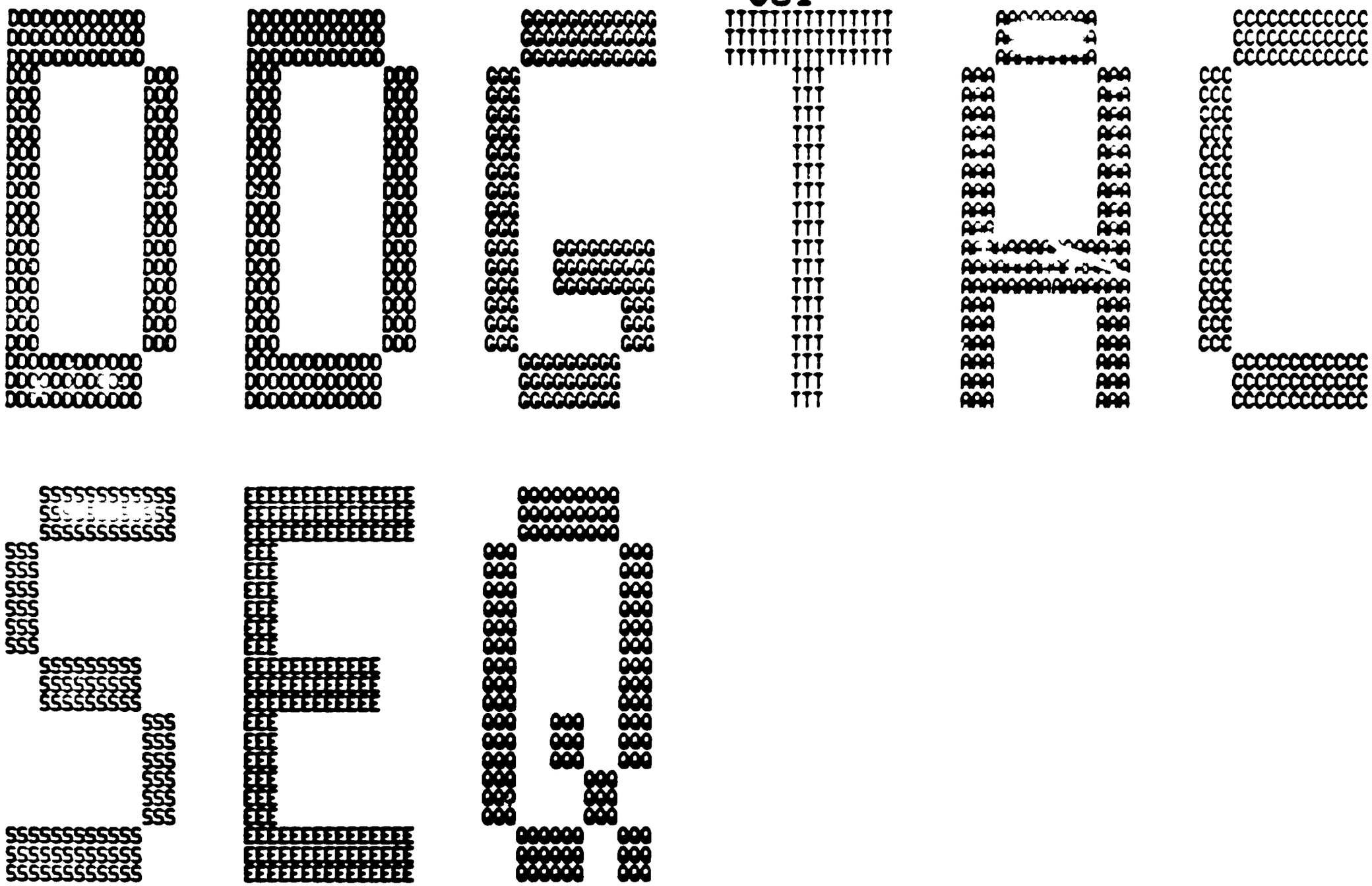


B01

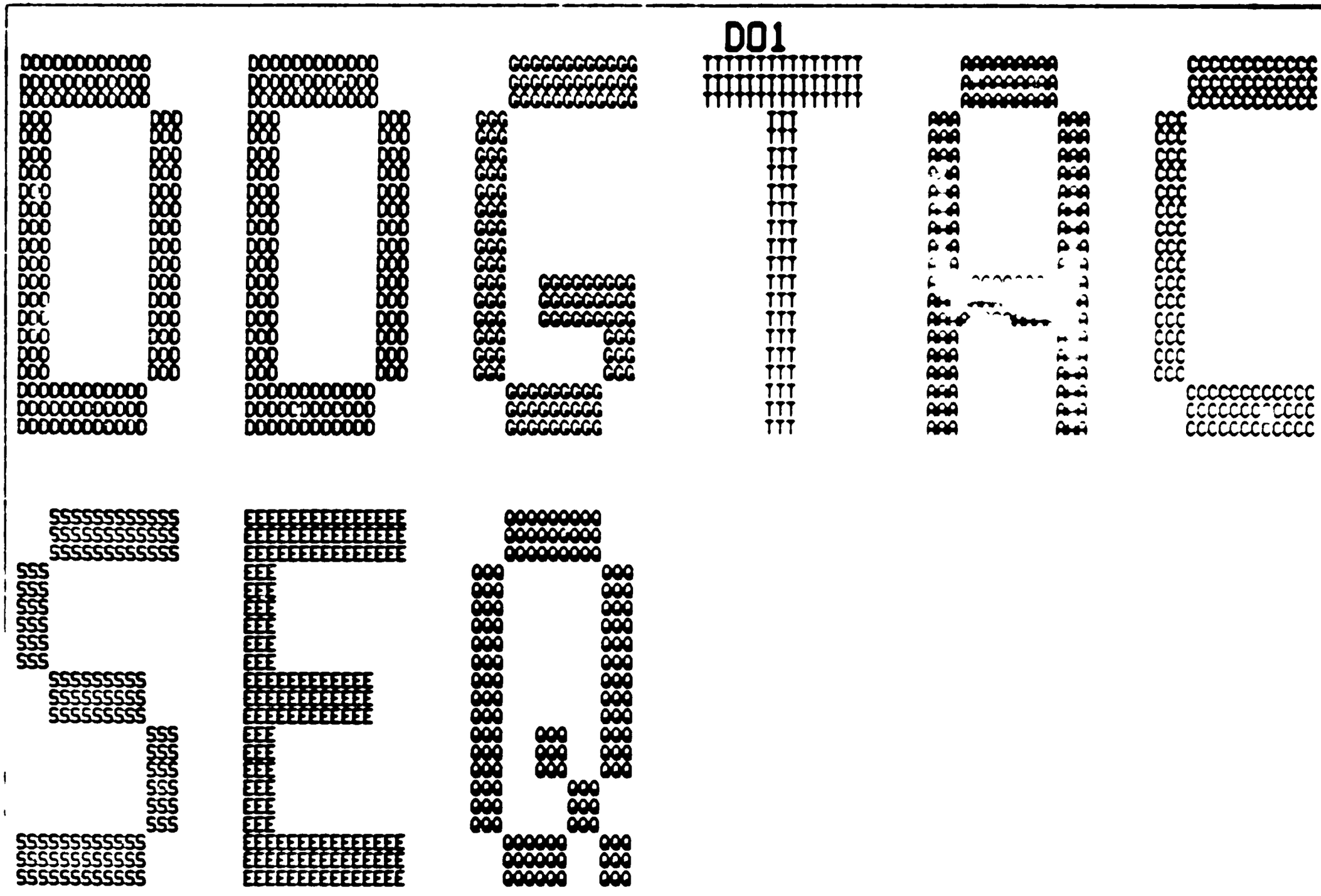
```
[illegible]1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012LPT
[illegible]RT*User DAVIES,TOM[illegible] [illegible]S DCGTAC S[illegible]T28 Date 04-Oct-76 12:53:22 Monitor IPC-D 507B [1A3] *START*
D    D   A    A   V    V     I     E         S                   T     O    O  MM  MM
D    D   A    A   V    V     I     E         S                   T     O    O  M  M  M
D    D   A    A   V    V     I     EEEE       SSS                T     O    O  M     M
D    D   AAAAA    V    V     I     E              S              T     O    O  M     M
D    D   A    A    V  V      I     E              S      ''      T     O    O  M     M
DDDD     A    A     V       III    EEEEE     SSSS        ;       T      OOO   M     M


MTO:ML21-4:DAVIE82-- distribution to MW21-4, slot 134     1     333   4  4     )
MM MM L       2  2   11          4  4      <      11    3   3  4  4      )
M M M L          2   1           4  4     <        1        3  4  4       )
M   M L         2    1    ----   44444   <         1       3   44444       )
M   M L        2     1              4     <        1        3     4       )
M   M L       2      1              4      <       1    3   3     4      )
M   M LLLLL  22222  111             4       <     111    333      4     )

>
```

```
[illegible] Monitor IPC-D [illegible] [1A3] *START*
0[illegible]0000000[illegible]0011111111111111111111111111111111110
[illegible]11111111[illegible]9999999999990000000001111111111122222222222333312
[illegible]01234567890123456789012 *S
D    D   A    A   V    V     I     E         S                   T     O    O
D    D   A    A   V    V     I     E         S                   T     O    O  M  M  M
D    D   A    A   V    V     I     EEEE       SSS                T     O    O  M     M
D    D   AAAAA    V    V     I     E              S              T     O    O  M     M
D    D   A    A    V  V      I     E              S      ''      T     O    O  M     M
DDDD     A    A     V       III    EEEEE     SSSS        ;       T      OOO   M     M


MTO:ML21-4:DAVIE82-- distribution to MW21-4, slot 134     1     333   4  4     )
MM MM L       2  2   11          4  4      <      11    3   3  4  4      )
M M M L          2   1           4  4     <        1        3  4  4       )
M   M L         2    1    ----   44444   <         1       3   44444       )
M   M L        2     1              4     <        1        3     4       )
M   M L       2      1              4      <       1    3   3     4      )
M   M LLLLL  22222  111             4       <     111    333      4     )
```

```
[illegible] Date 04-Oct-76 12:53:22 Monitor IPC-D 507B [1A3] *START*
```




```
LPTSPL Version 6(100344)  Running on MTA1
 *START* User DAVIES TOM [400,2704] Job  DOCTAC Seq. 28 Date 04-Oct-76 12:53:22 Monitor IPC-D 507B [1A3] *START*
Request created: 04-Oct-76  12:21:19     /TO:ML21-4:DAVIES -- distribution to ML21-4, slot 134

[illegible]12:53:23
File will be RENAMEd to <057> protection
```



LPTSPL Version 6(100344) Running on MTA1
 START User DAVIES TOM [400,2704] Job DOGTAC Seg. 28 Date 04-Oct-76 12:53:22 Monitor IPC-D 5078 [1A3] *START*
Request created: 04-Oct-76 12:21:19   /TO:ML21-4:DAVIES -- distribution to ML21-4, slot 134

[illegible] 12:53:23
File will be RENAMEd to <057> protection

.REM ←

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DDGTA-C
PRODUCT NAME:	GT40/GT44 INSTRUCTION TEST I
DATE CREATED:	DECEMBER 1, 1974
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	RAYMOND SHOOP

1. ABSTRACT

THIS IS A TWO PART LOGIC TEST OF THE ALPHAGRAPHIC TERMINAL.
FOR THIS TEST THE TWO MAINTENANCE SWITCH WILL BE USED.
THIS TEST IS DESIGNED TO TEST ALL FUNCTIONAL REGISTERS AND INTERRUPT
VECTOR IN THE ALPHAGRAPHIC DISPLAY CONTROL.
THIS PROGRAM DOES NOT TYPE-OUT OR DISPLAY ANY MESSAGES.
THE PROGRAM WILL ONLY HALT ON AN ERROR.

2. REQUIREMENTS

2.1 EQUIPTMENT

GT40 DISPLAY SYSTEM (REF. 7.) OR
GT44 DISPLAY SYSTEM

2.2 STORAGE

THIS PROGRAM USED MEMORY LOCATIONS 0-16000 (LESS THAN 4K OF MEMORY).

3. LOADING PROCEDURE

3.1 METHOD

PROCEDURE FOR NORMAL BINARY TAPES SHOULD BE FOLLOWED.

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

SWITCH BIT 14 = 1 LOOP ON TEST

4.2 STARTING ADDRESS OR ADDRESSES

174 SUB-TEST 1, BASIC LOGIC TEST (BR ONLY)
(MAINT. SWITCH 1 SET, MAINT. SWITCH 2 RESET)
200 SUB-TEST 2, COMPLEX LOGIC TEST (BR, NPR AND INTERRUPT)
(MAINT. SWITCH 1 RESET, MAINT. SWITCH 2 SET)

5. OPERATING PROCEDURE

NONE. ONCE STARTED BOTH SUB-TESTS WILL RUN IN THEIR NORMAL
MANNER WITHOUT OPERATOR INTERVENTION OR SWITCH SELECTION.

6. ERRORS

THE PROGRAM WILL ONLY HALT ON AN ERROR.
THE PROGRAM DOES NOT CONTAIN FACILITES FOR REPORTING
MESSAGES OR ERROR CONDITIONS. TO PLACE THE PROGRAM INTO
A SCOPE LOOP, REPLACE THE ERROR HALT WITH A NOP,
SET SWITCH 14 = 1 AND DEPRESS CONT.

7. RESTRICTIONS

BECAUSE BOTH SUB-TESTS USE THE MAINTENANCE SWITCHES,
ADVISE NOT RUNNING TEST IN CHAIN MODE.
IF VR14 SCOPE, LOCATION "GSYAXS" (LOC. 1012) MUST BE CHANGED TO 1377.

8. MISCELANEOUS

8.1 EXECUTION TIME

SUB-TEST 1 TAKES APPROXIMATELY 10 SECONDS.
SUB-TEST 2 TAKES APPROXIMATELY 30 SECONDS.

8.2 DEVICE ADDRESS PROGRAM LOCATIONS

LOCATION 1000 CONTAINS THE GT40/GT44 DEVICE ADDRESS
LOCATION 1002 CONTAINS THE GT40/GT44 INTERRUPT VECTOR.
LOCATION 1004 CONTAINS THE GT40/GT44 INTERRUPT LEVEL.
LOCATION 1006 CONTAINS THE GT40/GT44 CHARACTER SIZE.
LOCATION 1010 CONTAINS THE GT40/GT44 LINE FEED SIZE.
LOCATION 1012 CONTAINS THE GT40/GT44 +Y AXIS CUTOFF LOCATION.
(LOC. 1012 = 1377 IF VR14 SCOPE)
(LOC. 1012 = 1777 IF VR17 SCOPE)

9. PROGRAM DESCRIPTION

9.1 SUBTEST 1

(MAINT. SWITCH 1 SET, MAINT. SWITCH 2 RESET)
THIS SUBTEST IS A BASIC READ/WRITE TEST OF THE DISPLAY PROGRAM COUNTER REGISTER. WITH THE MAINT. SWITCHES SET IN THIS POSITION, THE DISPLAY SHOULD NOT REQUEST AN NPR OR BR INTERRUPT.

9.2 SUBTEST 2

(MAINT. SWITCH 1 RESET, MAINT. SWITCH 2 SET)
THIS SUBTEST IS A COMPLEX TEST OF THE DISPLAY STATUS, X AXIS AND Y AXIS REGISTERS. THE PROGRAM ALSO TESTS STOP(DONE), LIGHT-PEN, TIME-OUT AND SHIFT-OUT INTERRUPTS AND VECTORS. ALSO INCLUDED ARE TESTS FOR MODE, LINE-TYPE, BLINK, INTENSITY LEVELS, ITALICS AND COLOR CHANGE. THE 'RESUME' (DSTEP) INSTRUCTION IS USED TO SINGLE STEP THRU THE DISPLAY FILE. ALL DISPLAY INSTRUCTIONS ARE TESTED FOR PROPER OPERATION. TESTS ARE ALSO MADE FOR SETTING OF THE 'EDGE' FLAG, WHEN EXCEEDING ALL FOUR DISPLAY EDGES. TESTS ARE ALSO MADE THAT 'NULL', 'CR', 'LF' AND 'BS' CHANGE X OR Y AXIS CORRECTLY. WITH THE MAINT. SWITCHES SET IN THIS POSITION THE PROGRAM CAN SINGLE STEP THE DISPLAY CONTROLLER THRU A DISPLAY FILE (1 NPR AT A TIME) AND CHECK FOR PROPER OPERATION.

```
                        .ENABL  ABS,AMA
                        .TITLE GT-40/GT-44 INSTRUCTION TEST I MAINDEC-11-DDGTA-C
                                                .LIST   ME,BIN,SEQ
                                                .NLIST  MC,MD,CND
                        000000                  .=0
000000  000000          000000                  HALT
000002  000000          000000                  HALT
                                                ;LOCATIONS 0-776 ARE FILLED WITH TRAP CATCHER
                        000024                  .=24
000024  015556          015556                  LOWPWR
000026  000340          000340                  340
                        000030                  .=30
000030  015512          015512                  .WORD   SCOPEA  ;EMT RETURN
000032  000340          000340                  340
                        000046                  .=46
000046  015432          015432                  LOGICAL                 ;XXDP-ACT FLAG

                        000174                  .=174
000174  000137  001342  001342                  JMP     START   ;P.C. REGISTER TEST
000200  000137  001544  001544                  JMP     STARTB  ;LOGIC TEST (BR-NPR-INTERRUPT REQUESTS)

                        001000                  .=1000
001000  172000          172000          GSADD:  172000          ;GS DISPLAY STARTING ADDRESS
001002  000320          000320          GSVCT:  320             ;GS DISPLAY STARTING VECTOR
001004  000200          000200          DSPBR:  200             ;GS DISPLAY INTERRUPT LEVEL
001006  000016          000016          GSCHSZ: 16              ;CHARACTER SIZE (14-16)
001010  000030          000030          GSLFSZ: 30              ;LINE FEED SIZE (30-32)
001012  001777          001777          GSYAXS: 1777            ;+Y AXIS CUTOFF LOCATION
001014  000177          000177          GSSEMO: 177             ;SHIFT-OUT END CHARACTER

001016  000000          000000          ICNT:   0               ;PASS COUNTER
001020  177776          177776          PSW:    177776
001022  015656          015656          DBUF:   BUFFER          ;FIRST WORD IN THE DISPLAY BUFFER
001024  015660          015660          DBUF1:  BUFFER+2        ;SECOND WORD
001026  015662          015662          DBUF2:  BUFFER+4        ;THIRD WORD
001030  015664          015664          DBUF3:  BUFFER+6        ;FOURTH WORD
001032  015666          015666          DBUF4:  BUFFER+10       ;FIFTH WORD
001034  015670          015670          DBUF5:  BUFFER+12       ;SIXTH WORD
001036  000000          000000          DSAVE:  0               ;TEMP REG.
001040  017476          017476          SIZE:   17476           ;BUFFER SIZE FOR 4K (WORD LENGTH)
001042  000000          000000          CNTR:   0
001044  000750          000750          LFSIZE: 750             ;LINE FEED DELTA Y SIZE
001046  000762          000762          CHSIZE: 762             ;BACK SPACE CHARACTER DELTA X SIZE
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```
                                        ;GS ADDRESSES AND VECTORS
                                        
001050  172000                  DPC:    172000          ;DISPLAY PC REGISTER
001052  172002                  DSR:    172002          ;DISPLAY STATUS REGISTER
001054  172004                  XPOS:   172004          ;X AXIS REGISTER (READ ONLY)
001056  172006                  YPOS:   172006          ;Y AXIS REGISTER AND GRAPHPLOT REGISTER (READ ONLY)

001060  000320                  DDONE:  320             ;DISPLAY STOP (DONE) VECTOR
001062  000322                  DDONE1: 322             ;

001064  000324                  LPVCT:  324             ;DISPLAY LIGHT PEN VECTOR
001066  000326                  LPVCT1: 326             ;

001070  000330                  TIMEVT: 330             ;DISPLAY TIME-OUT (NXM.) ERROR VECTOR
001072  000332                  TMEVT1: 332             ; OR "SHIFT-OUT" VECTOR

                                        ;GS INITALIZATION ROUTINE

001074  012700  001050          SETUP:  MOV     #DPC,R0         ;SET UP POINTER
001100  013701  001000                  MOV     GSADD,R1
001104  010120                  SETUPA: MOV     R1,(0)+
001106  062701  000002                  ADD     #2,R1
001112  022700  001060                  CMP     #DPC+10,R0
001116  001372                          BNE     SETUPA
001120  012700  001060                  MOV     #DDONE,R0
001124  013701  001002                  MOV     GSVCT,R1
001130  010120                  SETUPB: MOV     R1,(0)+
001132  062701  000002                  ADD     #2,R1
001136  022700  001074                  CMP     #DDONE+14,R0
001142  001372                          BNE     SETUPB
001144  013737  001010  001044          MOV     GSLFSZ,LFSIZE   ;SET UP DELTA LF
001152  005437  001044                  NEG     LFSIZE          ;NEGATE IT
001156  042737  177000  001044          BIC     #177000,LFSIZE  ;MASK IT
001164  013737  001006  001046          MOV     GSCHSZ,CHSIZE   ;SET UP DELTA CHAR
001172  005437  001046                  NEG     CHSIZE          ;NEGATE IT
001176  004737  001250                  JSR     PC,DOCORE
001202  042737  177000  001046          BIC     #177000,CHSIZE  ;MASK IT
001210  013777  001062  177642          MOV     DDONE1,@DDONE
001216  005077  177640                  CLR     @DDONE1
001222  013777  001066  177634          MOV     LPVCT1,@LPVCT
001230  005077  177632                  CLR     @LPVCT1
001234  013777  001072  177626          MOV     TMEVT1,@TIMEVT
001242  005037  001072                  CLR     TMEVT1
001246  000207                          RTS     PC
```

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                                        ;SUBROUTINE TO DETERMINE THE SIZE OF CORE
                                        ; AND SET UP LOCATION SIZE WITH THE VALUE
                                        ;
001250  012737  001300  000004  DOCORE: MOV     #2$,@#4                 ;SET UP FOR NEM
001256  012701  017776          1$:     MOV     #17776,R1               ;SET UP ADDRESS
001262  062701  020000                  ADD     #20000,R1               ;MOVE TO THE NEXT BANK
001266  005711                          TST     (R1)                    ;TIMEOUT ?
001270  022701  177776                  CMP     #177776,R1              ;END ?
001274  001372                          BNE     1$
001276  000401                          BR      3$
001300  022626                  2$:     CMP     (SP)+,(SP)+             ;POP STACK
001302  012737  000006  000004  3$:     MOV     #6,@#4                  ;RESET BUSS ERROR
001310  162701  020000                  SUB     #20000,R1
001314  022701  017776                  CMP     #17776,R1               ;TEST FOR 4K MACHINE
001320  001003                          BNE     4$                      ;BR IF NOT 4K
001322  162701  000400                  SUB     #400,R1                 ;SAVE LOADERS
001326  000402                          BR      5$
001330  162701  010000          4$:     SUB     #10000,R1               ;ADJUST FOR XXDP
001334  010137  001040          5$:     MOV     R1,SIZE                 ;SET UP SIZE LENGTH
001340  000207                          RTS     PC                      ;EXIT
```

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001342  012777  000340  177450  START:  MOV     #340,@PSW
001350  012706  000500                  MOV     #STKPTR,SP
001354  004737  001074                  JSR     PC,SETUP
001360  005037  001016                  CLR     ICNT                    ;CLEAR PASS COUNT
001364  012701  001372                  MOV     #PCTST0+2,R1

                                ;DOES THE DISPLAY PC LOAD PROPERLY
                                ;BASIC TEST

001370  104000                  PCTST0: SCOPE
001372  013737  001016  177570          MOV     ICNT,@#DISPLAY
001400  005077  177444                  CLR     @DPC                    ;CLEAR DISPLAY P.C.
001404  017700  177440                  MOV     @DPC,R0                 ;READ DPC AND SAVE IN R0
001410  001401                          BEQ     .+4                     ;DPC EQUAL TO ZERO?
001412  000000                          HALT                            ;NO,DISPLAY P.C. FAILED TO RESET


001414  104000                  PCTST1: SCOPE
001416  012777  017776  177424          MOV     #17776,@DPC             ;LOAD 17776 INTO DISPLAY P.C.
001424  017700  177420                  MOV     @DPC,R0                 ;READ DPC AND SAVE IN R0.
001430  022700  017776                  CMP     #17776,R0               ;ARE THEY EQUAL ?
001434  001401                          BEQ     .+4                     ;YES
001436  000000                          HALT                            ;NO, DISPLAY P.C. FAILED TO SET
                                                                        ;

001440  104000                  PCTST2: SCOPE
001442  012777  012524  177400          MOV     #12524,@DPC             ;LOAD 12524 INTO DISPLAY P.C.
001450  017700  177374                  MOV     @DPC,R0                 ;READ DPC AND SAVE IN R0.
001454  022700  012524                  CMP     #12524,R0               ;DPC EQUAL TO 12524
001460  001401                          BEQ     .+4                     ;
001462  000000                          HALT                            ;DISPLAY P.C. FAILED TO LOAD PROPERLY
                                                                        ;12524

001464  104000                  PCTST3: SCOPE
001466  012777  005252  177354          MOV     #5252,@DPC              ;LOAD 5252 INTO DISPLAY P.C.
001474  017700  177350                  MOV     @DPC,R0                 ;READ DPC AND SAVE IN R0
001500  022700  005252                  CMP     #5252,R0                ;DPC EQUAL TO 5252?
001504  001401                          BEQ     .+4                     ;
001506  000000                          HALT                            ;DISPLAY P.C. FAILED TO LOAD PROPERLY
                                                                        ; 5252

001510  005777  177334          PCTST4: TST     @DPC
001514  005777  177332                  TST     @DSR
001520  005777  177330                  TST     @XPOS
001524  005777  177326                  TST     @YPOS

001530  005237  001016                  INC     ICNT
001534  001315                          BNE     PCTST0
001536  004737  015452                  JSR     PC,BELL                 ;RING BELL
001542  000712                          BR      PCTST0
```

```
                                STARTB: MOV     #340,@PSW
                                        MOV     #STKPTR,SP
                                        JSR     PC,SETUP
                                        CLR     ICNT
                                        MOV     #GT0+2,R1

                                ;MODE REGISTER TEST
                                ;DOES THE "MODE" REGISTER LOAD PROPERLY

                                GT0:    SCOPE
                                        MOV     ICNT,@#DISPLAY
                                        MOV     #100000,@DBUF   ;LOAD MODE REGISTER=0
                                        MOV     DBUF,@DPC       ;LOAD DISPLAY PC
                                        MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
                                        BIC     #103777,R0      ;MASK TO BITS 14-11
                                        CMP     #40000,R0       ;TEST R0
                                        BEQ     .+4
                                        HALT                    ;MODE BITS (14-11) FAILED TO RESET

                                GT1:    SCOPE
                                        MOV     #174000,@DBUF   ;LOAD MODE REGISTER=17
                                        MOV     DBUF,@DPC       ;LOAD DISPLAY PC.
                                        MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
                                        BIC     #103777,R0      ;MASK TO BITS 14-11
                                        CMP     #74000,R0       ;TEST R0
                                        BEQ     .+4
                                        HALT                    ;MODE BITS (14-11) FAILED TO SET

                                GT2:    SCOPE
                                        MOV     #140000,@DBUF   ;LOAD MODE REGISTER=10
                                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
                                        MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
                                        BIC     #103777,R0      ;MASK TO BITS 14-11
                                        CMP     #40000,R0       ;TEST R0
                                        BEQ     .+4
                                        HALT                    ;MODE BIT 14 FAILED TO SET

                                GT3:    SCOPE
                                        MOV     #160000,@DBUF   ;LOAD MODE REGISTER=14
                                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
                                        MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
                                        BIC     #103777,R0      ;MASK TO BITS 14-11
                                        CMP     #60000,R0       ;TEST R0
                                        BEQ     .+4
                                        HALT                    ;MODE BIT 13 FAILED TO SET
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001770  104000                          GT4:    SCOPE
001772  000005                                  RESET
001774  012777  170000  177020                  MOV     #170000,@DBUF   ;LOAD MODE REGISTER=16
002002  013777  001022  177040                  MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002010  017700  177036                          MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002014  042700  103777                          BIC     #103777,R0      ;MASK TO BITS 14-11
002020  022700  070000                          CMP     #70000,R0       ;TEST R0
002024  001401                                  BEQ     .+4             ;
002026  000000                                  HALT                    ;MODE BIT 12 FAILED TO SET


002030  104000                          GT5:    SCOPE
002032  012777  174000  176762                  MOV     #174000,@DBUF   ;LOAD MODE REGISTER=17
002040  013777  001022  177002                  MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002046  017700  177000                          MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002052  042700  103777                          BIC     #103777,R0      ;MASK TO BITS 14-11
002056  022700  074000                          CMP     #74000,R0       ;TEST R0
002062  001401                                  BEQ     .+4             ;
002064  000000                                  HALT                    ;MODE BIT 11 FAILED TO SET


                                        ;TESTED BY "SET GRAPHIC MODE"

002066  104000                          GT6:    SCOPE
002070  012777  100004  176724                  MOV     #100004,@DBUF   ;LOAD LINE TYPE ENABLE =1 AND LINE TYPE VALUE =0
002076  013777  001022  176744                  MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002104  017700  176742                          MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002110  042700  177774                          BIC     #177774,R0      ;MASK TO BITS 1-0
002114  022700  000000                          CMP     #0,R0           ;TEST R0
002120  001401                                  BEQ     .+4
002122  000000                                  HALT                    ;LINE BITS 1-0 FAILED TO RESET

002124  104000                          GT7:    SCOPE
002126  012777  100007  176666                  MOV     #100007,@DBUF   ;LINE TYPE ENABLE =1 LINE TYPE =3
002134  013777  001022  176706                  MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002142  017700  176704                          MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002146  042700  177774                          BIC     #177774,R0      ;MASK TO BITS 1-0
002152  022700  000003                          CMP     #3,R0           ;TEST R0
002156  001401                                  BEQ     .+4
002160  000000                                  HALT                    ;LINE BITS 1-0 FAILED TO SET

002162  104000                          GT8:    SCOPE
002164  012777  100005  176630                  MOV     #100005,@DBUF   ;LINE TYPE ENABLE =1 LINE TYPE =1
002172  013777  001022  176650                  MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002200  017700  176646                          MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002204  042700  177774                          BIC     #177774,R0      ;MASK TO BITS 1-0
002210  022700  000001                          CMP     #1,R0           ;TEST R0
002214  001401                                  BEQ     .+4
002216  000000                                  HALT                    ;LINE BIT 0 FAILED TO SET

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002220  104000                          GT9:    SCOPE
002222  012777  100006  176572                  MOV     #100006,@DBUF           ;LINE TYPE ENABLE =1 LINE TYPE =2
002230  013777  001022  176612                  MOV     DBUF,@DPC               ;LOAD DISPLAY P.C.
002236  017700  176610                          MOV     @DSR,R0                 ;READ DISPLAY STATUS REGISTER
002242  042700  177774                          BIC     #177774,R0              ;MASK TO BITS 1-0
002246  022700  000002                          CMP     #2,R0                   ;TEST R0
002252  001401                                  BEQ     .+4
002254  000000                                  HALT                            ;LINE BIT 1 FAILED TO SET


002256  104000                          GT10:   SCOPE
002260  012777  100003  176534                  MOV     #100003,@DBUF           ;LINE TYPE ENABLE =0 LINE TYPE =3
002266  013777  001022  176554                  MOV     DBUF,@DPC               ;LOAD DISPLAY P.C.
002274  017700  176552                          MOV     @DSR,R0                 ;READ DISPLAY STATUS REGISTER
002300  042700  177774                          BIC     #177774,R0              ;MASK TC BITS 1-0
002304  022700  000002                          CMP     #2,R0                   ;TEST R0
002310  001401                                  BEQ     .+4                     ;SHOULD NOT CHANGE LT VALUE
002312  000000                                  HALT                            ;LINE TYPE ENABLE FAILED TO INHIBIT
                                                                                ;CHANGING OF LINETYPE VALUE

002314  104000                          GT11:   SCOPE
002316  012777  100020  176476                  MOV     #100020,@DBUF           ;BLINK ENABLE =1  BLINK =0
002324  013777  001022  176516                  MOV     DBUF,@DPC               ;LOAD DISPLAY P.C.
002332  017700  176514                          MOV     @DSR,R0                 ;READ DISPLAY STATUS REGISTER
002336  042700  177767                          BIC     #177767,R0              ;MASK TO BIT 3
002342  022700  000000                          CMP     #0,R0                   ;TEST R0
002346  001401                                  BEQ     .+4
002350  000000                                  HALT                            ;BLINK BIT FAILED TO RESET
                                                                                ;

002352  104000                          GT12:   SCOPE
002354  012777  100030  176440                  MOV     #100030,@DBUF           ;BLINK ENABLE =1  BLINK =1
002362  013777  001022  176460                  MOV     DBUF,@DPC               ;LOAD DISPLAY P.C.
002370  017700  176456                          MOV     @DSR,R0                 ;READ DISPLAY STATUS REGISTER
002374  042700  177767                          BIC     #177767,R0              ;MASK TO BIT 3
002400  022700  000010                          CMP     #10,R0                  ;TEST R0
002404  001401                                  BEQ     .+4
002406  000000                                  HALT                            ;BLINK BIT FAILED TO SET


002410  104000                          GT13:   SCOPE
002412  012777  100000  176402                  MOV     #100000,@DBUF           ;BLINK ENABLE =0  BLINK =0
002420  013777  001022  176422                  MOV     DBUF,@DPC               ;LOAD DISPLAY P.C.
002426  017700  176420                          MOV     @DSR,R0                 ;READ DISPLAY STATUS REGISTER
002432  042700  177767                          BIC     #177767,R0              ;MASK TO BIT 3
002436  022700  000010                          CMP     #10,R0                  ;TEST R0
002442  001401                                  BEQ     .+4
002444  000000                                  HALT                            ;BLINK ENABLE FAILED TO INHIBIT
                                                                                ;CHANGING OF THE BLINK BIT
```

```

 002446  104000                    GT14:    SCOPE
 002450  012777  100100  176344             MOV     #100100,@DBUF     ;LP ENABLE =1 LP=0
 002456  013777  001022  176364             MOV     DBUF,@DPC         ;LOAD DISPLAY P.C.
 002464  017700  176362                     MOV     @DSR,R0           ;READ STATUS
 002470  032700  000200                     BIT     #200,R0           ;
 002474  001401                             BEQ     .+4
 002476  000000                             HALT                      ;LIGHT PEN FLAG SET IN ERROR

 002500  104000                    GT15:    SCOPE
 002502  012777  100140  176312             MOV     #100140,@DBUF     ;LP ENABLE =1 LP=1
 002510  013777  001022  176332             MOV     DBUF,@DPC         ;LOAD DISPLAY P.C.
 002516  017700  176330                     MOV     @DSR,R0           ;READ STATUS
 002522  032700  000200                     BIT     #200,R0
 002526  001401                             BEQ     .+4
 002530  000000                             HALT                      ;LIGHT PEN FLAG SET IN ERROR

 002532  104000                    GT16:    SCOPE
 002534  012777  102000  176260             MOV     #102000,@DBUF     ;INTENSITY LEVEL ENABLE =1 LEVEL =0
 002542  013777  001022  176300             MOV     DBUF,@DPC         ;LOAD DISPLAY P.C.
 002550  017700  176276                     MOV     @DSR,R0           ;READ DISPLAY STATUS REGISTER
 002554  042700  174377                     BIC     #174377,R0        ;MASK TO BITS 8-10
 002560  022700  000000                     CMP     #0,R0             ;TEST R0
 002564  001401                             BEQ     .+4
 002566  000000                             HALT                      ;INTENSITY LEVEL BITS 8-10 FAILED TO RESET

 002570  104000                    GT17:    SCOPE
 002572  012777  103600  176222             MOV     #103600,@DBUF     ;INTENSITY LEVEL ENABLE =1  LEVEL =7
 002600  013777  001022  176242             MOV     DBUF,@DPC         ;LOAD DISPLAY O.C.
 002606  017700  176240                     MOV     @DSR,R0           ;READ DISPLAY STATUS REGISTER
 002612  042700  174377                     BIC     #174377,R0        ;MASK TO BITS 8-10
 002616  022700  003400                     CMP     #3400,R0          ;TEST R0
 002622  001401                             BEQ     .+4
 002624  000000                             HALT                      ;INTENSITY LEVEL BITS 8-10 FAILED TO SET


 002626  104000                    GT18:    SCOPE
 0[illegible]30  012777  103000  176164     MOV     #103000,@DBUF     ;INTENSITY LEVEL ENABLE =1  LEVEL =4
 0[illegible]36  013777  001022  176204     MOV     DBUF,@DPC         ;LOAD DISPLAY P.C.
 0[illegible]44  017700  176202             MOV     @DSR,R0           ;READ DISPLAY STATUS REGISTER
 0[illegible]50  042700  174377             BIC     #174377,R0        ;MASK TO BITS 8-10
 00[illegible]54  022700  002000            CMP     #2000,R0          ;TEST R0
 0[illegible]60  001401                     BEQ     .+4
 002662  000000                             HALT                      ;INTENSITY LEVEL BIT 10 FAILED
```

```
                                                GT19:   SCOPE
002664  104000
002666  012777  102400  176126                        MOV     #102400,@DBUF   ;INTENSITY LEVEL ENABLE =1  LEVEL =2
002674  013777  001022  176146                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002702  017700  176144                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002706  042700  174377                                BIC     #174377,R0      ;MASK TO BITS 8-10
002712  022700  001000                                CMP     #1000,R0        ;TEST R0
002716  001401                                        BEQ     .+4
002720  000000                                        HALT                    ;INTENSITY LEVEL BIT 9 FAILED

002722  104000                                GT20:   SCOPE
002724  012777  102200  176070                        MOV     #102200,@DBUF   ;INTENSITY LEVEL ENABLE =1  LEVEL =1
002732  013777  001022  176110                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002740  017700  176106                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
002744  042700  174377                                BIC     #174377,R0      ;MASK TO BITS 8-10
002750  022700  000400                                CMP     #400,R0         ;TEST R0
002754  001401                                        BEQ     .+4
002756  000000                                        HALT                    ;INTENSITY LEVEL BIT 8 FAILED

002760  104000                                GT21:   SCOPE
002762  012777  101600  176032                        MOV     #101600,@DBUF   ;INTENSITY LEVEL ENABLE =0  LEVEL =7
002770  013777  001022  176052                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
002776  017700  176050                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
003002  042700  174377                                BIC     #174377,R0      ;MASK TO BITS 8-10
003006  022700  000400                                CMP     #400,R0         ;TEST R0
003012  001401                                        BEQ     .+4
003014  000000                                        HALT                    ;INTENSITY LEVEL ENABLE FAILED TO INHIBIT
                                                                            ;INTENSITY LEVEL CHANGE

                                        ;TESTED BY "LOAD STATUS REGISTER A"

003016  104000                                GT22:   SCOPE
003020  012777  170040  175774                        MOV     #170040,@DBUF   ;ITALICS ENABLE=1  ITALICS=0
003026  013777  001022  176014                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
003034  017700  176012                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
003040  042700  177757                                BIC     #177757,R0      ;MASK TO BIT 4
003044  022700  000000                                CMP     #0,R0           ;TEST R0
003050  001401                                        BEQ     .+4
003052  000000                                        HALT                    ;ITALICS BIT FAILED TO RESET

003054  104000                                GT23:   SCOPE
003056  012777  170060  175736                        MOV     #170060,@DBUF   ;ITALICS ENABLE=1  ITALICS=1
003064  013777  001022  175756                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
003072  017700  175754                                MOV     @DSR,R0         ;READY DISPLAY STATUS REGISTER
003076  042700  177757                                BIC     #177757,R0      ;MASK TO BIT 4
003102  022700  000020                                CMP     #20,R0          ;TEST R0
003106  001401                                        BEQ     .+4
003110  000000                                        HALT                    ;ITALICS BIT FAILED TO SET
```

```
573
574  003112  104000                    GT24:   SCOPE
575  003114  012777  170000  175700            MOV     #170000,@DBUF   ;ITALICS ENABLE=0  ITALICS=0
576  003122  013777  001022  175720            MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
577  003130  017700  175716                    MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
578  003134  042700  177757                    BIC     #177757,R0      ;MASK TO BITS 4
579  003140  022700  000020                    CMP     #20,R0          ;TEST R0
580  003144  001401                            BEQ     .+4             ;
581  003146  000000                            HALT                    ;ITALICS ENABLE FAILED TO INHIBIT
582                                                                    ;CLEARING OF ITALICS BIT
583
584  003150  104000                    GT25:   SCOPE
585  003152  012777  170000  175642            MOV     #170000,@DBUF   ;"STOP" BIT =0
586  003160  013777  001022  175662            MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
587  003166  017700  175660                    MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
588  003172  005700                            TST     R0              ;TEST BIT 15
589  003174  100001                            BPL     .+4
590  003176  000000                            HALT                    ;"STOP" BIT FAILED TO RESET
591
592
593  003200  104000                    GT26:   SCOPE
594  003202  012777  172000  175612            MOV     #172000,@DBUF   ;"STOP" BIT =1
595  003210  013777  001022  175632            MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
596  003216  017700  175630                    MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
597  003222  005700                            TST     R0              ;TEST BIT 15
598  003224  100401                            BMI     .+4
599  003226  000000                            HALT                    ;"STOP" BIT FAILED TO SET
600
601
602  003230  104000                    GT27:   SCOPE
603  003232  012777  170000  175562            MOV     #170000,@DBUF   ;"STOP" BIT =1
604  003240  013777  001022  175602            MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
605  003246  017700  175600                    MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
606  003252  005700                            TST     R0              ;TEST BIT 15
607  003254  100001                            BPL     .+4
608  003256  000000                            HALT                    ;"STOP" BIT FAILED TO RESET
```

```
                                                GT28:   SCOPE
003260  104000
003262  012777  170002  175532                        MOV     #170002,@DBUF   ;COLOR ENABLE=1  COLOR=0
003270  013777  001022  175552                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
003276  004737  015544                                JSR     7,DLAY1         ;EXECUTE A PROGRAM DELAY
003302  017700  175544                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
003306  042700  177773                                BIC     #177773,R0      ;MASK TO BIT 2
003312  022700  000000                                CMP     #0,R0           ;TEST R0
003316  001401                                        BEQ     .+4             ;
003320  000240                                        NOP                     ;COLOR BIT FAILED TO RESET

003322  104000                                GT29:   SCOPE
003324  012777  170003  175470                        MOV     #170003,@DBUF   ;COLOR ENABLE=1  COLOR=1
003332  013777  001 2   175510                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
003340  004737  015 44                              JSR     7,DLAY1         ;EXECUTE A PROGRAM DELAY
003344  017700  175 02                              MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
003350  042700  177773                                BIC     #177773,R0      ;MASK TO BIT 2
003354  022700  000004                                CMP     #4,R0           ;TEST R0
003360  001401                                        BEQ     .+4             ;
003362  000240                                        NOP                     ;COLOR BIT FAILED TO SET

003364  104000                                GT30:   SCOPE
00 366  012777  170000  175 46                        MOV     #170000,@DBUF   ;COLOR ENABLE=0  COLOR=0
003374  013777  001022  175446                        MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
00 372  017700  175444                                MOV     @DSR,R0         ;READ DISPLAY STATUS REGISTER
00 376  042700  177773                                BIC     #177773,R0      ;MASK TO BIT 2
003412  022700  000004                                CMP     #4,R0           ;TEST R0
003416  001401                                        BEQ     .+4             ;
003420  000240                                        NOP                     ;COLOR ENABLE FAILED TO INHIBIT
                                                                                ;RESETTING OF COLOR BIT
```

```
                                        ;GRAPHPLOT INCREMENT REGISTER TEST

003422  104000                  GT31:   SCOPE
003424  012777  174100  175370          MOV     #174100,@DBUF   ;LOAD GRAPHPLOT COUNTER
003432  013777  001022  175410          MOV     DBUF,@DPC       ;START DISPLAY
003440  017700  175410                  MOV     @XPOS,R0        ;READ INCREMENT REGISTER
003444  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
003450  022700  000000                  CMP     #0,R0
003454  001401                          BEQ     .+4
003456  000000                          HALT                    ;GRAPHPLOT REGISTER IN ERROR

003460  104000                  GT32:   SCOPE
003462  012777  174177  175332          MOV     #174177,@DBUF   ;LOAD GRAPHPLOT COUNTER
003470  013777  001022  175352          MOV     DBUF,@DPC       ;START DISPLAY
003476  017700  175352                  MOV     @XPOS,R0        ;READ INCREMENT REGISTER
003502  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
003506  022700  176000                  CMP     #176000,R0
003512  001401                          BEQ     .+4
003514  000000                          HALT                    ;GRAPHPLOT REGISTER IN ERROR

003516  104000                  GT33:   SCOPE
003520  012777  174152  175274          MOV     #174152,@DBUF   ;LOAD GRAPHPLOT COUNTER
003526  013777  001022  175314          MOV     DBUF,@DPC       ;START DISPLAY
003534  017700  175314                  MOV     @XPOS,R0        ;READ INCREMENT REGISTER
003540  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
003544  022700  124000                  CMP     #124000,R0
003550  001401                          BEQ     .+4
003552  000000                          HALT                    ;GRAPHPLOT REGISTER IN ERROR

003554  104000                  GT34:   SCOPE
003556  012777  174125  175236          MOV     #174125,@DBUF   ;LOAD GRAPHPLOT COUNTER
003564  013777  001022  175256          MOV     DBUF,@DPC       ;START DISPLAY
003572  017700  175256                  MOV     @XPOS,R0        ;READ INCREMENT REGISTER
003576  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
003602  022700  052000                  CMP     #52000,R0
003606  001401                          BEQ     .+4
003610  000000                          HALT                    ;GRAPHPLOT REGISTER IN ERROR

003612  104000                  GT35:   SCOPE
003614  012777  174100  175200          MOV     #174100,@DBUF   ;LOAD GRAPHPLOT COUNTER WITH 0
003622  013777  001022  175220          MOV     DBUF,@DPC       ;START DISPLAY
003630  004737  015522                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
003634  012777  174077  175160          MOV     #174077,@DBUF   ;LOAD GRAPHPLOT NO ENABLE
003642  013777  001022  175200          MOV     DBUF,@DPC       ;START DISPLAY
003650  017700  175200                  MOV     @XPOS,R0        ;READ INCREMENT REGISTER
003654  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
003660  022700  000000                  CMP     #0,R0           ;ARE THEY EQUAL ?
003664  001401                          BEQ     .+4
003666  000000                          HALT                    ;GRAPHPLOT REGISTER CHANGED WITHOUT
                                                                ; THE ENABLE BEING SET
```

```
                                        ;NOP TEST (INCREMENT PC TEST)
                                        ;SIMPLE - 4 INCREMENTS

003670  104000                  GT36:   SCOPE
003672  012777  164000  175122          MOV     #164000,@DBUF   ;MOVE DNOP INTO BUFFER
003700  012777  164000  175116          MOV     #164000,@DBUF1  ;MOVE DNOP INTO BUFFER
003706  012777  164000  175112          MOV     #164000,@DBUF2  ;MOVE DNOP INTO BUFFER
003714  012777  164000  175106          MOV     #164000,@DBUF3  ;MOVE DNOP INTO BUFFER
003722  012777  164000  175102          MOV     #164000,@DBUF4  ;MOVE DNOP INTO BUFFER
003730  013777  001022  175112          MOV     DBUF,@DPC       ;START THE DISPLAY
003736  017700  175106                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
003742  023700  001024                  CMP     DBUF1,R0        ;DID IT INCREMENT BY 2?
003746  001402                          BEQ     .+6             ;
003750  000000                          HALT                    ;DISPLAY P.C. FAILED TO INCREMENT
003752  000435                          BR      GT37
003754  012777  000001  175066          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
003762  017700  175062                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
003766  023700  001026                  CMP     DBUF2,R0        ;DID IT INCREMENT BY 2?
003772  001402                          BEQ     .+6             ;
003774  000000                          HALT                    ;DISPLAY P.C. FAILED TO INCREMENT
003776  000423                          BR      GT37
004000  012777  000001  175042          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004006  017700  175036                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004012  023700  001030                  CMP     DBUF3,R0        ;DID IT INCREMENT BY 2?
004016  001402                          BEQ     .+6             ;
004020  000000                          HALT                    ;DISPLAY P.C. FAILED TO INCREMENT
004022  000411                          BR      GT37
004026  012777  000001  175016          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004032  017700  175012                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004036  023700  001032                  CMP     DBUF4,R0        ;DID IT INCREMENT BY 2?
004042  001401                          BEQ     .+4             ;
004044  000000                          HALT                    ;DISPLAY P.C. FAILED TO INCREMENT
```

```
                                        ;DNOP TEST (INCREMENT P.C. TEST)
                                        ;COMPLEX - BUFFER LENGTH
                                        
004046  104000                  GT37:   SCOPE
004050  013702  001022                  MOV     DBUF,R2         ;SET UP POINTER
004054  012722  164000          1$:     MOV     #164000,(2)+    ;MOVE DNOP INTO THE BUFFER
004060  023702  001040                  CMP     SIZE,R2         ;FINISHED FILLING THE BUFFER?
004064  001373                          BNE     1$              ;NO
                                        
004066  104000                          SCOPE
004070  013777  001022  174752          MOV     DBUF,@DPC       ;YES, START THE DISPLAY
004076  013737  001022  001036          MOV     DBUF,DSAVE
004104  013702  001040                  MOV     SIZE,R2         ;SETUP A COUNT
004110  024242                          CMP     -(R2),-(R2)     ;DEC BY 2
004112  062737  000002  001036  GT37A:  ADD     #2,DSAVE
004120  017700  174724                  MOV     @DPC,R0         ;READ DISPLAY P.C.
004124  023700  001036                  CMP     DSAVE,R0        ;DID IT INCREMENT BY 2?
004130  001402                          BEQ     1$              ;YES
004132  000000                          HALT                    ;DISPLAY PC FAILED TO INCREMENT
004134  000407                          BR      GT40            ;PROPERLY
                                        
004136  020237  001036          1$:     CMP     R2,DSAVE        ;FINISHED THE BUFFER
004142  001404                          BEQ     GT40            ;YES
004144  012777  000001  174676          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004152  000757                          BR      GT37A           ;TRY AGAIN
```

```
                                        ;TEST THAT THE DISPLAY WILL JUMP TO ANOTHER ADDRESS
                                        ;DJUMP REGISTER TEST
                                        ;
004154  104000                  GT40:   SCOPE
004156  012777  160000  174636          MOV     #160000,@DBUF   ;MOVE DJUMP INTO THE BUFFER
004164  012777  000300  174632          MOV     #0,@DBUF1       ;MOVE 0 INTO THE NEXT LOCATION
004172  013777  001022  174650          MOV     DBUF,@DPC       ;START THE DISPLAY
004200  012777  000001  174642          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004206  017700  174636                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004212  022700  000000                  CMP     #0,R0           ;DID THE NEW DISPLAY P.C. LOAD PROPERLY
004216  001401                          BEQ     .+4
004220  000000                          HALT                    ;DJUMP FAILED TO CLEAR THE DISPLAY
                                                                ;PC PROPERLY
                                        ;
004222  104000                  GT41:   SCOPE
004224  012777  160000  174570          MOV     #160000,@DBUF   ;MOVE DJUMP INTO THE BUFFER
004232  012777  017776  174564          MOV     #17776,@DBUF1   ;MOVE 17776 INTO THE NEXT LOCATION
004240  013777  001022  174602          MOV     DBUF,@DPC       ;START THE DISPLAY I
004246  012777  000001  174574          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004254  017700  174570                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004260  022700  017776                  CMP     #17776,R0       ;DID THE NEW DISPLAY P.C. LOAD
004264  001401                          BEQ     .+4             ;PROPERLY?
004266  000000                          HALT                    ;DJUMP FAILED TO SET THE
                                                                ;DISPLAY P.C.
                                        ;
004270  104000                  GT42:   SCOPE
004272  012777  160000  174522          MOV     #160000,@DBUF   ;MOVE DJUMP INTO THE BUFFER
004300  012777  005252  174516          MOV     #5252,@DBUF1    ;MOVE 5252 INTO THE NEXT LOC.
004306  013777  001022  174534          MOV     DBUF,@DPC       ;START THE DISPLAY
004314  012777  000001  174526          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004322  017700  174522                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004326  022700  005252                  CMP     #5252,R0        ;DID THE NEW DISPLAY P.C. LOAD
004332  001401                          BEQ     .+4             ;PROPERLY?
004334  000000                          HALT                    ;DJUMP FAILED TO LOAD THE NEW
                                                                ;DISPLAY P.C. PROPERLY
                                        ;
004336  104000                  GT43:   SCOPE
004340  012777  160000  174454          MOV     #160000,@DBUF   ;MOVE DJUMP INTO THE BUFFER
004346  012777  012524  174450          MOV     #12524,@DBUF1   ;MOVE 12524 INTO THE NEXT LOC.
004354  013777  001022  174466          MOV     DBUF,@DPC       ;START THE DISPLAY
004362  012777  000001  174460          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004370  017700  174454                  MOV     @DPC,R0         ;READ THE DISPLAY P.C.
004374  022700  012524                  CMP     #12524,R0       ;DID THE NEW DISPLAY P.C. LOAD
004400  001401                          BEQ     .+4             ;PROPERLY?
004402  000000                          HALT                    ;DJUMP FAILED TO LOAD THE NEW
                                                                ;DISPLAY P.C. PROPERLY
```

```
                                        ;TEST THAT THE X POSITION REGISTER CAN BE LOADED CORRECTLY
                                        ;USING GRAPHPLOT X

004404  104000                  GT44:   SCOPE
004406  012777  122000  174406          MOV     #122000,@DBUF   ;LOW INTERSITY - SET GRAPH PLOT X MODE
004414  012777  001252  174402          MOV     #1252,@DBUF1    ;SET X POSITION
004422  012777  172000  174376          MOV     #172000,@DBUF2  ;LOAD STATUS REGISTER A, STOP
004430  013777  001022  174412          MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
004436  012777  000001  174404          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004444  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
004450  017700  174400                  MOV     @XPOS,R0        ;READ X POSITION
004454  022700  001252                  CMP     #1252,R0        ;
004460  001401                          BEQ     .+4
004462  000000                          HALT                    ;X POSITION REGISTER FAILED TO LOAD
                                                                ;PROPERLY USING GRAPH PLOT X MODE

                                        ;TEST THAT THE X POSITION REGISTER CAN BE LOADED CORRECTLY
                                        ;USING GRAPHPLOT X

004464  104000                  GT45:   SCOPE
004466  012777  122000  174326          MOV     #122000,@DBUF   ;LOW INTENSITY - SET GRAPH PLOT X MODE
004474  012777  000525  174322          MOV     #525,@DBUF1     ;SET X POSITION
004502  012777  172000  174316          MOV     #172000,@DBUF2  ;LOAD STATUS REGISTER A, STOP
004510  013777  001022  174332          MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
004516  012777  000001  174324          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004524  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
004530  017700  174320                  MOV     @XPOS,R0        ;READ X POSITION
004534  022700  000525                  CMP     #525,R0         ;
004540  001401                          BEQ     .+4
004542  000000                          HALT                    ;X POSITION REGISTER FAILED TO LAD
                                                                ;PROPERLY USING GRAPH PLOT X MODE

                                        ;TEST THAT THE Y POSITION REGISTER CAN BE LOADED CORRECTLY
                                        ;USING GRAPHPLOT Y MODE

004544  104000                  GT46:   SCOPE
004546  012777  126000  174246          MOV     #126000,@DBUF   ;LOW INTENSITY - SET GRAPHPLOT Y
004554  012777  001252  174242          MOV     #1252,@DBUF1    ;SET Y POSITION
004562  012777  172000  174236          MOV     #172000,@DBUF2  ;LOAD STATUS REGISTER A, STOP
004570  013777  001022  174252          MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
004576  012777  000001  174264          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004604  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
004610  017700  174242                  MOV     @YPOS,R0        ;READ Y POSITION
004614  022700  001252                  CMP     #1252,R0        ;
004620  001401                          BEQ     .+4
004622  000000                          HALT                    ;Y POSITION REGISTER FAILED TO LOAD
                                                                ;PROPERLY USING GRAPHPLOT Y MODE
```

```
                                        ;TEST THAT THE Y POSITION REGISTER CAN BE LOADED CORRECTLY
                                        ;USING GRAPHPLOT Y MODE
                                        
004624  104000                  GT47:   SCOPE
004626  012777  126000  174166        MOV     #126000,@DBUF   ;LOW INTENSITY - SET GRAPHPLOT Y MODE
004634  012777  000525  174162        MOV     #525,@DBUF1     ;SET Y POSITION
004642  012777  172000  174156        MOV     #172000,@DBUF2  ;LOAD STATUS REGISTER A, STOP
004650  013777  001022  174172        MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
004656  012777  000001  174164        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004664  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
004670  017700  174162                MOV     @YPOS,R0        ;READ Y POSITION
004674  022700  000525                CMP     #525,R0         ;
004700  001401                        BEQ     .+4             ;
004702  000000                        HALT                    ;Y POSITION REGISTER FAILED TO LOAD
                                                                ;PROPERLY USING GRAPHPLOT Y MODE
                                        
                                        ;TEST THAT THE X - Y POSITION REGISTERS CAN BE LOADED CORRECTLY
                                        ;USING GRAPHPLOT X + Y MODE
                                        ;TEST FOR PROPER SELECTION OF X AND Y REGISTERS
                                        
004704  104000                  GT48:   SCOPE
004706  012777  122000  174106        MOV     #122000,@DBUF   ;LOW INTENSITY - SET GRAPHPLOT X MODE
004714  012777  001234  174102        MOV     #1234,@DBUF1    ;SET X POSITION
004722  012777  126000  174076        MOV     #126000,@DBUF2  ;SET GRAPHPLOT Y MODE
004730  012777  001432  174072        MOV     #1432,@DBUF3    ;SET Y POSITION
004736  012777  172000  174066        MOV     #172000,@DBUF4  ;LOAD STATUS REGISTER A, STOP
004744  013777  001022  174076        MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
004752  012777  000001  174070        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
004760  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
004764  017700  174064                MOV     @XPOS,R0        ;READ X POSITION
004770  022700  001234                CMP     #1234,R0        ;
004774  001402                        BEQ     .+6             ;
004776  000000                        HALT                    ;GRAPHPLOT X MODE FAILED TO SELECT
005000  000416                        BR      GT49            ;X POSITION PROPERLY
                                        
005002  012777  000001  174040        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005010  012777  000001  174032        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005016  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005022  017700  174030                MOV     @YPOS,R0        ;READ Y POSITION
005026  022700  001432                CMP     #1432,R0        ;
005032  001401                        BEQ     .+4             ;
005034  000000                        HALT                    ;Y POSITION REGISTER FAILED TO LOAD
                                                                ;PROPERLY USING GRAPHPLOT Y MODE
```

```
                                        ;TEST THAT THE X-Y POSITION REGISTERS CAN BE RESET
                                        ;USING POINT DATA MODE.

005036  104000                  GT49:   SCOPE
005040  012777  116000  173754          MOV     #116000,@DBUF   ;LOW INTENSITY - POINT MODE
005046  005077  173752          CLR     @DBUF1          ;CLEAR X POSITION
005052  005077  173750          CLR     @DBUF2          ;CLEAR Y POSITION
005056  012777  172000  173744          MOV     #172000,@DBUF3  ;LOAD STATUS "A" REGISTER, STOP
005064  013777  001022  173756          MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
005072  012777  000001  173750          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005100  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005104  017700  173744                  MOV     @XPOS,R0        ;READ X POSITION
005110  001402                          BEQ     .+6             ;WAS IT 0?
005112  000000                          HALT                    ;X POSITION REGISTER FAILED TO RESET
005114  000411                          BR      GT50            ;USING POINT DATA MODE

005116  012777  000001  173724          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005124  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005130  017700  173722                  MOV     @YPOS,R0        ;READ Y POSITION
005134  001401                          BEQ     .+4             ;WAS IT 0?
005136  000000                          HALT                    ;Y POSITION REGISTER FAILED TO RESET
                                                                ;USING POINT DATA MODE

                                        ;TEST THAT THE X-Y POSITION REGISTERS CAN BE SET
                                        ;USING POINT DATA MODE.

005140  104000                  GT50:   SCOPE
005142  012777  116000  173652          MOV     #116000,@DBUF   ;LOW INTENSITY - POINT MODE
005150  012777  001777  173646          MOV     #1777,@DBUF1    ;SET X POSITION
005156  012777  001777  173642          MOV     #1777,@DBUF2    ;SET Y POSITION
005164  012777  172000  173636          MOV     #172000,@DBUF3  ;LOAD STATUS A REGISTER, STOP
005172  013777  001022  173650          MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
005200  012777  000001  173642          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005206  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005212  017700  173636                  MOV     @XPOS,R0        ;READ X POSITION
005216  022700  001777                  CMP     #1777,R0        ;WAS IT SET?
005222  001402                          BEQ     .+6             ;
005224  000000                          HALT                    ;X POSITION REGISTER FAILED TO SET
005226  000413                          BR      GT51            ;USING POINT DATA MODE

005230  012777  000001  173612          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005236  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005242  017700  173610                  MOV     @YPOS,R0        ;READ Y POSITION
005246  022700  001777                  CMP     #1777,R0        ;WAS IT SET?
005252  001401                          BEQ     .+4             ;
005254  000000                          HALT                    ;Y POSITION REGISTER FAILED TO SET
                                                                ;USING POINT DATA MODE
```

```
                                        ;TEST THAT THE X-Y POSITION REGISTERS CAN BE LOADED CORRECTLY
                                        ;USING POINT DATA MODE

005256  104000                  GT51:   SCOPE
005260  012777  116000  173534          MOV     #116000,@DBUF   ;LOW INTENSITY - POINT MODE
005266  012777  001252  173530          MOV     #1252,@DBUF1    ;SET X POSITION
005274  012777  001252  173524          MOV     #1252,@DBUF2    ;SET Y POSITION
005302  012777  172000  173520          MOV     #172000,@DBUF3  ;LOAD STATUS REGISTER A, STOP
005310  013777  001022  173532          MOV     DBUF,@DPC
005316  012777  000001  173524          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005324  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005330  017700  173520                  MOV     @XPOS,R0        ;READ X POSITION
005334  022700  001252                  CMP     #1252,R0        ;
005340  001402                          BEQ     .+6
005342  000000                          HALT                    ;X POSITION REGISTER FAILED
005344  000413                          BR      GT52            ;USING POINT DATA MODE

005346  012777  000001  173474          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005354  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005360  017700  173472                  MOV     @YPOS,R0        ;READ Y POSITION
005364  022700  001252                  CMP     #1252,R0        ;
005370  001401                          BEQ     .+4             ;
005372  000000                          HALT                    ;Y POSITION REGISTER FAILED
                                                                ;USING POINT DATA MODE

                                        ;TEST THAT THE X-Y POSITION REGISTERS CAN BE LOADED CORRECTLY
                                        ;USING POINT DATA MODE

005374  104000                  GT52:   SCOPE
005376  012777  116000  173416          MOV     #116000,@DBUF   ;LOW INTENSITY - POINT MODE
005404  012777  000525  173412          MOV     #525,@DBUF1     ;SET X POSITION
005412  012777  000525  173406          MOV     #525,@DBUF2     ;SET Y POSITION
005420  012777  172000  173402          MOV     #172000,@DBUF3  ;LOAD STATUS REGISTER A, STOP
005426  013777  001022  173414          MOV     DBUF,@DPC
005434  012777  000001  173406          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005442  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005446  017700  173402                  MOV     @XPOS,R0        ;READ X POSITION
005452  022700  000525                  CMP     #525,R0         ;
005456  001402                          BEQ     .+6
005460  000000                          HALT                    ;X POSITION REGISTER FAILED
005462  000413                          BR      GT53            ;USING POINT DATA MODE

005464  012777  000001  173356          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
005472  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
005476  017700  173354                  MOV     @YPOS,R0        ;READ Y POSITION
005502  022700  000525                  CMP     #525,R0         ;
005506  001401                          BEQ     .+4             ;
005510  000000                          HALT                    ;Y POSITION REGISTER FAILED
                                                                ;USING POINT DATA MODE
```

```
  996
  997                                   ;TEST THAT THE X-Y POSITION REGISTERS CAN BE LOADED CORRECTLY
  998                                   ;USING POINT DATA MODE
  999
 1000  005512  104000            GT53:   SCOPE
 1001  005514  012777  116000  173300    MOV     #116000,@DBUF   ;LOW INTENSITY - POINT MODE
 1002  005522  012777  000000  173274    MOV     #0,@DBUF1       ;SET X POSITION
 1003  005530  012777  001777  173270    MOV     #1777,@DBUF2    ;SET Y POSITION
 1004  005536  012777  172000  173264    MOV     #172000,@DBUF3  ;LOAD STATUS REGISTER A, STOP
 1005  005544  013777  001022  173276    MOV     DBUF,@DPC
 1006  005552  012777  000001  173270    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1007  005560  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1008  005564  017700  173264            MOV     @XPOS,R0        ;READ X POSITION
 1009  005570  022700  000000            CMP     #0,R0
 1010  005574  001402                    BEQ     .+6
 1011  005576  000000                    HALT                    ;X POSITION REGISTER FAILED
 1012  005600  000413                    BR      GT54            ;USING POINT DATA MODE
 1013
 1014  005602  012777  000001  173240    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1015  005610  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1016  005614  017700  173236            MOV     @YPOS,R0        ;READ Y POSITION
 1017  005620  022700  001777            CMP     #1777,R0        ;
 1018  005624  001401                    BEQ     .+4             ;
 1019  005626  000000                    HALT                    ;Y POSITION REGISTER FAILED
 1020                                                            ;USING POINT DATA MODE
 1021
```

```
1022
1023                                        ;TEST THAT LONG VECTOR MODE INCREMENTS X AND Y AXIS PROPERLY
1024                                        ;COUNT 1
1025
1026  005630  104000                        GT54:   SCOPE
1027  005632  013700  001022                        MOV     DBUF,R0
1028  005636  012720  116000                        MOV     #116000,(0)+    ;LOAD "POINT MODE"
1029  005642  005020                        CLR     (0)+            ;CLEAR X AXIS
1030  005644  005020                        CLR     (0)+            ;CLEAR Y AXIS
1031  005646  012720  110000                MOV     #110000,(0)+    ;LOAD "LONG VECTOR MODE"
1032  005652  012720  000001                MOV     #1,(0)+         ;PRESET "DELTA X AXIS"
1033  005656  012720  000001                MOV     #1,(0)+         ;PRESET "DELTA Y AXIS"
1034  005662  012710  172000                MOV     #172000,(0)     ;LOAD "DISP   STOP"
1035  005666  013777  001022  173154        MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1036  005674  012777  000001  173146        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1037  005702  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1038  005706  012777  000001  173134        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1039  005714  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1040  005720  012777  000001  173122        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1041  005726  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1042  005732  012777  000001  173110        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1043  005740  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1044  005744  012777  000001  173076        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1045  005752  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1046  005756  012777  000001  173064        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1047  005764  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1048
1049  005770  017700  173060                MOV     @XPOS,R0        ;READ X AXIS
1050  005774  022700  000001                CMP     #1,R0           ;DID IT INCREMENT BY 1
1051  006000  001402                        BEQ     .+6             ;YES
1052  006002  000000                        HALT                    ;NO, INCREMENT X AXIS BY
1053  006004  000406                        BR      GT55            ;LONG VECTOR MODE FAILED
1054
1055  006006  017700  173044                MOV     @YPOS,R0        ;READ Y AXIS
1056  006012  022700  000001                CMP     #1,R0           ;DID IT INCREMENT BY 1
1057  006016  001401                        BEQ     .+4             ;YES
1058  006020  000000                        HALT                    ;NO, INCREMENT Y AXIS BY
1059                                                                ;LONG VECTOR MODE FAILED
```

```
1060
1061                                    ;TEST THAT LONG VECTOR MODE DECREMENT X AND Y AXIS PROPERLY
1062                                    ;COUNT 1
1063
1064  006022  104000                    GT55:   SCOPE
1065  006024  013700  001022                    MOV     DBUF,R0
1066  006030  012720  116000                    MOV     #116000,(0)+    ;LOAD "POINT MODE"
1067  006034  005020                            CLR     (0)+            ;CLEAR X AXIS
1068  006036  005020                            CLR     (0)+            ;CLEAR Y AXIS
1069  006040  012720  110000                    MOV     #,10000,(0)+    ;LOAD "LONG VECTOR MODE"
1070  006044  012720  020001                    MOV     #20001,(0)+     ;RESET "DELTA X AXIS"
1071  006050  012720  020001                    MOV     #20001,(0)+     ;RESET "DELTA Y AXIS"
1072  006054  012710  172000                    MOV     #17?000,(0)     ;LOAD "DISPLAY STOP"
1073  006060  013777  001022  172762            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1074  006066  012777  000001  172754            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1075  006074  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1076  006100  012777  000001  172742            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1077  006106  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1078  006112  012777  000001  172730            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1079  006120  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1080  006124  012777  000001  172716            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1081  006132  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1082  006136  012777  000001  172704            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1083  006144  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1084  006150  012777  000001  172672            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1085  006156  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1086
1087  006162  017700  172666                    MOV     @XPOS,R0        ;READ X AXIS
1088  006166  022700  001777                    CMP     #1777,R0        ;DID IT DECREMENT BY 1
1089  006172  001402                            BEQ     .+6             ;YES
1090  006174  000000                            HALT                    ;NO, DECREMENT X AXIS BY
1091  006176  000406                            BR      GT56            ;LONG VECTOR MODE FAILED
1092
1093  006200  017700  172652                    MOV     @YPOS,R0        ;READ Y AXIS
1094  006204  022700  001777                    CMP     #1777,R0        ;DID IT DECREMENT BY 1
1095  006210  001401                            BEQ     .+4             ;YES
1096  006212  000000                            HALT                    ;NO, DECREMENT Y AXIS BY
1097                                                                    ;LONG VECTOR MODE FAILED
```

```
1098
1099                                    ;TEST THAT LONG VECTOR MODE INCREMENT X AND Y AXIS PROPERLY
1100                                    ;COUNT 0-1777
1101
1102  006214  104000                    GT56:   SCOPE
1103  006216  012703  001777                    MOV     #1777,R3        ;SET UP A COUNTER
1104  006222  012704  000001                    MOV     #1,R4           ;PRESET THE COMPARED VALUE
1105
1106  006226  104000                            SCOPE
1107  006230  013700  001022            GT56A:  MOV     DBUF,R0         ;SET UP R0
1108  006234  012720  116000                    MOV     #116000,(0)+    ;LOAD "POINT MODE"
1109  006240  005020                            CLR     (0)+            ;CLEAR X AXIS
1110  006242  005020                            CLR     (0)+            ;CLEAR Y AXIS
1111  006244  012720  110000                    MOV     #110000,(0)+    ;LOAD "LONG VECTOR MODE"
1112  006250  010420                            MOV     R4,(0)+         ;PRESET "DELTA X AXIS"
1113  006252  010420                            MOV     R4,(0)+         ;PRESET "DELTA Y AXIS"
1114  006254  013777  001022  172566            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1115  006262  012777  000001  172560            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1116  006270  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1117  006274  012777  000001  172546            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1118  006302  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1119  006306  012777  000001  172534            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1120  006314  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1121  006320  012777  000001  172522            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1122  006326  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1123  006332  012777  000001  172510            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1124  006340  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1125
1126  006344  017700  172504                    MOV     @XPOS,R0        ;READ X AXIS
1127  006350  020400                            CMP     R4,R0           ;ARE THEY EQUAL?
1128  006352  001402                            BEQ     .+6             ;YES
1129  006354  000000                            HALT                    ;NO, INCREMENT X AXIS VIA
1130  006356  000411                            BR      GT57            ;LONG VECTOR MODE FAILED
1131
1132  006360  017700  172472                    MOV     @YPOS,R0        ;READ Y AXIS
1133  006364  020400                            CMP     R4,R0           ;ARE THEY EQUAL?
1134  006366  001402                            BEQ     .+6             ;YES
1135  006370  000000                            HALT                    ;NO, INCREMENT Y AXIS VIA
1136  006372  000403                            BR      GT57            ;LONG VECTOR MODE FAILED
1137
1138  006374  005204                            INC     R4              ;INCREMENT EXPECTED VALUE
1139  006376  005303                            DEC     R3              ;FINISHED?
1140  006400  001313                            BNE     GT56A           ;NO, TEST MORE DATA
```

```
1141
1142                                    ;TEST THAT LONG VECTOR MODE DECREMENTS X AND Y AXIS PROPERLY
1143                                    ;COUNT 1777-0
1144
1145  006402  104000                    GT57:   SCOPE
1146  006404  012703  002000                    MOV     #2000,R3        ;SET UP A COUNTER
1147  006410  012704  001777                    MOV     #1777,R4        ;PRESET THE COMPARED VALUE
1148  006414  012705  020001                    MOV     #20001,R5
1149
1150  006420  104000                    GT57A:  SCOPE
1151  006422  013700  001022                    MOV     @BUF,R0         ;SET UP R0
1152  006426  012720  116000                    MOV     #116000,(0)+    ;LOAD "POINT MODE"
1153  006432  005020                            CLR     (0)+            ;CLEAR X AXIS
1154  006434  005020                            CLR     (0)+            ;CLEAR Y AXIS
1155  006436  012720  110000                    MOV     #110000,(0)+    ;LOAD "LONG VECTOR MODE"
1156  006442  010520                            MOV     R5,(0)+         ;PRESET "DELTA X AXIS"
1157  006444  010520                            MOV     R5,(0)+         ;PRESET "DELTA Y AXIS"
1158  006446  013777  001022  172374            MOV     @BUF,@DPC       ;LOAD THE DISPLAY P.C.
1159  006454  012777  000001  172366            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1160  006462  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1161  006466  012777  000001  172354            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1162  006474  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1163  006500  012777  000001  172342            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1164  006506  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1165  006512  012777  000001  172330            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1166  006520  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1167  006524  012777  000001  172316            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1168  006532  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1169
1170  006536  017700  172312                    MOV     @XPOS,R0        ;READ X AXIS
1171  006542  020400                            CMP     R4,R0           ;ARE THEY EQUAL?
1172  006544  001402                            BEQ     .+6             ;YES
1173  006546  000000                            HALT                    ;NO, DECREMENT X AXIS VIA
1174  006550  000412                            BR      GT58            ;LONG VECTOR MODE FAILED
1175
1176  006552  017700  172300                    MOV     @YPOS,R0        ;READ Y AXIS
1177  006556  020400                            CMP     R4,R0           ;ARE THEY EQUAL?
1178  006560  001402                            BEQ     .+6             ;YES
1179  006562  000000                            HALT                    ;NO, DECREMENT Y AXIS VIA
1180  006564  000404                            BR      GT58            ;LONG VECTOR MODE FAILED
1181
1182  006566  005205                            INC     R5              ;INCREMENT "DELTA X-Y"
1183  006570  005304                            DEC     R4              ;DECREMENT EXPECTED VALUE
1184  006572  005303                            DEC     R3              ;FINISHED?
1185  006574  001312                            BNE     GT57A           ;NO, TEST MORE DATA
```

```
1186                                    ;TEST THAT X AND Y ASIS INCREMENTS PROPERLY
1187                                    ;USING SHORT VECTOR MODE
1188                                    ;COUNT 1
1189
1190  006576  104000                    GT58:   SCOPE
1191  006600  013700  001022                    MOV     DBUF,R0         ;SET UP R0
1192  006604  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT MODE"
1193  006610  005020                    CLR     (0)+            ;CLEAR X AXIS
1194  006612  005020                    CLR     (0)+            ;CLEAR Y AXIS
1195  006614  012720  106000                    MOV     #106000,(0)+    ;LOAD "SET SHORT VECTOR MODE"
1196  006620  012720  000201                    MOV     #201,(0)+       ;PRESET "DELTA X AND DELTA Y"
1197  006624  013777  001022  172216            MOV     DBUF,@DPC       ;LOAD THE DISPLAY PC
1198  006632  012777  000001  172210            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1199  006640  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1200  006644  012777  000001  172176            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1201  006652  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1202  006656  012777  000001  172164            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1203  006664  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1204  006670  012777  000001  172152            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1205  006676  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1206
1207  006702  017700  172146                    MOV     @XPOS,R0        ;READ X AXIS
1208  006706  022700  000001                    CMP     #1,R0           ;ARE THEY EQUAL?
1209  006712  001402                    BEQ     .+6             ;YES
1210  006714  000000                    HALT                    ;NO, INCREMENT X AXIS FAILED USING
1211  006716  000406                    BR      GT59            ;SHORT VECTOR MODE
1212
1213  006720  017700  172132                    MOV     @YPOS,R0        ;READ Y AXIS
1214  006724  022700  000001                    CMP     #1,R0           ;ARE THEY EQUAL?
1215  006730  001401                    BEQ     .+4             ;YES
1216  006732  000000                    HALT                    ;NO INCREMENT Y AXIS FAILED
1217                                            ;USING SHORT VECTOR MODE
```

```
1218
1219                                    ;TEST THAT X AND Y AXIS DECREMENT PROPERLY
1220                                    ;USING SHORT VECTOR MODE
1221                                    ;COUNT 1
1222
1223  006734  1[illegible]              GT59:   SCOPE
1224  006736  [illegible]  001022              MOV     DBUF,R0         ;SET UP R0
1225  006742  012720  116000                   MOV     #116000,(0)+    ;LOAD "SET POINT MODE"
1226  006746  [illegible]                      CLR     (0)+            ;CLEAR X AXIS
1227  006750  [illegible]                      CLR     (0)+            ;CLEAR Y AXIS
1228  006752  [illegible]  [illegible]000      MOV     #106000,(0 +    ;LOAD "SET SHORT VECTOR MODE"
1229  006756  012720  [illegible]01           MOV     #20301,(0)+     ;SET DELTA X AND DELTA Y"
1230  006762  013777  [illegible]2  172060     MOV     DBUF,@PC        ;LOAD THE DISPLAY
1231  006770  012777  [illegible]1  172052     MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
1232  006776  004737  013532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1233  007002  012777  000001  172040           MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
1234  007010  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1235  007014  012777  000001  172026           MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
1236  007022  004737  013532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1237  007026  012777  000001  172014           MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
1238  007034  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1239
1240  007040  017700  172010                   MOV     @XPOS,R0        ;READ X AXIS
1241  007044  022700  001777                   CMP     #1777,R0        ;ARE THEY EQUAL?
1242  007050  001402                           BEQ     .+6             ;YES
1243  007052  000000                           HALT                    ;NO, DECREMENT X AXIS FAILED USING
1244  007054  000406                           BR      GT60            ;SHORT VECTOR MODE
1245
1246  007056  017700  171774                   MOV     @YPOS,R0        ;READ Y AXIS
1247  007062  022700  001777                   CMP     #1777,R0        ;ARE THEY EQUAL?
1248  007066  001401                           BEQ     .+4             ;YES
1249  007070  000000                           HALT                    ;NO DECREMENT Y AXIS FAILED
1250                                          ;USING SHORT VECTOR MODE
```

```
1251
1252                                    ;TEST THAT X AND Y AXIS INCREMENT PROPERLY
1253                                    ;USING SHORT VECTOR MODE
1254                                    ;COUNT 0-77
1255
1256  007072  104000                    GT60:   SCOPE
1257  007074  012703  000077                    MOV     #77,R3          ;SET UP A COUNT LOCATION
1258  007100  012702  000001                    MOV     #1,R2           ;SET UP THE COMPARED LOCATION
1259  007104  012704  000201                    MOV     #201,R4         ;SET UP "DELTA X-Y"
1260
1261  007110  104000                    GT60A:  SCOPE
1262  007112  013700  001022                    MOV     DBUF,R0         ;SET UP R0
1263  007116  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT DATA MODE"
1264  007122  005020                    GT61:   CLR     (0)+            ;CLEAR X AXIS
1265  007124  005020                            CLR     (0)+            ;CLEAR Y AXIS
1266  007126  012720  106000                    MOV     #106000,(0)+    ;LOAD "SET SHORT VECTOR MODE"
1267  007132  010420                            MOV     R4,(0)+         ;PRESET "DELTA X AND DELTA Y"
1270  007134  013777  001022  171706            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1269  007142  012777  000001  171700            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1270  007150  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1271  007154  012777  000001  171666            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1272  007162  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1273  007166  012777  000001  171654            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1274  007174  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1275  007200  012777  000001  171642            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1276  007206  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1277
1278  007212  017700  171636                    MOV     @XPOS,R0        ;READ X POSITION
1279  007216  020200                            CMP     R2,R0           ;ARE THEY EQUAL
1280  007220  001402                            BEQ     .+6             ;YES
1281  007222  000000                            HALT                    ;INCREMENT X AXIS FAILED USING
1282  007224  000413                            BR      GT61            ;SHORT VECTOR MODE
1283
1284  007226  017700  171624                    MOV     @YPOS,R0        ;READ Y POSITION
1285  007232  020200                            CMP     R2,R0           ;ARE THEY EQUAL ?
1286  007234  001402                            BEQ     .+6             ;YES
1287  007236  000000                            HALT                    ;INCREMENT Y AXIS FAILED USING
1288  007240  000405                            BR      GT61            ;SHORT VECTOR MODE
1289
1290  007242  062704  000201                    ADD     #201,R4         ;ADD DELTA X-Y
1291  007246  005202                            INC     R2              ;INCREMENT EXPECTED VALUE
1292  007250  005303                            DEC     R3              ;DECREMENT COUNT, FINISHED?
1293  007252  001317                            BNE     GT60A           ;NO, TEST MORE DATA
```

```
1294
1295                                    ;TEST THAT X AND Y AXIS DECREMENT PROPERLY
1296                                    ;USING SHORT VECTOR MODE
1297                                    ;COUNT 77-0
1298
1299  007254  104000                    GT61:   SCOPE
1300  007256  012703  000077                    MOV     #77,R3          ;SET UP A COUNT LOCATION
1301  007262  012702  001777                    MOV     #1777,R2        ;SET UP THE COMPARED LOCATION
1302  007266  012704  020301                    MOV     #20301,R4       ;PRESET THE "DELTA X-Y"
1303
1304  007272  104000                    GT61A:  SCOPE
1305  007274  013700  001022                    MOV     DBUF,R0         ;SET UP R0
1306  007300  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT DATA MODE"
1307  007304  005020                    GT62:   CLR     (0)+            ;CLEAR X AXIS
1308  007306  005020                            CLR     (0)+            ;CLEAR Y AXIS
1309  007310  012720  106000                    MOV     #106000,(0)+    ;LOAD "SET SHORT VECTOR MODE"
1310  007314  010420                            MOV     R4,(0)+         ;PRESET "DELTA X AND DELTA Y"
1311  007316  013777  001022  171524            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1312  007324  012777  000001  171516            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1313  007332  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1314  007336  012777  000001  171504            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1315  007344  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1316  007350  012777  000001  171472            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1317  007356  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1318  007362  012777  000001  171460            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1319  007370  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1320
1321  007374  017700  171454                    MOV     @XPOS,R0        ;READ X POSITION
1322  007400  020200                            CMP     R2,R0           ;ARE THEY EQUAL
1323  007402  001402                            BEQ     .+6             ;YES
1324  007404  000000                            HALT                    ;DECREMENT X AXIS FAILED USING
1325  007406  000413                            BR      GT62            ;SHORT VECTOR MODE
1326
1327  007410  017700  171442                    MOV     @YPOS, R0       ;READ Y POSITION
1328  007414  020200                            CMP     R2,R0           ;ARE THEY EQUAL ?
1329  007416  001402                            BEQ     .+6             ;YES DECREMENT
1330  007420  000000                            HALT                    ;DECREMENT Y AXIS FAILED USING
1331  007422  000405                            BR      GT62            ;SHORT VECTOR MODE
1332
1333  007424  062704  000201                    ADD     #201,R4         ;ADD "DELTA X-Y"
1334  007430  005302                            DEC     R2              ;DECREMENT EXPECTED VALUE
1335  007432  005303                            DEC     R3              ;DECREMENT COUNT, FINISHED?
1336  007434  001317                            BNE     GT61A           ;NO, TEST MORE DATA
1337
```

```
 1338                                   ;TEST THAT X AND Y ASIS INCREMENTS PROPERLY
 1339                                   ;USING RELATIVE POINT MODE
 1340                                   ;COUNT 1
 1341
 1342  007436  104000                   GT62:   SCOPE
 1343  007440  013700  001022                   MOV     DBUF,R0         ;SET UP R0
 1344  007444  012720  116000                   MOV     #116000,(0)+    ;LOAD "SET POINT MODE"
 1345  007450  005020                           CLR     (0)+            ;CLEAR X AXIS
 1346  007452  005020                           CLR     (0)+            ;CLEAR Y AXIS
 1347  007454  012720  130000                   MOV     #130000,(0)+    ;LOAD "SET RELATIVE POINT MODE"
 1348  007460  012720  000201                   MOV     #201,(0)+       ;PRESET "DELTA X AND DELTA Y"
 1349  007464  013777  001022  171356           MOV     DBUF,@DPC       ;LOAD THE DISPLAY PC
 1350  007472  012777  000001  171350           MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1351  007500  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1352  007504  012777  000001  171336           MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1353  007512  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1354  007516  012777  000001  171324           MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1355  007524  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1356  007530  012777  000001  171312           MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
 1357  007536  004737  015532                   JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
 1358
 1359  007542  017700  171306                   MOV     @XPOS,R0        ;READ X AXIS
 1360  007546  022700  000001                   CMP     #1,R0           ;ARE THEY EQUAL?
 1361  007552  001402                           BEQ     .+6             ;YES
 1362  007554  000000                           HALT                    ;NO, INCREMENT X AXIS FAILED USING
 1363  007556  000406                           BR      GT63            ;RELATIVE POINT MODE
 1364
 1365  007560  017700  171272                   MOV     @YPOS,R0        ;READ Y AXIS
 1366  007564  022700  000001                   CMP     #1,R0           ;ARE THEY EQUAL?
 1367  007570  001401                           BEQ     .+4             ;YES
 1368  007572  000000                           HALT                    ;NO INCREMENT Y AXIS FAILED
 1369                                          ;USING RELATIVE POINT MODE
```

```
1370
1371                                    ;TEST THAT X AND Y AXIS DECREMENT PROPERLY
1372                                    ;USING RELATIVE POINT MODE
1373                                    ;COUNT 1
1374
1375  007574  104000                    GT63:   SCOPE
1376  007576  013700  001022                    MOV     DBUF,R0         ;SET UP R0
1377  007602  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT MODE"
1378  007606  005020                            CLR     (0)+            ;CLEAR X AXIS
1379  007610  005020                            CLR     (0)+            ;CLEAR Y AXIS
1380  007612  012720  130000                    MOV     #130000,(0)+    ;LOAD "SET RELATIVE POINT MODE"
1381  007616  012720  020301                    MOV     #20301,(0)+     ;PRESET "DELTA X AND DELTA Y"
1382  007622  013777  001022  171220            MOV     DBUF,@DPC       ;LOAD THE DISPLAY PC
1383  007630  012777  000001  171212            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1384  007636  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1385  007642  012777  000001  171200            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1386  007650  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1387  007654  012777  000001  171166            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1388  007662  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1389  007666  012777  000001  171154            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1390  007674  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1391
1392  007700  017700  171150                    MOV     @XPOS,R0        ;READ X AXIS
1393  007704  022700  001777                    CMP     #1777,R0        ;ARE THEY EQUAL?
1394  007710  001402                            BEQ     .+6             ;YES
1395  007712  000000                            HALT                    ;NO, DECREMENT X AXIS FAILED USING
1396  007714  000406                            BR      GT64            ;RELATIVE POINT MODE
1397
1398  007716  017700  171134                    MOV     @YPOS,R0        ;READ Y AXIS
1399  007722  022700  001777                    CMP     #1777,R0        ;ARE THEY EQUAL?
1400  007726  001401                            BEQ     .+4             ;YES
1401  007730  000000                            HALT                    ;NO DECREMENT Y AXIS FAILED
1402                                          ;USING RELATIVE POINT MODE
```

```
1403
1404                                    ;TEST THAT X AND Y AXIS INCREMENT PROPERLY
1405                                    ;USING RELATIVE POINT MODE
1406                                    ;COUNT 0-77
1407
1408  007732  104000                    GT64:   SCOPE
1409  007734  012703  000077                    MOV     #77,R3          ;SET UP A COUNT LOCATION
1410  007740  012702  000001                    MOV     #1,R2           ;SET UP THE COMPARED LOCATION
1411  007744  012704  000201                    MOV     #201,R4         ;SET UP "DELTA X-Y"
1412
1413  007750  104000                    GT64A:  SCOPE
1414  007752  013700  001022            GT64A:  MOV     @BUF,R0         ;SET UP R0
1415  007756  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT DATA MODE"
1416  007762  005020                            CLR     (0)+            ;CLEAR X AXIS
1417  007764  005020                            CLR     (0)+            ;CLEAR Y AXIS
1418  007766  012720  130000                    MOV     #130000,(0)+    ;LOAD "SET RELATIVE POINT MODE"
1419  007772  010420                            MOV     R4,(0)+         ;PRESET "DELTA X AND DELTA Y"
1420  007774  013777  001022  171046            MOV     @BUF,@DPC       ;LOAD THE DISPLAY P.C.
1421  010002  012777  000001  171040            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1422  010010  004737  015532                    JSR     7,@LAY          ;EXECUTE A PROGRAM DELAY
1423  010014  012777  000001  171026            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1424  010022  004737  015532                    JSR     7,@LAY          ;EXECUTE A PROGRAM DELAY
1425  010026  012777  000001  171014            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1426  010034  004737  015532                    JSR     7,@LAY          ;EXECUTE A PROGRAM DELAY
1427  010040  012777  000001  171002            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1428  010046  004737  015532                    JSR     7,@LAY          ;EXECUTE A PROGRAM DELAY
1429
1430  010052  017700  170776                    MOV     @XPOS,R0        ;READ X POSITION
1431  010056  020200                            CMP     R2,R0           ;ARE THEY EQUAL
1432  010060  001402                            BEQ     .+6             ;YES
1433  010062  000000                            HALT                    ;INCREMENT X AXIS FAILED USING
1434  010064  000413                            BR      GT65            ;RELATIVE POINT MODE
1435
1436  010066  017700  170764                    MOV     @YPOS,R0        ;READ Y POSITION
1437  010072  020200                            CMP     R2,R0           ;ARE THEY EQUAL ?
1438  010074  001402                            BEQ     .+6             ;YES
1439  010076  000000                            HALT                    ;INCREMENT Y AXIS FAILED USING
1440  010100  000405                            BR      GT65            ;RELATIVE POINT MODE
1441
1442  010102  062704  000201                    ADD     #201,R4         ;ADD DELTA X-Y
1443  010106  005202                            INC     R2              ;INCREMENT EXPECTED VALUE
1444  010110  005303                            DEC     R3              ;DECREMENT COUNT, FINISHED?
1445  010112  001317                            BNE     GT64A           ;NO, TEST MORE DATA
```

```
1446
1447                                    ;TEST THAT X AND Y AXIS DECREMENT PROPERLY
1448                                    ;USING RELATIVE POINT MODE
1449                                    ;COUNT 77-0
1450
1451  010114  104000                    GT65:   SCOPE
1452  010116  012703  000077                    MOV     #77,R3          ;SET UP A COUNT LOCATION
1453  010122  012702  001777                    MOV     #1777,R2        ;SET UP THE COMPARED LOCATION
1454  010126  012704  020301                    MOV     #20301,R4       ;PRESET THE "DELTA X-Y"
1455
1456  010132  104000                    GT65A:  SCOPE
1457  010134  013700  001022            GT65A:  MOV     DBUF,R0         ;SET UP R0
1458  010140  012720  116000                    MOV     #116000,(0)+    ;LOAD "SET POINT DATA MODE"
1459  010144  005020                    CLR     (0)+                    ;CLEAR X AXIS
1460  010146  005020                    CLR     (0)+                    ;CLEAR Y AXIS
1461  010150  012720  130000                    MOV     #130000,(0)+    ;LOAD "SET RELATIVE POINT MODE"
1462  010154  010420                    MOV     R4,(0)+                 ;PRESET "DELTA X AND DELTA Y"
1463  010156  013777  001022  170664            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1464  010164  012777  000001  170656            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1465  010172  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1466  010176  012777  000001  170644            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1467  010204  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1468  010210  012777  000001  170632            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1469  010216  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1470  010222  012777  000001  170620            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1471  010230  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1472
1473  010234  017700  170614                    MOV     @XPOS,R0        ;READ X POSITION
1474  010240  020200                    CMP     R2,R0                   ;ARE THEY EQUAL
1475  010242  001402                    BEQ     .+6                     ;YES
1476  010244  000000                    HALT                            ;DECREMENT X AXIS FAILED USING
1477  010246  000413                    BR      GT66                    ;RELATIVE POINT MODE
1478
1479  010250  017700  170602                    MOV     @YPOS, R0       ;READ Y POSITION
1480  010254  020200                    CMP     R2,R0                   ;ARE THEY EQUAL ?
1481  010256  001402                    BEQ     .+6                     ;YES DECREMENT
1482  010260  000000                    HALT                            ;DECREMENT Y AXIS FAILED USING
1483  010262  000405                    BR      GT66                    ;RELATIVE POINT MODE
1484
1485  010264  062704  000201                    ADD     #201,R4         ;ADD "DELTA X-Y"
1486  010270  005302                    DEC     R2                      ;DECREMENT EXPECTED VALUE
1487  010272  005303                    DEC     R3                      ;DECREMENT COUNT, FINISHED?
1488  010274  001317                    BNE     GT65A                   ;NO, TEST MORE DATA
1489
```

```
1490
1491
1492                                    ;LOAD STATUS B TEST
1493                                    ;USE GRAPHPLOT X MODE TO TEST Y AXIS IS INCREMENTED BY
1494                                    ;"SCALE" REGISTER
1495
1496  010276  104000                    GT66:   SCOPE
1497  010300  012703  000077                    MOV     #77,R3          ;SET UP EXECUTION COUNTER
1498  010304  012704  000001                    MOV     #1,R4           ;SET UP COMPARED DATA
1499  010310  012737  174101  001036            MOV     #174101,DSAVE   ;SET UP BASIC "LOAD STATUS B"
1500
1501  010316  104000                    GT66A:  SCOPE
1502  010320  013700  001022                    MOV     DBUF,R0         ;SET UP R0
1503  010324  012720  116000                    MOV     #116000,(0)+    ;LOAD "POINT MODE"
1504  010330  005020                            CLR     (0)+            ;CLEAR X AXIS
1505  010332  005020                            CLR     (0)+            ;CLEAR Y AXIS
1506  010334  013720  001036                    MOV     DSAVE,(0)+      ;LOAD "SET STATUS B"
1507  010340  012720  120000                    MOV     #120000,(0)+    ;LOAD "SET GRAPHPLOT X MODE"
1508  010344  005020                            CLR     (0)+            ;LOAD "X GRAPHPLOT DATA"
1509  010346  013777  001022  170474            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1510  010354  012777  000001  170466            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1511  010362  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1512  010366  012777  000001  170454            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1513  010374  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1514  010400  012777  000001  170442            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1515  010406  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1516  010412  012777  000001  170430            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1517  010420  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1518  010424  012777  000001  170416            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1519  010432  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1520
1521  010436  017700  170414                    MOV     @YPOS,R0        ;READ Y AXIS
1522  010442  020400                            CMP     R4,R0           ;COMPARE TO EXPECTED VALUE
1523  010444  001402                            BEQ     .+6             ;ARE THEY EQUAL?
1524  010446  000000                            HALT                    ;LOAD "STATUS B" FAILED TO LOAD
1525  010450  000405                            BR      GT67            ;THE Y AXIS CORRECTLY
1526  010452  005237  001036                    INC     DSAVE
1527  010456  005204                            INC     R4              ;INCREMENT THE STATUS B COUNT
1528  010460  005303                            DEC     R3              ;DECREMENT THE EXECUTION COUNT
1529  010462  001316                            BNE     GT66A           ;TEST MORE DATA
```

```
1530
1531                                        ;LOAD STATUS B TEST
1532                                        ;USE GRAPHPLOT Y MODE TO TEST X AXIS IS INCREMENTED BY
1533                                        ;"SCALE" REGISTER
1534
1535  010464  104000                GT67:   SCOPE
1536  010466  012703  000077               MOV     #77,R3          ;SET UP EXECUTION COUNTER
1537  010472  012704  000001               MOV     #1,R4           ;SET UP COMPARED DATA
1538  010476  012737  174101  001036       MOV     #174101,DSAVE   ;SET UP BASIC "LOAD STATUS B"
1539
1540  010504  104000                        SCOPE
1541  010506  013700  001022       GT67A:  MOV     DBUF,R0         ;SET UP R0
1542  010512  012720  116000               MOV     #116000,(0)+    ;LOAD "POINT MODE"
1543  010516  005020                       CLR     (0)+            ;CLEAR X AXIS
1544  010520  005020                       CLR     (0)+            ;CLEAR Y AXIS
1545  010522  013720  001036               MOV     DSAVE,(0)+      ;LOAD "SET STATUS B"
1546  010526  012720  124000               MOV     #124000,(0)+    ;LOAD "SET GRAPHPLOT Y MODE"
1547  010532  005020                       CLR     (0)+            ;LOAD "Y GRAPHPLOT DATA"
1548  010534  013777  001022  170306       MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1549  010542  012777  000001  170300       MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1550  010550  004737  015532               JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1551  010554  012777  000001  170266       MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1552  010562  004737  015532               JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1553  010566  012777  000001  170254       MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1554  010574  004737  015532               JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1555  010600  012777  000001  170242       MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1556  010606  004737  015532               JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1557  010612  012777  000001  170230       MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1558  010620  004737  015532               JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1559
1560  010624  017700  170224               MOV     @XPOS,R0        ;READ X AXIS
1561  010630  042700  176000               BIC     #176000,R0      ;MASK TO BITS 0-9
1562  010634  020400                       CMP     R4,R0           ;COMPARE TO EXPECTED VALUE
1563  010636  001402                       BEQ     .+6             ;ARE THEY EQUAL?
1564  010640  000000                       HALT                    ;LOAD "STATUS B" FAILED TO LOAD
1565  010642  000413                       BR      GT70            ;THE X AXIS CORRECTLY
1566
1567  010644  005237  001036               INC     DSAVE
1568  010650  005204                       INC     R4              ;INCREMENT THE STATUS B COUNT
1569  010652  005303                       DEC     R3              ;DECREMENT THE EXECUTION COUNT
1570  010654  001314                       BNE     GT67A           ;TEST MORE DATA
1571
1572
1573  010656  012777  174100  170136 GT67B: MOV     #174100,@DBUF
1574  010664  013777  001022  170156       MOV     DBUF,@DPC
```

```
1575                                        ;EDGE FLAG TEST
1576                                        ;TEST THAT EXCEEDING +X AXIS SETS EDGE FLAG
1577
1578  010672  104000                  GT70: SCOPE
157A  010674  013700  001022                MOV     DBUF,R0
158C  010700  012720  116000                MOV     #116000,(0)+    ;LOAD POINT
1590  010704  012720  001777                MOV     #1777,(0)+      ;LOAD MAX X
1594  010710  012720  000000                MOV     #0,(0)+         ;LOAD Y
1598  010714  012720  110000                MOV     #110000,(0)+    ;LOAD LONG VECTOR
159C  010720  012720  000001                MOV     #1,(0)+         ;LOAD DETA X
15A0  010724  012720  000000                MOV     #0,(0)+         ;LOAD DELTA Y
15A4  010730  012720  172000                MOV     #172000,(0)+    ;LOAD STOP
15A8  010734  013777  001022  170106        MOV     DBUF,@DPC       ;START DISPLAY
15AE  010742  012777  000001  170100        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15B4  010750  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15B8  010754  012777  000001  170066        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15BE  010762  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15C2
15C4  010766  032777  000040  170056        BIT     #40,@DSR        ;TEST BIT 5
15CA  010774  001402                        BEQ     .+6
15CC  010776  000000                        HALT                    ;EDGE FLAG SET IN ERROR
15D0  011000  000454                        BR      GT71
15D2
15D4  011002  012777  000001  170040        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15DA  011010  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15DE  011014  012777  000001  170026        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15E4  011022  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15E8  011026  012777  000001  170014        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15EE  011034  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15F2  011040  012777  000001  170002        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
15F8  011046  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
15FC
15FE  011052  032777  000040  167772        BIT     #40,@DSR        ;TEST BIT 5
1604  011060  001002                        BNE     .+6
1606  011062  000000                        HALT                    ;EDGE FLAG FAILED TO SET
1608  011064  000422                        BR      GT71
160A
160C  011066  013777  001022  167754        MOV     DBUF,@DPC       ;START DISPLAY AGAIN
1612  011074  012777  000001  167746        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1618  011102  004737  015532                JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
161C  011106  012777  000001  167734        MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1622  011114  004737  015532                JSR     7,DLAY          ;EXECUTE A PRUGRAM DELAY
1626  011120  032777  000040  167724        BIT     #40,@DSR        ;TEST BIT 5
162C  011126  001401                        BEQ     .+4
162E  011130  000000                        HALT                    ;EDGE FLAG FAILED TO CLEAR
```

```
1620
1621
1622                                    ;EDGE FLAG TEST
1623                                    ;TEST THAT EXCEEDING -X AXIS SETS EDGE FLAG
1624
1625  011132  104000            GT71:   SCOPE
1626  011134  013700  001022            MOV     DBUF,R0
1627  011140  012720  116000            MOV     #116000,(0)+    ;LOAD POINT
1628  011144  012720  000000            MOV     #0,(0)+         ;LOAD MAX X
1629  011150  012720  000000            MOV     #0,(0)+         ;LOAD Y
1630  011154  012720  110000            MOV     #110000,(0)+    ;LOAD LONG VECTOR
1631  011160  012720  020001            MOV     #20001,(0)+     ;LOAD DETA X
1632  011164  012720  000000            MOV     #0,(0)+         ;LOAD DELTA Y
1633  011170  012720  172000            MOV     #172000,(0)+    ;LOAD STOP
1634  011174  013777  001022  167646    MOV     DBUF,@DPC       ;START DISPLAY
1635  011202  012777  000001  167640    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1636  011210  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1637  011214  012777  000001  167626    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1638  011222  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1639
1640  011226  032777  000040  167616    BIT     #40,@DSR        ;TEST BIT 5
1641  011234  001402                    BEQ     .+6
1642  011236  000000                    HALT                    ;EDGE FLAG SET IN ERROR
1643  011240  000454                    BR      GT72
1644
1645  011242  012777  000001  167600    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1646  011250  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1647  011254  012777  000001  167566    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1648  011262  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1649  011266  012777  000001  167554    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1650  011274  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1651  011300  012777  000001  167542    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1652  011306  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1653
1654  011312  032777  000040  167532    BIT     #40,@DSR        ;TEST BIT 5
1655  011320  001002                    BNE     .+6
1656  011322  000000                    HALT                    ;EDGE FLAG FAILED TO SET
1657  011324  000520                    BR      GT73
1658
1659  011326  013777  001022  167514    MOV     DBUF,@DPC       ;START DISPLAY AGAIN
1660  011334  012777  000001  167506    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1661  011342  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1662  011346  012777  000001  167474    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1663  011354  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1664  011360  032777  000040  167464    BIT     #40,@DSR        ;TEST BIT 5
1665  011366  001401                    BEQ     .+4
1666  011370  000000                    HALT                    ;EDGE FLAG FAILED TO CLEAR
```

```
                                        ;EDGE FLAG TEST
                                        ;TEST THAT EXCEEDING +Y AXIS SETS EDGE FLAG

011372  104000            GT72:   SCOPE
011374  013700  001022            MOV     DBUF,R0
011400  012720  116000            MOV     #116000,(0)+    ;LOAD POINT
011404  012720  000000            MOV     #0,(0)+         ;LOAD X
011410  013720  001012            MOV     GSYAYS,(0)+     ;LOAD MAX Y
011414  012720  110000            MOV     #110000,(0)+    ;LOAD LONG VECTOR
011420  012720  000000            MOV     #0,(0)+         ;LOAD DETA X
011424  012720  000001            MOV     #1,(0)+         ;LOAD DELTA Y
011430  012720  172000            MOV     #172000,(0)+    ;LOAD STOP
011434  013777  001042  167406    MOV     DBUF,@DPC       ;START DISPLAY
011442  012777  000001  167400    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011450  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
011454  012777  000001  167366    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011462  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY

011466  032777  000040  167356    BIT     #40,@DSR        ;TEST BIT 5
011474  001402                    BEQ     .+6
011476  000000                    HALT                    ;EDGE FLAG SET IN ERROR
011500  000432                    BR      GT73

011502  012777  000001  167340    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011510  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
011514  012777  000001  167326    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011522  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
011526  012777  000001  167314    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011534  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
011540  012777  000001  167302    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
011546  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY

011552  032777  000040  167272    BIT     #40,@DSR        ;TEST BIT 5
011560  001002                    BNE     .+6
011562  000000                    HALT                    ;EDGE FLAG FAILED TO SET
011564  000400                    BR      GT73
```

```
1706
1707
1708                                    ;EDGE FLAG TEST
1709                                    ;TEST THAT EXCEEDING -Y AXIS SETS EDGE FLAG
1710
1711  011566  104000                    GT73:   SCOPE
1712  011570  013700  001022                    MOV     DBUF,R0
1713  011574  012720  116000                    MOV     #116000,(0)+    ;LOAD POINT
1714  011600  012720  000000                    MOV     #0,(0)+         ;LOAD X
1715  011604  012720  000000                    MOV     #0,(0)+         ;LOAD Y
1716  011610  012720  110000                    MOV     #110000,(0)+    ;LOAD LONG VECTOR
1717  011614  012720  000000                    MOV     #0,(0)+         ;LOAD DETA X
1718  011620  012720  020001                    MOV     #20001,(0)+     ;LOAD DELTA Y
1719  011624  012720  172000                    MOV     #172000,(0)+    ;LOAD STOP
1720  011630  013777  001022  167212            MOV     DBUF,@DPC       ;START DISPLAY
1721  011636  012777  000001  167204            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1722  011644  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1723  011650  012777  000001  167172            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1724  011656  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1725
1726  011662  032777  000040  167162            BIT     #40,@DSR        ;TEST BIT 5
1727  011670  001402                            BEQ     .+6
1728  011672  000000                            HALT                    ;EDGE FLAG SET IN ERROR
1729  011674  000454                            BR      GT74
1730
1731  011676  012777  000001  167144            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1732  011704  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1733  011710  012777  000001  167132            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1734  011716  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1735  011722  012777  000001  167120            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1736  011730  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1737  011734  012777  000001  167106            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1738  011742  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1739
1740  011746  032777  000040  167076            BIT     #40,@DSR        ;TEST BIT 5
1741  011754  001002                            BNE     .+6
1742  011756  000000                            HALT                    ;EDGE FLAG FAILED TO SET
1743  011760  000422                            BR      GT74
1744
1745  011762  013777  001022  167060            MOV     DBUF,@DPC       ;START DISPLAY AGAIN
1746  011770  012777  000001  167052            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1747  011776  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1748  012002  012777  000001  167040            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1749  012010  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1750  012014  032777  000040  167030            BIT     #40,@DSR        ;TEST BIT 5
1751  012022  001401                            BEQ     .+4
1752  012024  000000                            HALT                    ;EDGE FLAG FAILED TO CLEAR
```

```
1753                                    ;TEST THAT THE CHARACTER REGISTER IS LOADED PROPERLY
1754                                    ; CODE 00
1755
1756  012026  104000                    GT74:   SCOPE
1757  012030  012777  100000  166764            MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
1758  012036  012777  000000  166760            MOV     #0,@DBUF1       ;LOAD "NULL" CHARACTER
1759  012044  013777  001022  166776            MOV     DBUF,@DPC       ;START DISPLAY
1760  012052  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1761  012056  012777  000001  166764            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1762  012064  017700  166766                    MOV     @YPOS,R0        ;READ CHARACTER REG.
1763  012070  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1764  012074  022700  000000                    CMP     #0,R0
1765  012100  001401                            BEQ     .+4
1766  012102  000000                            HALT                    ;ERROR, CHARACTER REGISTER LOADED IN ERROR
1767
1768                                    ;TEST THAT THE CHARACTER REGISTER IS LOADED PROPERLY
1769                                    ; CODE 77
1770
1771  012104  104000                    GT75:   SCOPE
1772  012106  012777  100000  166706            MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
1773  012114  012777  000077  166702            MOV     #77,@DBUF1      ;LOAD CHARACTER
1774  012122  013777  001022  166720            MOV     DBUF,@DPC       ;START DISPLAY
1775  012130  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1776  012134  012777  000001  166706            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1777  012142  017700  166710                    MOV     @YPOS,R0        ;READ CHARACTER REG.
1778  012146  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1779  012152  022700  176000                    CMP     #176000,R0
1780  012156  001401                            BEQ     .+4
1781  012160  000000                            HALT                    ;ERROR, CHARACTER REGISTER LOADED IN ERROR
1782
1783                                    ;TEST THAT THE CHARACTER REGISTER IS LOADED PROPERLY
1784                                    ; CODE 25
1785
1786  012162  104000                    GT76:   SCOPE
1787  012164  012777  100000  166630            MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
1788  012172  012777  000025  166624            MOV     #25,@DBUF1      ;LOAD CHARACTER
1789  012200  013777  001022  166642            MOV     DBUF,@DPC       ;START DISPLAY
1790  012206  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1791  012212  012777  000001  166630            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1792  012220  017700  166632                    MOV     @YPOS,R0        ;READ CHARACTER REG.
1793  012224  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1794  012230  022700  052000                    CMP     #52000,R0
1795  012234  001401                            BEQ     .+4
1796  012236  000000                            HALT                    ;ERROR, CHARACTER REGISTER LOADED IN ERROR
```

```
1797
1798                                    ;TEST THAT THE CHARACTER REGISTER IS LOADED PROPERLY
1799                                    ; CODE 52
1800
1801  012240  104000                    GT77:   SCOPE
1802  012242  012777  100000  166552            MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
1803  012250  012777  000052  166546            MOV     #52,@DBUF1      ;LOAD CHARACTER
1804  012256  013777  001022  166564            MOV     DBUF,@DPC       ;START DISPLAY
1805  012264  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1806  012270  012777  000001  166552            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1807  012276  017700  166554                    MOV     @YPOS,R0        ;READ CHARACTER REG.
1808  012302  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1809  012306  022700  124000                    CMP     #124000,R0
1810  012312  001401                            BEQ     .+4
1811  012314  000000                            HALT                    ;ERROR, CHARACTER REGISTER LOADED IN ERROR
1812
1813                                    ;TEST THAT CHARACTER MODE DOES NOT HANG THE DISPLAY PROCESSOR
1814                                    ;TEST THAT "NULL" DOES NOT CHANGE X OR Y AXIS
1815
1816  012316  104000                    GT78:   SCOPE
1817  012320  012777  116000  166474            MOV     #116000,@DBUF   ;POINT MODE
1818  012326  012777  001000  166470            MOV     #1000,@DBUF1
1819  012334  012777  001000  166464            MOV     #1000,@DBUF2    ;1000,1000
1820  012342  012777  100000  166460            MOV     #100000,@DBUF3  ;LOAD "CHARACTER MODE"
1821  012350  005077  166456                    CLR     @DBUF4          ;NULL CHARACTER
1822  012354  013777  001022  166466            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1823  012362  012777  000001  166460            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1824  012370  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1825  012374  012777  000001  166446            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1826  012402  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1827  012406  012777  000001  166434            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1828  012414  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1829  012420  012777  000001  166422            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1830  012426  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1831
1832  012432  017700  166420                    MOV     @YPOS,R0        ;READ CHARACTER REGISTER
1833  012436  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1834  012442  022700  000000                    CMP     #0,R0
1835  012446  001402                            BEQ     .+6
1836  012450  000000                            HALT                    ;CHARACTER REGISTER IN ERROR
1837  012452  000417                            BR      GT79
1838
1839  012454  017700  166374                    MOV     @XPOS,R0        ;READ X AXIS
1840  012460  022700  001000                    CMP     #1000,R0        ;ARE THEY EQUAL ?
1841  012464  001402                            BEQ     .+6             ;YES
1842  012466  000000                            HALT                    ;"NULL" CHARACTER CHANGED X AXIS
1843  012470  000410                            BR      GT79
1844
1845  012472  017700  166360                    MOV     @YPOS,R0        ;READ Y AXIS
1846  012476  042700  176000                    BIC     #176000,R0      ;MASK TO BITS 0-9
1847  012502  022700  001000                    CMP     #1000,R0        ;ARE THEY EQUAL ?
1848  012506  001401                            BEQ     .+4             ;YES
1849  012510  000000                            HALT                    ;"NULL" CHARACTER CHANGED Y AXIS
1850
```

```
1851
1852
1853                                    ;TEST THAT CHARACTER MODE DOES NOT HANG THE DISPLAY PROCESSOR
1854                                    ;TEST THAT "CR" DOES CHANGE X AND DOES NOT CHANGE Y AXIS
1855
1856  012512  104000            GT79:   SCOPE
1857  012514  012777  116000  166300    MOV     #116000,@#BUF   ;POINT MODE
1858  012522  012777  001000  166274    MOV     #1000,@#BUF1
1859  012530  012777  001000  166270    MOV     #1000,@#BUF2    ;1000,1000
1860  012536  012777  100000  166254    MOV     #100000,@#BUF3  ;LOAD "CHARACTER MODE"
1861  012544  012777  000015  166250    MOV     #15,@#BUF4      ;LOAD "CR"
1862  012552  013777  001052  166270    MOV     @#DPC,@#BUF     ;LOAD THE DISPLAY P.C.
1863  012560  012777  000001  166262    MOV     #1,@#SCR        ;SINGLE STEP THE DISPLAY
1864  012566  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1865  012572  012777  000001  166250    MOV     #1,@#DPC        ;SINGLE STEP THE DISPLAY
1866  012600  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1867  012604  012777  000001  166236    MOV     #1,@#DPC        ;SINGLE STEP THE DISPLAY
1868  012612  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1869  012616  012777  000001  166224    MOV     #1,@#DPC        ;SINGLE STEP THE DISPLAY
1870  012624  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1871
1872  012630  017700  166222            MOV     @YPOS,R0        ;READ Y AXIS
1873  012634  042700  001777            BIC     #1777,R0        ;MASK TO BITS 10-15
1874  012640  022700  032000            CMP     #32000,R0
1875  012644  001402                    BEQ     .+6
1876  012646  000000                    HALT                    ;CHARACTER REGISTER FAILED TO LOAD CORRECTLY
1877  012650  000417                    BR      GT80
1878
1879  012652  017700  165176            MOV     @XPOS,R0        ;READ X AXIS
1880  012656  022700  000000            CMP     #0,R0           ;ARE THEY EQUAL ?
1881  012662  001402                    BEQ     .+6             ;YES
1882  012664  000000                    HALT                    ;"CR" CHARACTER FAILED TO CHANGED X AXIS CORRECTLY
1883  012666  000410                    BR      GT80
1884
1885  012670  017700  166162            MOV     @YPOS,R0        ;READ Y AXIS
1886  012674  042700  176000            BIC     #176000,R0      ;MASK TO BITS 0-9
1887  012700  022700  001000            CMP     #1000,R0        ;ARE THEY EQUAL ?
1888  012704  001401                    BEQ     .+4             ;YES
1889  012706  000000                    HALT                    ;"CR" CHARACTER CHANGED Y AXIS
1890
```

```
                                        ;TEST THAT CHARACTER MODE DOES NOT HANG THE DISPLAY PROCESSOR
                                        ;TEST THAT "LF" DOES NOT CHANGE X BUT DOES CHANGE Y AXIS

012710  104000                GTBO:   SCOPE
012712  012777  116000  166[illegible]       MOV     #116000,@DBUF   ;POINT MODE
012720  012777  001000  166076               MOV     #1000,@DBUF+2
012726  012777  001000  166072               MOV     #1000,@DBUF+4   ;1000,1000
012734  012777  100000  166066               MOV     #100000,@DBUF+6 ;LOAD "CHARACTER MODE"
012742  012777  012000  166062               MOV     #12000,@DBUF+8
012750  013777  001022  166072               MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
012756  012777  000001  166064               MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
012764  004737  015532                       JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
012770  012777  000001  166052               MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
012776  004737  015532                       JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
013002  012777  000001  166040               MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
013010  004737  015532                       JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
013014  012777  000001  166026               MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
013022  004737  015532                       JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY

013026  017700  166024                       MOV     @YPOS,R0        ;READ CHARACTER REG.
013032  042700  001777                       BIC     #1777,R0        ;MASK TO BITS 10-15
013036  022700  024000                       CMP     #24000,R0
013042  001402                             BEQ     .+6
013044  000000                             HALT                    ;CHARACTER REGISTER IN ERROR
013046  000417                             BR      GTBOA

013050  017700  166000                       MOV     @XPOS,R0        ;READ X AXIS
013054  022700  001000                       CMP     #1000,R0        ;ARE THEY EQUAL ?
013060  001402                             BEQ     .+6             ;YES
013062  000000                             HALT                    ;"LF" CHARACTER CHANGED X AXIS
013064  000410                             BR      GTBOA

013066  017700  165764                       MOV     @YPOS,R0        ;READ Y AXIS
013072  042700  176000                       BIC     #176000,R0      ;MASK TO BITS 10-15
013076  023700  001044                       CMP     LFSIZE,R0       ;ARE THEY EQUAL ?
013102  001401                             BEQ     .+4             ;YES
013104  000000                             HALT                    ;"LF" CHARACTER FAILED TO CHANGED Y AXIS CORRECTLY
```

```
1931
1932
1933                                    ;TEST THAT CHARACTER MODE DOES NOT HANG THE DISPLAY PROCESSOR
1934                                    ;TEST THAT "A" DOES CHANGE X BUT NOT Y AXIS
1935
1936  013106  104000                    GTBOA:  SCOPE
1937  013110  012777  116000  165704            MOV     #116000,@DBUF   ;POINT MODE
1938  013116  012777  000000  165700            MOV     #0,@DBUF1
1939  013124  012777  001000  165674            MOV     #1000,@DBUF2    ;0,1000
1940  013132  012777  100000  165670            MOV     #100000,@DBUF3  ;LOAD "CHARACTER MODE"
1941  013140  012777  000101  165664            MOV     #101,@DBUF4     ;LOAD AN "A"
1942  013146  013777  001022  165674            MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1943  013154  012777  000001  165666            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1944  013162  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1945  013166  012777  000001  165654            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1946  013174  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1947  013200  012777  000001  165642            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1948  013206  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1949  013212  012777  000001  165630            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1950  013220  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1951
1952  013224  017700  165626                    MOV     @YPOS,R0        ;READ CHARACTER REG
1953  013230  042700  001777                    BIC     #1777,R0        ;MASK TO BITS 10-15
1954  013234  022700  002000                    CMP     #2000,R0
1955  013240  001402                            BEQ     .+6
1956  013242  000000                            HALT                    ;CHARACTER REGISTER IN ERROR
1957  013244  000417                            BR      GT81
1958
1959  013246  017700  165602                    MOV     @XPOS,R0        ;READ X AXIS
1960  013252  023700  001006                    CMP     GSCHSZ,R0       ;ARE THEY EQUAL ?
1961  013256  001402                            BEQ     .+6             ;YES
1962  013260  000000                            HALT                    ;"A" CHARACTER FAILED TO CHANGED X AXIS CORRECTLY
1963  013262  000410                            BR      GT81
1964
1965  013264  017700  165566                    MOV     @YPOS,R0        ;READ Y AXIS
1966  013270  042700  176000                    BIC     #176000,R0      ;MASK TO BITS 0-9
1967  013274  022700  001000                    CMP     #1000,R0        ;ARE THEY EQUAL ?
1968  013300  001401                            BEQ     .+4             ;YES
1969  013302  000000                            HALT                    ;"A" CHARACTER CHANGED Y AXIS
1970
```

```
1971
1972
1973                                    ;TEST THAT CHARACTER MODE DOES NOT HANG THE DISPLAY PROCESSOR
1974                                    ;TEST THAT "BS" DOES CHANGE X BUT NOT Y AXIS
1975
1976  013304  104000            GTB1:   SCOPE
1977  013306  012777  116000  165506    MOV     #116000,@DBUF   ;POINT MODE
1978  013314  012777  001000  165502    MOV     #1000,@DBUF1
1979  013322  012777  001000  165476    MOV     #1000,@DBUF2    ;1000,1000
1980  013330  012777  100000  165472    MOV     #100000,@DBUF3  ;LOAD "CHARACTER MODE"
1981  013336  012777  000010  165466    MOV     #10,@DBUF4
1982  013344  013777  001022  165476    MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
1983  013352  012777  000001  165470    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1984  013360  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1985  013364  012777  000001  165456    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1986  013372  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1987  013376  012777  000001  165444    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1988  013404  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1989  013410  012777  000001  165432    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
1990  013416  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
1991
1992  013422  017700  165430            MOV     @YPOS,R0        ;READ CHARACTER REG
1993  013426  042700  001777            BIC     #1777,R0        ;MASK TO BITS 10-15
1994  013432  022700  020000            CMP     #20000,R0
1995  013436  001402                    BEQ     .+6
1996  013440  000000                    HALT                    ;CHARACTER REGISTER IN ERROR
1997  013442  000426                    BR      GT82
1998
1999  013444  017700  165404            MOV     @XPOS,R0        ;READ X AXIS
2000  013450  023700  001046            CMP     CHSIZE,R0       ;ARE THEY EQUAL ?
2001  013454  001402                    BEQ     .+6             ;YES
2002  013456  000000                    HALT                    ;"BS" CHARACTER FAILED TO CHANGED X AXIS CORRECTLY
2003  013460  000417                    BR      GT82
2004
2005  013462  017700  165370            MOV     @YPOS,R0        ;READ Y AXIS
2006  013466  042700  176000            BIC     #176000,R0      ;MASK TO BITS 0-9
2007  013472  022700  001000            CMP     #1000,R0        ;ARE THEY EQUAL ?
2008  013476  001402                    BEQ     .+6             ;YES
2009  013500  000000                    HALT                    ;"BS" CHARACTER CHANGED Y AXIS
2010  013502  000406                    BR      GT82
2011
2012                                ;TEST THAT "SHIFT-OUT" STATUS BIT IS NOT SET
2013
2014  013504  017700  165342            MOV     @DSR,R0         ;READ STATUS
2015  013510  032700  000100            BIT     #100,R0
2016  013514  001401                    BEQ     .+4
2017  013516  000000                    HALT                    ;SHIFT OUT STATUS BIT IS SET
2018
```

```
2019
2020                                    ;TEST THAT "SHIFT-OUT" GENERATES A STATUS BIT
2021                                    ;SHIFT-OUT (LOW BYTE), FOLLOWED BY CODE 77 (HIGH BYTE)
2022
2023  013520  104000            GT82:   SCOPE
2024  013522  012777  116000  165272    MOV     #116000,@DBUF   ;POINT MODE
2025  013530  012777  001000  165266    MOV     #1000,@DBUF     ;1000,1000
2026  013536  012777  001000  165262    MOV     #1000,@DBUF     ;1000,1000
2027  013544  012777  100000  165256    MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
2028  013552  012777  037416  165252    MOV     #37416,@DBUF    ;"SHIFT-OUT" IN LOW BYTE #77 IN HIGH BYTE
2029  013560  013777  001022  165262    MOV     @DBUF,@DPC      ;START DISPALY
2030  013566  012777  000001  165254    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2031  013574  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2032  013600  012777  000001  165242    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2033  013606  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2034  013612  012777  000001  165230    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2035  013620  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2036  013624  012777  000001  165216    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2037  013632  004737  015532            JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2038
2039  013636  017700  165214            MOV     @YPOS,R0        ;READ CHARACTER REG
2040  013642  042700  001777            BIC     #1777,R0        ;MASK TO BITS 10-15
2041  013646  022700  176000            CMP     #176000,R0
2042  013652  001402                    BEQ     .+6
2043  013654  000000                    HALT                    ;CHARACTER REGISTER IN ERROR
2044  013656  000426                    BR      GT83            ; AFTER A SHIFT-OUT COMMAND
2045
2046  013660  017700  165166            MOV     @DSR,R0         ;READ STATUS REGISTER
2047  013664  032700  000100            BIT     #100,R0
2048  013670  001002                    BNE     .+6
2049  013672  000000                    HALT                    ;SHIFT OUT STATUS BIT FAILED TO SET
2050  013674  000417                    BR      GT83
2051
2052  013676  017700  165152            MOV     @XPOS,R0        ;READ X POS
2053  013702  022700  001000            CMP     #1000,R0
2054  013706  001402                    BEQ     .+6
2055  013710  000000                    HALT                    ;SHIFT-OUT CHARACTER CHANGED X AXIS
2056  013712  000410                    BR      GT83
2057
2058  013714  017700  165136            MOV     @YPOS,R0        ;READ Y POS
2059  013720  042700  176000            BIC     #176000,R0      ;MASK
2060  013724  022700  001000            CMP     #1000,R0
2061  013730  001401                    BEQ     .+4
2062  013732  000000                    HALT                    ;SHIFT-OUT CHARACTER CHANGED Y AXIS
```

```
2063
2064                                    ;TEST THAT "SHIFT-OUT" DOES NOT GENERATE A STATUS BIT
2065                                    ;("SHIFT-OUT" FOLLOWED BY CODE 0 THRU 37 EXCEPT #17)
2066
2067  013734  104000                    GT83:   SCOPE
2068  013736  000005                            RESET
2069  013740  005003                            CLR     R3
2070  013742  012777  100000  165052    GT83A:  MOV     #100000,@DBUF   ;SET 'CHAR' MODE
2071  013750  012737  000016  001036            MOV     #16,DSAVE       ;LOAD "SHIFT-OUT" INTO THE LOW BYTE
2072  013756  110337  001037                    MOVB    R3,DSAVE+1      ;LOAD HIGH BYTE WITH A CHARACTER
2073  013762  013777  001036  165034            MOV     DSAVE,@DBUF1    ;LOAD DISPLAY BUFFER
2074  013770  013777  001022  165052            MOV     DBUF,@DPC       ;START THE DISPLAY
2075  013776  012777  000001  165044            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2076  014004  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2077
2078  014010  032777  000100  165034            BIT     #100,@DSR       ;TEST FOR SHIFT BIT
2079  014016  001402                            BEQ     .+6
2080  014020  000000                            HALT                    ;SHIFT STATUS BIT SET IN ERROR
2081  014022  000407                            BR      GT84            ; CHARACTER IS IN R3
2082
2083  014024  005203                    GT83B:  INC     R3
2084  014026  022703  000017                    CMP     #17,R3          ;TEST FOR "SHIFT-IN"
2085  014032  001774                            BEQ     GT83B
2086  014034  022703  000040                    CMP     #40,R3          ;TEST FOR #40
2087  014040  001340                            BNE     GT83A           ;IS IT #40
2088                                                                    ;YES, NEXT TEST
2089
2090                                    ;TEST THAT "SHIFT-OUT" FOLLOWED BY CODE 40 GENERATE A
2091                                    ;SHIFT STATUS BIT
2092
2093  014042  104000                    GT84:   SCOPE
2094  014044  000005                            RESET
2095  014046  012777  100000  164746            MOV     #100000,@DBUF   ;LOAD SET CHAR MODE
2096  014054  012777  000016  164742            MOV     #16,@DBUF1      ;LOAD "SHIFT-OUT" INTO THE LOW BYTE
2097  014062  112737  000040  015661    GT84A:  MOVB    #40,BUFFER+3    ;LOAD HIGH BYTE
2098  014070  013777  001022  164752            MOV     DBUF,@DPC       ;START THE DISPLAY
2099  014076  004737  015532                    JSR     PC,DLAY         ;DELAY
2100  014102  012777  000001  164740            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2101  014110  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2102
2103  014114  032777  000100  164730            BIT     #100,@DSR       ;TEST 'SHIFT' STATUS BIT
2104  014122  001002                            BNE     .+6
2105  014124  000000                            HALT                    ;"SHIFT-OUT" STATUS BIT FAILED TO SET
2106  014126  000441                            BR      GT85            ;ON CHARACTER IN R3
2107
```

```
2108
2109  014130  000005                          RESET                   ;POWER CLEAR
2110  014132  032777  000100  164712          BIT     #100,@DSR       ;TEST FOR NO "SHIFT-OUT"
2111  014140  001402                          BEQ     1$              ;BR IF NOT SET
2112  014142  000000                          HALT                    ;"SHIFT-OUT"FLAG FAILED TO CLEAR
2113  014144  000432                          BR      GT85
2114
2115  014146  112737  000100  015661  1$:     MOVB    #100,BUFFER+3   ;LOAD HIGT BYTE
2116  014154  013777  001022  164666          MOV     DBUF,@DPC       ;START DISPLAY
2117  014162  004737  015532                  JSR     PC,DLAY         ;DELAY
2118  014166  012777  000001  164654          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2119  014174  004737  015532                  JSR     PC,DLAY         ;DELAY
2120
2121  014200  032777  000100  164644          BIT     #100,@DSR       ;TEST "SHIFT-OUT" STATUS BIT
2122  014206  001002                          BNE     .+6             ;BR IF SET
2123  014210  000000                          HALT                    ;"SHIFT-OUT" STATUS BIT FAILED TO SET
2124  014212  000407                          BR      GT85            ;ON #100
2125
2126  014214  000005                          RESET                   ;POWER CLEAR
2127  014216  032777  000100  164626          BIT     #100,@DSR       ;TEST BIT
2128  014224  001402                          BEQ     GT85            ;BR IF CLEARED
2129  014226  000000                          HALT                    ;"INIT" FAILED TO CLEAR "SHIFT-OUT"STATUS
2130  014230  000400                          BR      GT85
2131
2132
2133                                  ;TEST THAT 'SHIFT-OUT' IN THE HIGH BYTE FOLLOWED BY A CHARACTER
2134                                  ; IN THE NEXT LOW BYTE GENERATES A STATUS BIT
2135
2136  014232  104000                  GT85:   SCOPE
2137  014234  012777  100000  164560          MOV     #100000,@DBUF   ;LOAD SET 'CHAR' MODE
2138  014242  012777  007000  164554          MOV     #7000,@DBUF1    ;LOAD 'SHIFT-OUT' INTO THE HIGH BYTE
2139  014250  012777  000040  164550          MOV     #40,@DBUF2      ;LOAD A SHIFT-OUT CHARACTER IN THE NEXT
2140                                                                  ;WORD (LOW BYTE)
2141  014256  000005                          RESET
2142  014260  013777  001022  164562          MOV     DBUF,@DPC       ;START THE DISPLAY
2143  014266  012777  000001  164554          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2144  014274  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2145  014300  012777  000001  164542          MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2146  014306  004737  015532                  JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2147
2148  014312  032777  000100  164532          BIT     #100,@DSR       ;TEST THE STATUS REGISTER
2149  014320  001002                          BNE     .+6
2150  014322  000000                          HALT                    ;SHIFT-OUT IN THE HIGH BYTE FAILED TO
2151  014324  000410                          BR      GT86            ;SET A STATUS BIT
2152
2153  014326  017700  164524                  MOV     @YPOS,R0        ;READ Y POS
2154  014332  042700  001777                  BIC     #1777,R0        ;MASK TO BITS 15-10
2155  014336  022700  100000                  CMP     #100000,R0      ;TEST FOR CHAR #40
2156  014342  001401                          BEQ     .+4
2157  014344  000000                          HALT                    ;CHARACTER REGISTER IN ERROR AFTER A
2158                                                                  ;"SHIFT-OUT" (HIGH BYTE) FOLLOWED BY
2159                                                                  ; #40 (LOW BYTE NEXT WORD)
2160
```

```
2161                                        ;STOP INTERRUPT TEST
2162                                        ;TEST FOR NO INTERRUPT
2163
2164  014346  104000                GT86:   SCOPE
2165  014350  000005                        RESET
2166  014352  012777  014442  164500        MOV     #GT86A,@DONE    ;LOAD RETURN FROM DONE INTERRUPT
2167  014360  012777  014442  164502        MOV     #GT86A,@TIMEVT  ;LOAD RETURN FROM TIME-OUT INTERRUPT
2168  014366  012777  014442  164470        MOV     #GT86A,@LPVCT   ;LOAD RETURN FROM LIGHT-PEN INTERRUPT
2169  014374  012777  164000  164420        MOV     #164000,@DBUF   ;LOAD "DISPLAY NOP"
2170  014402  012777  173000  164414        MOV     #173000,@DBUF1  ;LOAD "STATUS A"-"STOP"-"STOP INT. ENABLE"
2171  014410  005077  164404                CLR     @PSW            ;LOWER MACHINE PRIORITY
2172  014414  013777  001022  164426        MOV     DBUF,@PC        ;LOAD DISPLAY P.C.
2173  014422  012777  000001  164420        MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
2174  014430  000240                        NOP
2175  014432  000240                        NOP
2176  014434  000240                        NOP
2177  014436  000240                        NOP
2178  014440  000401                        BR      .+4
2179
2180  014442  000000                GT86A:  HALT                    ;GT-40 INTERRUPTED IN ERROR
2181
2182                                        ;STOP INTERRUPT TEST
2183                                        ;TEST FOR INTERRUPT
2184
2185  014444  104000                GT87:   SCOPE
2186  014446  000005                        RESET
2187  014450  012777  014540  164402        MOV     #GT87A,@DONE    ;LOAD RETURN ADDRESS FROM INTERRUPT
2188  014456  012777  014552  164404        MOV     #GT87B,@TIMEVT
2189  014464  012777  014560  164372        MOV     #GT87C,@LPVCT
2190  014472  012777  164000  164322        MOV     #164000,@DBUF   ;LOAD "DISPLAY NOP"
2191  014500  012777  173400  164316        MOV     #173400,@DBUF1  ;LOAD "STATUS A"-"STOP"-"STOP INT. ENABLE-INT"
2192  014506  005077  164306                CLR     @PSW
2193  014512  013777  001022  164330        MOV     DBUF,@PC
2194  014520  012777  000001  164322        MOV     #1,@PC          ;SINGLE STEP THE DISPLAY
2195  014526  000240                        NOP
2196  014530  000240                        NOP
2197  014532  000240                        NOP
2198  014534  000240                        NOP
2199  014536  000000                        HALT                    ;GT-40 FAILED TO GENERATE AN INTERRUPT
2200  014540  013777  001062  164312  GT87A:  MOV     DDONE1,@DONE
2201  014546  022626                        CMP     (SP)+,(SP)+
2202  014550  000405                        BR      GT88
2203
2204  014552  022626                GT87B:  CMP     (SP)+,(SP)+
2205  014554  000000                        HALT                    ;GT-40 STOP (DONE) INTERRUPTED TO
2206                                                                ; THE GT-40 TIME OUT VECTOR
2207  014556  000402                        BR      GT88
2208
2209  014560  022626                GT87C:  CMP     (SP)+,(SP)+
2210  014562  000000                        HALT                    ;GT-40 STOP (DONE) INTERRUPTED
2211                                                                ; TO THE GT-40 LIGHT-PEN VECTOR
```

```
2212
2213                                    ;SHIFT OUT INTERRUPT TEST
2214                                    ;TEST FOR INTERRUPT
2215
2216  014564  104000                    GT88:   SCOPE
2217  014566  000005                            RESET
2218  014570  012777  014674  164262            MOV     #GT888,@DONE    ;LOAD DONE VECTOR
2219  014576  012777  014702  164260            MOV     #GT88C,@LPVCT   ;LOAD LIGHT-PEN VECTOR
2220  014604  012777  014660  164256            MOV     #GT88A,@TIMEVT  ;LOAD RETURN ADDRESS
2221  014612  012777  100000  164202            MOV     #100000,@DBUF   ;LOAD "CHARACTER MODE"
2222  014620  012777  020016  164176            MOV     #20016,@DBUF1   ;LOAD "SHIFT-OUT"
2223  014626  005077  164166                    CLR     @PSW
2224  014632  013777  001022  164210            MOV     DBUF,@DPC       ;START DISPLAY
2225  014640  012777  000001  164202            MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2226  014646  000240                            NOP
2227  014650  000240                            NOP
2228  014652  000240                            NOP
2229  014654  000240                            NOP
2230  014656  000000                            HALT                    ;GT-40 FAILED TO INTERRUPT ON SHIFT-OUT
2231  014660  000240                    GT88A:  NOP
2232  014662  013777  001072  164200            MOV     TMEVT1,@TIMEVT
2233  014670  022626                            CMP     (SP)+,(SP)+
2234  014672  000405                            BR      GT89
2235
2236  014674  022626                    GT888:  CMP     (SP)+,(SP)+
2237  014676  000000                            HALT                    ;GT-40 SHIFT-OUT INTERRUPTED
2238  014700  000402                            BR      GT89            ; TO STOP VECTOR
2239
2240  014702  022626                    GT88C:  CMP     (SP)+,(SP)+
2241  014704  000000                            HALT                    ;GT-40 SHIFT-OUT INTERRUPTED TO
2242                                                                    ; THE LIGHT-PEN VECTOR
```

```
2243
2244
2245                                    ;TIME-OUT INTERRUPT TEST
2246
2247  014706  104000                    GT89:   SCOPE
2248  014710  000005                            RESET
2249  014712  013777  001062  164140            MOV     DDONE1,@DDONE
2250  014720  013777  001066  164136            MOV     LPVCT1,@LPVCT
2251  014726  012777  014754  164134            MOV     #GT89A,@TIMEVT  ;LOAD RETURN ADDRESS
2252  014734  005077  164060                    CLR     @PSW
2253  014740  012777  177776  164102            MOV     #177776,@PC     ;LOAD DISPLAY P.C.
2254  014746  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2255  014752  000000                            HALT                    ;GT-40 FAILED TO INTERRUPT ON TIME-OUT
2256
2257  014754  000240                    GT89A:  NOP
2258  014756  013777  001072  164104            MOV     TMEVT1,@TIMEVT
2259  014764  022626                            CMP     (SP)+,(SP)+
2260
2261                                    ;LIGHT PEN INTERUPT TEST
2262
2263  014766  104000                    GT90:   SCOPE
2264  014770  000005                            RESET
2265  014772  012777  015026  164064            MOV     #GT90A,@LPVCT   ;LOAD RETURN ADDRESS
2266  015000  012777  100140  164014            MOV     #100140,@DBUF   ;LOAD DISPLAY BUFFER
2267  015006  005077  164006                    CLR     @PSW
2268  015012  013777  001022  164030            MOV     DBUF,@PC        ;LOAD DISPLAY P.C.
2269  015020  004737  015532                    JSR     7,DLAY          ;EXECUTE A PROGRAM DELAY
2270  015024  000401                            BR      .+4
2271  015026  000000                    GT90A:  HALT                    ;GT-40 INTERRUPTED ON FALSE LIGHT PEN FLAG
2272  015030  013777  001066  164026            MOV     LPVCT1,@LPVCT
```

```
                                        ;PRE BR LEVEL SETUP
                                
015036  042737  177437  001004        BIC     #177437,DSPBR   ;MASK TO BITS
015044  001001                        BNE     .+4
015046  000000                        HALT                    ;BR LEVEL WAS 0
015050  022737  000340  001004        CMP     #340,DSPBR
015056  001001                        BNE     .+4
015060  000000                        HALT                    ;BR LEVEL WAS 7
                                
015062  013737  001004  015106        MOV     DSPBR,BRLEV1
015070  162737  000040  015106        SUB     #40,BRLEV1
015076  013737  001004  015110        MOV     DSPBR,BRLEV2
015104  000402                        BR      GT91
                                
015106  000140                BRLEV1: 140
015110  000200                BRLEV2: 200
                                
                                        ;BR LEVEL TEST (BR-1)
                                        ;TEST FOR INTERRUPT
                                
015112  104000                GT91:   SCOPE
015114  000005                        RESET
015116  012777  015160  163734        MOV     #GT91A,@DDONE   ;LOAD RETURN ADDRESS
015124  012777  173400  163670        MOV     #173400,@DBUF   ;LOAD "STATUS A"-NO INTERRUPT ENABLE
015132  013777  015106  163650        MOV     BRLEV1,@PSW
015140  013777  001022  163702        MOV     DBUF,@DPC       ;LOAD THE DISPLAY P.C.
015146  000240                        NOP
015150  000240                        NOP
015152  000240                        NOP
015154  000240                        NOP
015156  000000                        HALT                    ;NO STOP INTERRUPT ON BR LEVEL INDICATED -1
                                                                ;CHECK TO SEE IF PROPER BR LEVEL
015160  022626                GT91A:  CMP     (SP)+,(SP)+
                                
                                        ;BR LEVEL TEST (BR)
                                        ;TEST THAT THE GT-40 DOES NOT INTERRUPT AT THE LEVEL INDICATED
                                
015162  104000                GT92:   SCOPE
015164  000005                        RESET
015166  012777  015230  163664        MOV     #GT92A,@DDONE   ;LOAD RETURN ADDRESS
015174  012777  173400  163620        MOV     #173400,@DBUF   ;LOAD "STATUS A- STOP- STOP INT ENABLE
015202  013777  015110  163610        MOV     BRLEV2,@PSW     ;LOWER MACHINE PRIORITY TO INDICATED LEVEL
015210  013777  001022  163632        MOV     DBUF,@DPC
015216  000240                        NOP
015220  000240                        NOP
015222  000240                        NOP
015224  000240                        NOP
015226  000401                        BR      .+4             ;NEXT TEST
                                
015230  000000                GT92A:  HALT                    ;GT-40 INTERRUPTED ON THE WRONG BR LEVEL
                                
015232  013777  001062  163620        MOV     DDONE1,@DDONE   ;LOAD INVERRUPT VECTOR
015240  000005                        RESET
                                
```

```
2327
2328
2329                                    ;RESET TEST
2330                                    ;DOES RESET CLEAR ALL DISPLAY PC AND STATUS BITS
2331
2332  015242  104000                    GT93:   SCOPE
2333  015244  012777  117637  163550            MOV     #117637,@DBUF   ;POINT INTENSITY=7,BLINK=1,LINETYPE=3
2334  015252  005077  163546            CLR     @DBUF1          ;CLEAR X
2335  015256  005077  163544            CLR     @DBUF2          ;CLEAR Y
2336  015262  012777  172077  163540    MOV     #172077,@DBUF3  ;ITALIC=1,SYNC=1,COLOR=1
2337  015270  013777  001022  163552    MOV     DBUF,@DPC       ;LOAD DISPLAY P.C.
2338  015276  004737  015532            JSR     PC,DLAY
2339  015302  012777  000001  163540    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2340  015310  004737  015532            JSR     PC,DLAY
2341  015314  012777  000001  163526    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2342  015322  004737  015532            JSR     PC,DLAY
2343  015326  012777  000001  163514    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2344  015334  004737  015532            JSR     PC,DLAY
2345  015340  012777  000001  163502    MOV     #1,@DPC         ;SINGLE STEP THE DISPLAY
2346  015346  000005                    RESET                   ;GENERATE "INIT"
2347  015350  005777  163474            TST     @DPC
2348  015354  001402                    BEQ     .+6
2349  015356  000000                    HALT                    ;RESET FAILED TO CLEAR DISPLAY PC
2350  015360  000406                    BR      END
2351
2352  015362  017700  163464            MOV     @DSR,R0         ;READ DISPLAY STATUS
2353  015366  042700  074000            BIC     #74000,R0       ;MASK TO BIT 11-14
2354  015372  001401                    BEQ     .+4             ;IS THE STATUS CLEARED ?
2355  015374  000000                    HALT                    ;"INIT" FAILED TO RESET DISPLAY STATUS REGISTER
2356
2357  015376  104000                    END:    SCOPE
2358  015400  005237  001016            INC     ICNT            ;UPDATE COUNTER
2359  015404  022737  000004  001016    CMP     #4,ICNT ;FINISHED ?
2360  015412  001402                    BEQ     HERE            ;BR IF YES
2361  015414  000137  001572            JMP     GTO             ;NO RESTART
2362  015420  000005                    HERE:   RESET
2363  015422  013700  000042            MOV     @#42,R0
2364  015426  001405                    BEQ     HERE1           ;BRANCH IF OFF LINE
2365  015430  000005                    RESET
2366  015432  004710                    LOGICAL:        JSR     PC,(0)
2367  015434  000240                    NOP
2368  015436  000240                    NOP
2369  015440  000240                    NOP
2370  015442  004737  015452            HERE1:  JSR     PC,BELL
2371  015446  000137  001544            JMP     START8
2372  015452  012777  000102  163372    BELL:   MOV     #2,@DSR                 ;RING THE BELL
2373  015460  012737  000207  177566            MOV     #207,@#TPDBR    ;RINT THE BELL
2374  015466  105737  177564            1$:     TSTB    TPCSR
2375  015472  100375                    BPL     1$
2376  015474  012737  000207  177566            MOV     #207,TPDBR
2377  015502  105737  177564            2$:     TSTB    TPCSR
2378  015506  100375                    BPL     2$
2379  015510  000207                    RTS     PC
```

```
                                        ;SCOPE ROUTINE
                                
015512  032737  040000  177570  SCOPEA: BIT     #40000,@#DISPLAY        ;TEST "SCOPE" SWITCH
015530  001001                  BNE     SCOPEB
015532  011601                  MOV     (SP),R1
015534  012706  000500          SCOPEB: MOV     #STKPTR,SP
015540  000111                  JMP     (1)
                                
015542  012700  000200          DLAY:   MOV     #200,R0
015546  005300                  DLAYA:  DEC     R0
015550  001376                  BNE     DLAYA
015552  000207                  RTS     7
                                
015554  012700  001000          DLAY1:  MOV     #1000,R0
015560  005300                  DLAY1A: DEC     R0
015562  001376                  BNE     DLAY1A
015564  000207                  RTS     7
                                
015566  010046                  LOWPWR: MOV     R0,-(SP)
015570  010146                          MOV     R1,-(SP)
015572  010246                          MOV     R2,-(SP)
015574  010346                          MOV     R3,-(SP)
015576  010446                          MOV     R4,-(SP)
015600  010546                          MOV     R5,-(SP)
015602  010637  015654                  MOV     SP,LOWSV
015606  012737  015626  000024          MOV     #HIGPWR,@#24
015614  000000                          HALT
015616  013706  015654          HIGPWR: MOV     LOWSV,SP
015622  012605                          MOV     (SP)+,R5
015624  012604                          MOV     (SP)+,R4
015626  012603                          MOV     (SP)+,R3
015630  012602                          MOV     (SP)+,R2
015632  012601                          MOV     (SP)+,R1
015634  012600                          MOV     (SP)+,R0
015636  012737  015556  000024          MOV     #LOWPWR,@#24
015644  012706  000500                  MOV     #STKPTR,SP
015650  000240                          NOP
015652  000240                          NOP
015654  000000                          HALT
015656  000240                          NOP
015660  000240                          NOP
015662  000111                          JMP     (R1)
                                
015664  000000          LOWSV:  0
                                
015666  000000          BUFFER: 0
                                
000001                          .END
```

BELL 015452 324 2370 2372#
FLEV1 015106 2[illegible]3# 2[illegible]3# 2287# 2297
FLEV2 015110 2[illegible]4# 2[illegible]# 2314
BUFFER 015[illegible]6 197 1[illegible] 199 200 201 202 2097# 2115# 2425#
CHSIZE 001046 207# 244# 245# 247# 2000
CNTR 001042 205#
DBUF 001022 197# 337# 338 347# 348 357# 358 367# 368 379# 390 389# 390
401# 402 410# 411 419# 420 429# 430 439# 440 449# 450 459#
460 463# 470 479# 480 487# 488 495# 496 504# 505 514# 515
523# 524 532# 533 542# 543 554# 555 564# 565 575# 576 585#
5[illegible]5 594# 5[illegible]5 603# 604 612# 613 623# 624 634# 635 647# 648
6[illegible]# 657 6[illegible]# 666 674# 675 683# 684 6[illegible]# 687 700# 705 735
741 742 761# 763 772# 774 783# 785 794# 796 807# 810 823#
826 833# 842 8[illegible]# 859 873# 878 901# 905 924# 928 950# 954
975# 979 1001# 10[illegible] 1027 10[illegible] 1065 1073 1107 1114 1151 1158 1191
1197 1224 1230 12[illegible] 12[illegible] 13[illegible] 1311 1343 13[illegible] 1376 1382 1414 1420
1457 1463 1502 15[illegible] 1541 15[illegible] 1573# 1574 15[illegible] 1587 1612 1626 1634
1659 1673 1681 1712 1720 1745 1757# 1759 1772# 1774 1787# 1789 1802#
1804 1817# 1822 1857# 1862 1897# 1902 1937# 1942 1977# 1982 2024# 2029
2070# 2074 20[illegible]# 2[illegible]8 2116 2137# 2142 2169# 2172 2190# 2193 2221# 2224
22[illegible]# 2[illegible]8 22[illegible]# 2[illegible]8 2313# 2315 2333# 2337
DBUF1 001024 198# 701# 707 762# 773# 784# 795# 808# 824# 840# 857# 874# 902#
925# 951# 976# 1002# 1758# 1773# 1788# 1803# 1818# 1858# 1898# 1938# 1978#
2025# 2073# 2096# 2138# 2170# 2191# 2222# 2334#
DBUF2 001026 199# 702# 713 809# 825# 841# 858# 875# 903# 926# 952# 977# 1003#
1819# 1859# 1899# 1939# 1979# 2026# 2139# 2335#
DBUF3 001030 200# 703# 719 876# 904# 927# 953# 978# 1004# 1820# 1860# 1900# 1940#
1980# 2027# 2336#
DBUF4 001032 201# 704# 725 877# 1821# 1861# 1901# 1941# 1981# 2028#
DBUF5 001034 202#
DDONE 001060 218# 235 239 248# 2166# 2187# 2200# 2218# 2249# 2295# 2312# 2324#
DDONE1 001062 219# 2[illegible] 249# 2200 2249 2324
DISPLA= 177570 168# 2[illegible]# 3[illegible]# 2[illegible]2
DLAY 015532 6[illegible] 812 [illegible] 844 861 880 889 907 914 930 938 956 964
931 9[illegible] 1007 1015 1037 1039 1041 1043 1045 1047 1075 1077 1079
1031 10[illegible] 1085 1116 1118 1120 1122 1124 1160 1162 1164 1166 1168
1199 1201 1203 1205 1232 1234 1236 1238 1270 1272 1274 1276 1313
1315 1317 1319 1351 1353 1355 1357 1384 1386 1388 1390 1422 1424
1426 14[illegible] 1465 1467 1469 1471 1511 1513 1515 1517 1519 1550 1552
1554 15[illegible] 15[illegible] 1589 1591 1599 1601 1603 1605 1614 1616 1636 1638
1646 16[illegible] 16[illegible] 1652 1661 1663 1693 16[illegible] 1693 1695 1697 1699 1722
1724 17[illegible] 17[illegible] 1736 1738 1747 1749 1760 1775 1790 18[illegible] 18[illegible] 18[illegible]
18[illegible] 1[illegible] 1864 1866 1868 1870 1904 1906 1908 1910 1944 1946 1948
1950 1[illegible] 1986 19[illegible] 1990 2031 2033 2035 2037 2076 2099 2101 2117
2119 2144 2146 2254 2269 2338 2340 2342 2344 2388#
DLAYA 015536 23[illegible]# 23[illegible]
DLAY1 015544 614 [illegible] 2393#
DLAY1A 015550 2394# 2[illegible]
DOCORE 001250 246 2[illegible]#
DPC 001050 213# 2[illegible] 233 287# 2[illegible] 294# 295 302# 303 310# 311 317 338#
348# 3[illegible]# 3[illegible]# 3[illegible]0# 340# 402# 411# 420# 430# 440# 450# 460# 470#
480# 5[illegible]# 4[illegible]# 505# 515# 524# 533# 543# 555# 565# 576# 586# 595#
604# 613# 624# 635# 648# 657# 666# 675# 684# 687# 705# 706 711#
712 717# 718 723# 724 741# 74[illegible] 754# 763# 764# 765 774# 775#
776 785# 7[illegible]# 787 796# 797# 798 8[illegible]0# 811# 8[illegible]6# 827# 842# 843#
859# 860# 87[illegible]# 879# 887# 888# 905# 9[illegible]6# 913# 9[illegible]8# 929# 937# 954#

K05


```
                           955*   963*   979*   9[illegible]*  998*   1005*  1006*  1014*  1035*  1036*  1038*  1040*  1042*
                          1044*  1046*  1073*  1074*  1076*  1078*  1080*  1082*  1084*  1114*  1115*  1117*  1119*
                          1121*  1123*  1159*  1159*  1161*  1163*  1165*  1167*  1197*  1198*  1200*  1202*  1204*
                          1230*  1231*  1233*  12[illegible]5*  1237*  12[illegible]8*  1269*  1271*  1273*  1275*  1311*  1312*  1314*
                          1316*  1318*  1343*  13[illegible]*  13[illegible]*  1354*  1356*  13[illegible]*  1383*  13[illegible]5*  1387*  1389*  1420*
                          1421*  1423*  1425*  1427*  1463*  1464*  1466*  1468*  1470*  15[illegible]9*  1510*  1512*  1514*
                          1516*  1518*  1548*  1549*  1551*  1553*  1555*  1557*  1574*  1587*  1588*  1590*  1598*
                          1600*  [illegible]2*  1604*  1612*  1613*  1615*  1634*  16[illegible]5*  1637*  1645*  1647*  1649*  1651*
                          1659*  1[illegible]*  1[illegible]2*  1631*  16[illegible]2*  1684*  1692*  1694*  16[illegible]6*  1698*  1720*  1721*  1723*
                          1731*  173[illegible]*  17[illegible]*  1737*  17[illegible]*  1746*  1748*  1759*  1761*  1774*  1776*  1789*  1791*
                          1804*  1806*  18[illegible]2*  1823*  1825*  1827*  1829*  1862*  1863*  1865*  1867*  1869*  1902*
                          1903*  19[illegible]*  19[illegible]7*  19[illegible]9*  1942*  1943*  1945*  1947*  1949*  1982*  1983*  1985*  1987*
                          1963*  20[illegible]*  20[illegible]0*  20[illegible]2*  2034*  2036*  2074*  2075*  20[illegible]3*  2100*  2116*  2118*  2142*
                          2143*  2145*  21[illegible]2*  2173*  2193*  2194*  2224*  2225*  2253*  2268*  2298*  2315*  2337*
                          2339*  2341*  2343*  2345*  2347
DSAVE     001036           203#   742*   745*   747    752   1499*  1506   1526*  1538*  1545   1567*  2071*  2072*
                          2073
DSPBR     001004           189#  2275*  2278   2282   2284
DSR       001052           214#   318    339    349    359    369    381    391    403    412    421    431    441
                           451    461    471    481    489    497    506    516    525    534    544    556    566
                           577    587    596    605    615    626    636   1593   1607   1617   1640   1654   1664
                          1687   1701   1726   1740   1750   2014   2046   2078   2103   2110   2121   2127   2148
                          2352   2372*
END       015376          2350   2357#
GSADD     001000           187#   230
GSCHSZ    001006           190#   244   1960
GSLFSZ    001010           191#   241
GSSEND    001014           193#
GSVCT     001002           188#   236
GSYAXS    001012           192#  1676
GT0       001572           330    335#  2361
GT1       001636           346#
GT10      002256           438#
GT11      002314           448#
GT12      002352           458#
GT13      002410           468#
GT14      002446           478#
GT15      002500           486#
GT16      002532           494#
GT17      002570           503#
GT18      002626           513#
GT19      002664           522#
GT2       001674           356#
GT20      002722           531#
GT21      002760           541#
GT22      003016           553#
GT23      003054           563#
GT24      003112           574#
GT25      003150           584#
GT26      003200           593#
GT27      003230           602#
GT28      003260           611#
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GT3       001732           366#
GT30      003364           633#
GT31      003422           646#
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GT32    003460            655#
GT33    003516            664#
GT34    003554            673#
GT35    003612            682#
GT36    003670            699#
GT37    004046            710     716     722     734#
GT37A   004112            745#    755
GT4     001770            377#
GT40    004154            750     753     760#
GT41    004222            771#
GT42    004270            782#
GT43    004336            793#
GT44    004404            806#
GT45    004464            822#
GT46    004544            838#
GT47    004624            855#
GT48    004704            872#
GT49    005036            885     900#
GT5     002030            388#
GT50    005140            911     923#
GT51    005256            935     949#
GT52    005374            961     974#
GT53    005512            986    1000#
GT54    005630           1012    1026#
GT55    006022           1053    1064#
GT56    006214           1091    1102#
GT56A   006230           1107#   1140
GT57    006402           1130    1136    1145#
GT57A   006422           1151#   1185
GT58    006576           1174    1180    1190#
GT59    006734           1211    1223#
GT6     002066            400#
GT60    007072           1244    1256#
GT60A   007112           1262#   1293
GT61    007254           1282    1288    1299#
GT61A   007274           1305#   1336
GT62    007436           1325    1331    1342#
GT63    007574           1363    1375#
GT64    007732           1396    1408#
GT64A   007752           1414#   1445
GT65    010114           1434    1440    1451#
GT65A   010134           1457#   1488
GT66    010276           1477    1483    1496#
GT66A   010320           1502#   1529
GT67    010464           1525    1535#
GT67A   010506           1541#   1570
GT67B   010656           1573#
GT7     002124            409#
GT70    010672           1565    1578#
GT71    011132           1596    1610    1625#
GT72    011372           1643    16[illegible]#
GT73    011566           1657    1690    1704    1711#
GT74    012026           1729    1743    1756#
GT75    012104           1771#
GT76    012162           1786#
GT77    012240           1801#
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DOGTAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

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GT79    012316          1816#
GT79    012512          1837    1843    1856#
GT8     002162           418#
GT80    012710          1877    1883    1896#
GT80A   013106          1917    1923    1936#
GT81    013204          1957    1963    1976#
GT82    013320          1997    2003    2010    2023#
GT83    013734          2044    2050    2056    2067#
GT83A   013742          2070#   2087
GT83B   014024          2083#   2085
GT84    014042          2081    2093#
GT84A   014052          2097#
GT85    014232          2106    2113    2124    2128    2130    2136#
GT86    014346          2151    2164#
GT86A   014442          2166    2167    2168    2180#
GT87    014444          2185#
GT87A   014540          2187    2200#
GT87B   014552          2188    2204#
GT87C   014560          2189    2209#
GT89    014564          2202    2207    2216#
GT89A   014660          2220    2231#
GT89B   014674          2218    2236#
GT89C   014702          2219    2240#
GT89    014706          2234    2238    2247#
GT89A   014754          2251    2257#
GT9     002220           428#
GT90    014766          2263#
GT90A   015026          2265    2271#
GT91    015112          2285    2293#
GT91A   015160          2295    2305#
GT92    015162          2310#
GT92A   015230          2312    2322#
GT93    015242          2332#
HERE    015420          2360    2362#
HERE1   015442          2364    2370#
HIGPWR  015606          2405    2407#
ICNT    001016           195#    279*    286     322*    329*    336     2358*   2359
LFSIZE  001044           206#    241*    242*    243*    1927
LOGICA  015432           180     2366#
LOWPWR  015556           174     2398#   2414
LOWSV   015654          2404*   2407    2423#
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LPVCT1  001066           222#    250     251*    2250    2272
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                        2344*   2366*   2370*   2379*
PCTST0  001370           280     285#    323     325
PCTST1  001414           293#
PCTST2  001440           301#
PCTST3  001464           309#
PCTST4  001510           317#
PSW     001020           196#    276*    326*    2171*   2192*   2223*   2252*   2267*   2297*   2314*
R0    =%000000           168#    229*    233     235*    239     288*    295*    296     303*    304     311*    312     339*
                        340*    341     349*    350*    351     359*    360*    361     369*    370*    371     381*    382*
                        383     391*    392*    393     403*    404*    405     412*    413*    414     421*    422*    423
                        431*    432*    433     441*    442*    443     451*    452*    453     461*    462*    463     471*
                        472*    473     481*    482     489*    490     497*    498*    499     506*    507*    508     516*
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                                517*  518   525*  526*  527   534*  535*  536   544*  545*  546   556*  557*
                                558   566*  567*  568   577*  578*  579   587*  588   596*  597   605*  606
                                615*  616*  617   626*  627*  628   636*  637*  638   649*  650*  651   658*
                                659*  660   667*  668*  669   676*  677*  678   688*  689*  690   706*  707
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                                788   798*  799   813*  814   829*  830   845*  846   862*  863   881*  882
                                890*  891   903*  915*  931*  932   939*  940   957*  958   965*  966   982*
                                983   990*  991   1008* 1009  1025* 1017  1027* 1049* 1050  1055* 1056  1065*
                               1087* 1088  1093* 1094  1107* 1113* 1127  1132* 1133  1151* 1170* 1171  1176*
                               1177  1191* 1207* 1208  1213* 1214  1234* 1240* 1241  1246* 1247  1262* 1278*
                               1279  1294* 1305  1306* 1321* 1322  1327* 1328  1343* 1359* 1360  1365* 1366
                               1376* 1392* 1393  1398* 1399  1414* 1430* 1431  1436* 1437  1457* 1473* 1474
                               1479* 1480  1502* 1521* 1522  1541* 1560* 1561* 1562  1579* 1626* 1673* 1712*
                               1762* 1763* 1764  1777* 1778* 1779  1792* 1793* 1794  1807* 1808* 1809  1832*
                               1833* 1834  1839* 1840  1845* 1846* 1847  1872* 1873* 1874  1879* 1880  1885*
                               1886* 1887  1912* 1913* 1914  1919* 1920  1925* 1926* 1927  1952* 1953* 1954
                               1959* 1960  1965* 1966* 1967  1992* 1993* 1994  1999* 2000  2005* 2006* 2007
                               2014* 2015  2039* 2040* 2041  2046* 2047  2052* 2053  2058* 2059* 2060  2153*
                               2154* 2155  2352* 2353* 2363* 2388* 2389* 2393* 2394* 2398  2413*
R1      =%000001                168*  230*  231   232*  236*  237   238*  259*  260*  261   262   267*  268
                                270*  272*  273   280*  330*  2384* 2399  2412* 2421
R2      =%000002                168*  735*  737   743*  744   752   1258* 1279  1285  1291* 1301* 1322  1328
                               1334* 1410* 1431  1437  1443* 1453* 1474  1490  1496* 2400  2411*
R3      =%000003                168*  1103* 1139* 1146* 1184* 1257* 1292* 1300* 1335* 1409* 1444* 1452* 1487*
                               1497* 1528* 1536* 1569* 2069* 2072  2083* 2084  2086  2401  2410*
R4      =%000004                168*  1104* 1112  1113  1127  1133  1138* 1147* 1171  1177  1183* 1259* 1267
                               1290* 1302* 1310  1333* 1411* 1419  1442* 1454* 1462  1485* 1498* 1522  1527*
                               1537* 1562  1568* 2402  2409*
R5      =%000005                168*  1148* 1156  1157  1182* 2403  2408*
SCOPE   = 104000                168*  285   293   301   309   335   346   356   366   377   388   400   409
                                418   428   438   448   458   468   478   486   494   503   513   522   531
                                541   553   563   574   584   593   602   611   622   633   646   655   664
                                673   682   699   734   740   760   771   782   793   806   822   838   855
                                872   900   923   949   974   1000  1026  1064  1102  1106  1145  1150  1190
                               1223  1256  1261  1299  1304  1342  1375  1408  1413  1451  1456  1496  1501
                               1535  1540  1578  1625  1672  1711  1756  1771  1786  1801  1816  1856  1896
                               1936  1976  2023  2067  2093  2136  2164  2185  2216  2247  2263  2293  2310
                               2332  2357
SCOPEA  015512                  177   2382*
SCOPEB  015524                 2383   2385*
SETUP   001074                  229*  278   328
SETUPA  001104                  231*  234
SETUPB  001130                  237*  240
SIZE    001040                  204*  273*  737   743
SP      =%000006                168*  265   277*  327*  2201  2204  2209  2233  2236  2240  2259  2305  2384
                               2385* 2398* 2399* 2400* 2401* 2402* 2403* 2404  2407* 2408  2409  2410  2411
                               2412  2413  2415*
START   001342                  183   276*
STARTB  001544                  184   326*  2371
STKPTR= 000500                  168*  277   327   2385  2415
TIMEVT  001070                  224*  252*  2167* 2188* 2220* 2232* 2251* 2258*
TMEVT1  001072                  225*  252   253*  2232  2258
TPCSR   = 177564                168*  2374  2377
TPDBR   = 177566                168*  2373* 2376*
XPOS    001054                  215*  319   649   658   667   676   688   813   829   881   908   931   957
                                982   1008  1049  1087  1126  1170  1207  1240  1278  1321  1359  1392  1430
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YPOS 001056

1473 1560 1839 1879 1919 1959 1999 2052
2168 320 845 862 890 915 939 965 990 1016 1055 1093 1132
1176 1213 1246 1264 1327 1365 1398 1436 1479 1521 1762 1777 1792
1807 1832 1845 1872 1885 1912 1925 1952 1965 1992 2005 2039 2058
2153

. = 015660

1698 1738 1768 1798 1828 1868 289 297 305 313 342 352 362
372 384 394 406 415 424 434 444 454 464 474 483 491
500 509 519 528 537 547 559 569 580 589 598 607 618
629 639 652 661 670 679 691 708 714 720 726 767 778
789 800 815 831 847 864 883 892 909 916 933 941 959
967 984 992 1010 1018 1051 1057 1089 1095 1128 1134 1172 1178
1209 1215 1242 1248 1280 1286 1323 1329 1361 1367 1394 1400 1432
1438 1475 1481 1523 1563 1594 1608 1618 164' 1655 1665 1688 1702
1727 1741 1751 1765 1780 1795 1810 1835 184. 1848 1875 1881 1888
1915 1921 1928 1955 1961 1968 1995 2001 2008 2016 2042 2048 2054
2061 2079 2104 2122 2149 2156 2178 2270 2276 2279 2320 2348 2354

DELAY	2098#	685	812	[illegible]	844	861	[illegible]	[illegible]	907	914	[illegible]	[illegible]	[illegible]	964	991
	989	1007	1015	1037	1039	1041	1043	1045	1047	1075	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	1116	1118	1120	[illegible]	1124	1160	1162	1164	1166	1168	1193	[illegible]	[illegible]	[illegible]	[illegible]
	1234	1236	[illegible]	1270	1272	1274	1276	1313	1315	1317	1319	1351	1353	1355	1357
	1334	[illegible]	[illegible]	1390	[illegible]	1424	[illegible]	[illegible]	[illegible]	[illegible]	1469	1471	1511	1513	1515
	1517	1519	1550	1552	[illegible]	1556	[illegible]	[illegible]	1591	[illegible]	1601	1603	[illegible]	1614	1616
	1636	1638	1646	1648	1650	1652	1661	1663	1683	[illegible]	[illegible]	[illegible]	1697	1699	1722
	1724	1732	1734	1736	[illegible]	1747	1749	1760	1775	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	1864	1866	[illegible]	1870	1904	1906	1908	1910	1944	1946	[illegible]	1950	[illegible]	[illegible]	[illegible]
	[illegible]	2031	2033	2035	2037	2076	2101	2144	2146	2254	2269				
DELAY1	2108#	614	625												
RESUME	[illegible]#	711	717	723	754	764	775	786	797	811	827	843	860	879	887
	[illegible]	906	913	929	937	[illegible]	963	[illegible]	[illegible]	1006	1014	1036	1038	1040	1042
	[illegible]	1046	1074	1076	1078	[illegible]	[illegible]	[illegible]	1115	1117	1119	1121	1123	1159	1161
	1163	1165	1167	1198	1200	1202	1204	1231	1233	[illegible]	1237	1259	1271	1273	1275
	1312	1314	1316	1318	1350	1352	1354	1356	[illegible]	[illegible]	1387	1389	1421	1423	1425
	1427	1464	1466	1468	1470	1510	1512	1514	1516	1518	1549	1551	1553	1555	1557
	[illegible]	1590	1598	1600	1602	1604	1613	1615	1635	1637	1645	1647	1649	1651	1560
	1662	1682	1684	1692	1694	1696	1698	1721	1723	1731	1733	1735	1737	1746	1748
	1761	1776	1791	1806	1823	1825	1827	1829	1863	1865	1867	1869	1903	1905	1907
	1909	1943	1945	1947	1949	1983	1985	1987	1989	2030	2032	2034	2036	2075	2100
	2118	2143	2145	2173	2194	2225	2339	2341	2343	2345					

ADD	232	238	260	745	1290	1333	1442	1485							
BEQ	289	297	305	313	342	352	362	372	384	394	406	415	424	434	444
	454	464	474	483	491	500	509	519	528	537	547	559	569	580	618
	629	639	652	661	670	679	691	708	714	720	726	748	753	767	778
	789	800	815	831	847	854	883	892	909	916	933	941	959	967	984
	992	1010	1018	1031	1057	1069	1095	1128	1134	1172	1178	1209	1215	1242	1248
	1280	1286	1323	1333	1361	1367	1394	1400	1432	1438	1475	1481	1523	1563	1594
	1618	1641	1655	1	1727	1751	1765	1770	1795	1810	1835	1841	1848	1875	1881
	1909	1915	1951	1	1975	1981	1998	1995	2001	2008	2016	2042	2054	2061	2079
	2085	2111	2133	2	2333	2354	2360	2364							
BIC	243	247	300		360	370	382	392	404	413	422	432	442	452	462
	472	498	507	517	526	535	545	557	567	578	616	627	637	650	659
	668	677	703	1	1753	1778	1793	1808	1833	1846	1873	1886	1913	1926	1953
	1966	1983	2		2159	2154	2275	2353							
BIT	462	490	1503		1617	1640	1654	1664	1687	1701	1726	1740	1750	2015	2047
	2078	2103	2110	2121	2127	2148	2382								
BMI	598														
BNE	234	240	253	269	323	738	1140	1185	1293	1336	1445	1488	1529	1570	1608
	1655	1702	1741	5	2087	2104	2122	2149	2276	2279	2383	2390	2395		
BPL	589	607	2375	2388											
BR	264	271	325	710	716	722	750	755	885	911	935	961	996	1012	1053
	1091	1130	1136	1174	1180	1211	1244	1282	1293	1325	1331	1363	1396	1434	1440
	1477	1483	1515	1525	1536	1610	1643	1657	1690	1704	1729	1743	1837	1843	1877
	1883	1917	1923	1937	1963	1997	2003	2010	2044	2050	2056	2081	2106	2113	2124
	2130	2151	2178	2202	2207	2234	2238	2270	2285	2320	2350				
CLR	249	251	253	279	287	329	902	903	1029	1030	1067	1068	1109	1110	1153
	1154	1193	1194	1226	1227	1264	1265	1307	1308	1345	1346	1378	1379	1416	1417
	1459	1460	1504	1506	1508	1543	1544	1547	1821	2069	2171	2192	2223	2252	2267
	2334	2335													
CMP	233	239	262	265	268	296	304	312	341	351	361	371	383	393	405
	414	423	433	443	453	463	473	499	508	518	527	536	545	558	568
	579	617	628	638	651	660	669	678	690	707	713	719	725	737	744
	747	752	766	777	788	799	814	830	846	863	882	891	932	940	958
	966	983	991	1009	1017	1030	1056	1078	1094	1127	1133	1171	1177	1208	1214
	1241	1247	1279	1295	1312	1330	1350	1376	1393	1399	1431	1437	1474	1480	1522
	1562	1764	1779	1794	1809	1834	1840	1847	1874	1880	1887	1914	1920	1927	1954
	1960	1967	1994	2000	2007	2041	2053	2060	2084	2086	2155	2201	2204	2209	2233
	2236	2240	2279	2298	2315	2359									
DEC	1139	1183	1184	1292	1334	1335	1444	1486	1487	1528	1569	2389	2394		
EMT	168														
HALT	170	171	173	290	298	306	314	343	353	363	373	385	395	407	416
	425	435	445	455	465	475	484	492	501	510	520	529	538	548	560
	570	581	590	599	613	653	671	681	690	692	709	715	721	727	749
	768	779	790	801	816	825	835	874	883	893	910	917	934	942	960
	968	985	993	1011	1019	1052	1073	1080	1086	1129	1135	1173	1179	1210	1216
	1243	1249	1281	1287	1324	1330	1362	1383	1395	1401	1433	1439	1476	1482	1524
	1564	1595	1609	1619	1642	1655	1685	1699	1703	1728	1742	1752	1766	1781	1796
	1811	1836	1842	1849	1876	1883	1893	1916	1922	1929	1956	1962	1969	1996	2002
	2009	2017	2043	2049	2055	2062	2080	2105	2116	2123	2129	2150	2157	2180	2199
	2205	2210	2230	2237	2241	2255	2271	2277	2290	2303	2322	2349	2355	2406	2418
INC	322	1138	1182	1291	1443	1526	1527	1567	1568	2083	2358				
JMP	183	184	2361	2371	2386	2421									
JSR	246	278	324	328	614	625	685	812	828	844	861	880	889	907	914
	930	938	956	964	981	989	1007	1015	1037	1039	1041	1043	1045	1047	1075
	1077	1079	1081	1083	1085	1116	1118	1120	1122	1124	1160	1162	1164	1166	1168
	1199	1201	1203	1205	1232	1234	1236	1238	1270	1272	1274	1276	1313	1315	1317

	1319	1351	1353	1355	1357	1384	1386	1388	1390	1422	1424	1426	1428	1465	1467
	1469	1471	1511	1513	1515	1517	1519	1550	1552	1554	1556	1558	1589	1591	1599
	1601	1603	1605	1614	1616	1636	1638	1646	1648	1650	1652	1661	1663	1683	1685
	1693	1695	1697	1699	1722	1724	1732	1734	1736	1738	1747	1749	1760	1775	1790
	1805	1824	1826	1828	1830	1864	1866	1868	1870	1904	1906	1908	1910	1944	1946
	1948	1950	1984	1986	[illegible]	1990	2031	2033	2035	2037	2076	2099	2101	2117	2119
	2144	2146	2254	2269	[illegible]	2340	2342	2344	2366	2370					
MOV	229	230	231	235	236	237	241	244	248	250	252	258	259	266	273
	276	277	280	286	289	294	295	302	303	310	311	326	327	330	336
	337	338	339	347	348	349	357	358	359	367	368	369	379	380	381
	389	390	391	401	402	403	410	411	412	419	420	421	429	430	431
	439	440	441	449	450	451	459	460	461	469	470	471	479	480	481
	487	488	489	495	496	497	504	505	506	514	515	516	523	524	525
	532	533	534	542	543	544	554	555	556	564	565	566	575	576	577
	585	586	587	594	595	596	603	604	605	612	613	615	623	624	626
	634	635	636	647	648	649	656	657	658	665	666	667	674	675	676
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	807	808	809	810	811	813	823	824	825	826	827	829	839	840	841
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	879	881	887	888	890	901	904	905	906	908	913	915	924	925	926
	927	928	929	931	937	939	950	951	952	953	954	955	957	963	965
	975	976	977	978	979	980	982	989	990	1001	1002	1003	1004	1005	1006
	1008	1014	1016	1027	1028	1031	1032	1033	1034	1035	1036	1038	1040	1042	1044
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	1084	1087	1093	1103	1104	1107	1108	1111	1112	1113	1114	1115	1117	1119	1121
	1123	1126	1132	1146	1147	1148	1151	1152	1155	1156	1157	1158	1159	1161	1163
	1165	1167	1170	1176	1191	1192	1195	1196	1197	1198	1200	1202	1204	1207	1213
	1224	1225	1228	1229	1230	1231	1233	1235	1237	1240	1246	1257	1258	1259	1262
	1263	1266	1267	1268	1269	1271	1273	1275	1278	[illegible]	1300	1301	1302	1305	1306
	1309	1310	1311	1312	1314	1316	1318	1321	1327	1343	1344	1347	1348	1349	1350
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	1498	1499	1502	1503	1506	1507	1509	1510	1512	1514	1516	1518	1521	1536	1537
	1538	1541	1542	1545	1546	1548	1549	1551	1553	1555	1557	1560	1573	1574	1579
	1580	1581	1582	1583	1584	1585	1586	1587	[illegible]	[illegible]	[illegible]	[illegible]	1602	1604	1612
	1613	1615	1626	1627	1628	1629	1630	1631	1632	1633	1634	1635	1637	1645	1647
	1649	1651	1659	1660	1662	1673	1674	1675	1676	1677	1678	1679	1680	1681	1682
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	1819	1820	1822	1823	1825	1827	1829	[illegible]	1839	1845	[illegible]	[illegible]	1849	[illegible]	1861
	1862	1863	1865	1867	1869	1872	1879	[illegible]	1897	1898	1899	1900	1901	1902	1903
	1905	1907	1909	1912	1919	1925	1937	[illegible]	1939	1940	1941	1942	1943	1945	1947
	1949	1952	1959	1965	1977	1978	1979	[illegible]	1981	1982	1983	1985	1987	1989	1992
	1999	2005	2014	2024	2025	2026	2027	[illegible]	[illegible]	2030	2032	2034	2036	2039	2046
	2052	2058	2070	2071	2073	2074	2075	[illegible]	[illegible]	[illegible]	2100	2116	2118	2137	2138
	2139	2142	2143	2145	2153	2166	2167	2168	2169	2170	2172	2173	2187	2188	2189
	2190	2191	2193	2194	2200	2218	2219	2220	2221	2222	2224	2225	2232	2249	2250
	2251	2253	2258	2265	2266	2268	2272	2282	2284	2295	2296	2297	2298	2312	2313
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	2410	2411	2412	2413	2414	2415									
MOVB	2072	2097	2115												

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NEG       242     245
NOP       619     630     640    2174    2175    2176    2177    2195    2196    2197    2198    2226    2227    2228    2229
         2231    2257    2299    2300    2301    2302    2316    2317    2318    2319    2367    2368    2369    2416    2417
         2419    2420
RESET     378    2068    2094    2109    2126    2141    2165    2186    2217    2248    2264    2294    2311    2325    2346
         2362    2365
RTS       254     274    2379    2391    2396
SUB       267     270     272    2283
TST       261     317     318     319     320     588     597     606    2347
TSTB     2374    2377
.ENABL    163
.END     2427
.LIST       1     165     168     173
.MACR     208     209     210
.NLIST      1     166     168     173
.REM        1
.REPT     173
.TITLE    164
.WORD     177


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 *DDGTAC,DDGTAC.SEQ/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DDGTAC.P11
 RUN-TIME:  8 17 4 SECONDS
 RUN-TIME RATIO: 64/30=2.0
 CORE USED:  8K  (16 PAGES)
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[redacted]