VT71

CONTROL/VIDIO TEST

MD-11-DZKVB-B

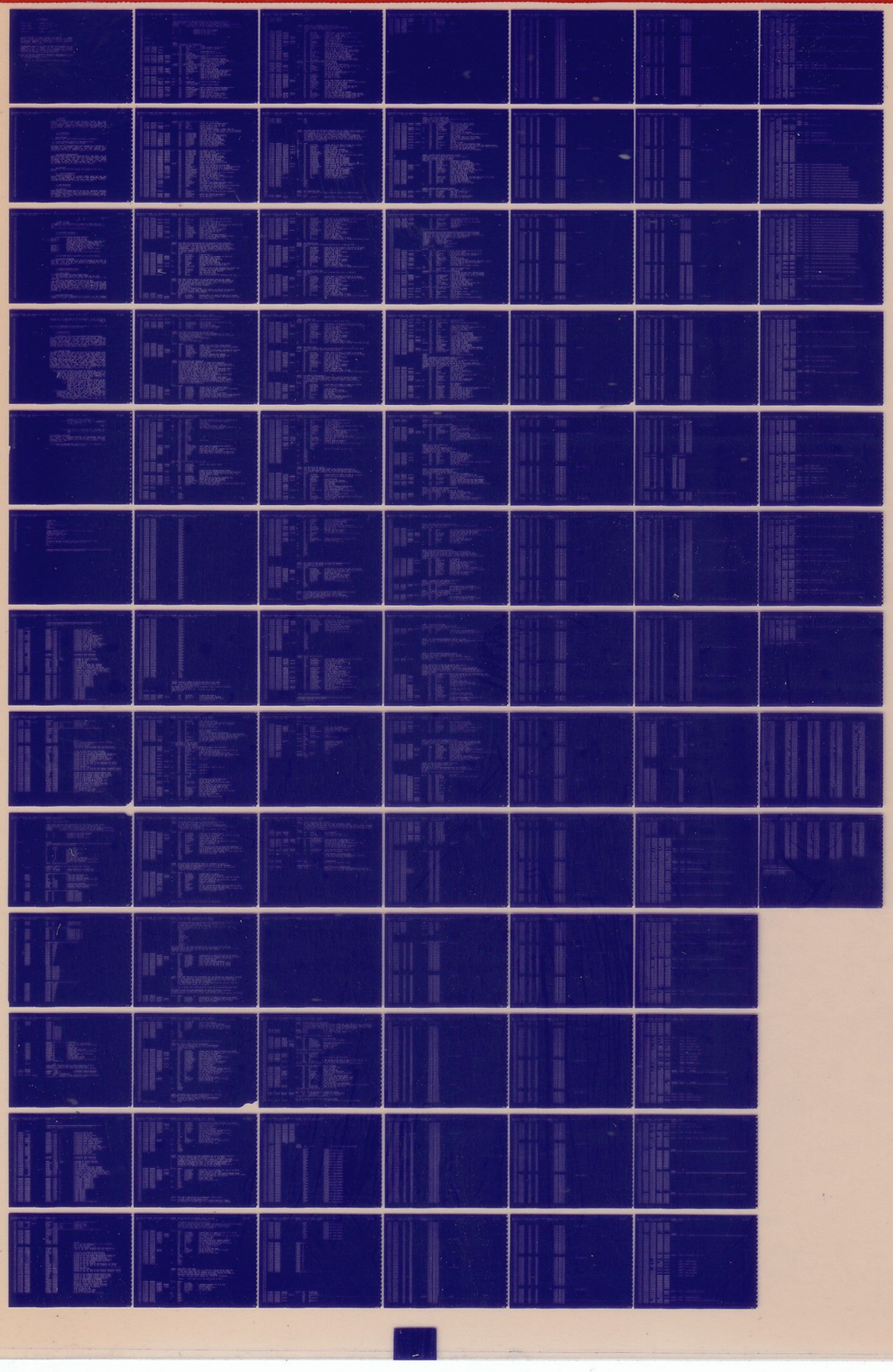
EP-DZKVB-B-DL

FICHE 1 OF 1

JUN 1978

digital

MADE IN USA



IDENTIFICATION

PRODUCT CODE: MAINDEC-11-D2KVB-B-D

PRODUCT NAME: VT71 CONTROL/VIDIC TEST

PRODUCT DATE: JANUARY 1977

MAINTAINER: DIAGNOSTIC ENGINEERING

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                                1. ABSTRACT
                                -----------
DZKVB IS A PROGRAM WRITTEN TO TEST THE VT71  CONTROL  AND  VIDEO
BOARDS.  IT CHECKS FOR PROPER OPERATION  OF  ALL STATUS AND
CONTROL REGISTER BITS, AND INTERRUPTS UNIQUE TO THE CONTROL  AND
VIDEO  BOARDS.  ERRORS ARE REPORTED ON THE VT71 SCREEN, AND ON
ANY ADDITIONAL TERMINAL THAT IS  INTERFACED  DIRECTLY  WITH  THE
VT71.


                                2. REQUIREMENTS
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                                2.1 HARDWARE
FOR DZKVB TO RUN, THE FOLLOWING EQUIPMENT IS NESCECARY,

  A.  A VT71 TERMINAL WITH 8K OF READ/WRITE MEMORY
  B.  SOME MEANS OF LOADING THIS PROGRAM

THE ONLY OPTIONAL EQUIPMENT THAT THIS PROGRAM WILL UTILIZE IS  A
TELLETYPE  OR  EQUIVILENT  TERMINAL,  INTERFACED  WITH THE VT71.
THIS CAN BE USEFULL  IF  PROBLEMS  IN  THE  VT71  PREVENT  ERROR
INFORMATION FROM BEING DISPLAYED PROPERLY ON THE VT71'S SCREEN.


                                2.2 SOFTWARE REQUIREMENTS
IF AN ADDITIONAL TERMINAL IS INTERFACED WITH  THE  VT71,  IT  IS
BEST TO RUN THE LSI-11 MEMORY TEST, THE LSI-11 INSTRUCTION TEST,
THE LSI-11 TRAPS TEST,  AND  THE  VT71  KEYBOARD  TEST,  BEFORE
ATTEMPTING  TO  RUN THIS PROGRAM.  THIS WILL HELP TO INSURE THAT
ANY  ERRORS  REPORTED  BY  THIS  PROGRAM  ARE  TRULY  DUE  TO
MALFUNCTIONS OF THE VT71 CONTROL AND VIDEO BOARDS.


                                2.3 STORAGE
THIS PROGRAM USES LOCATIONS 000000 THRU 024000 OF THE VT71'S
MEMORY.

                                3.  LOADING PROCECDURE
                                ----------------------
THIS PROGRAM IS SUPPLIED  ON  PUNCHED  PAPER  TAPE  IN  THE  ABS
FORMAT.  IN MOST CASES IT IS EASIEST TO LOAD THE PROGRAM USING A
VT20 HOST PROGRAM B COMMAND.  THE VT2M  HOST  PROGRAM  DOCUMENTS
DESCRIBE THIS PROCEDURE IN DETAIL(DZVTGA, DZVTEA).


                                4. USER PROCEDURE
                                -----------------

                                4.1 STARTING
AFTER LOADING THE PROGRAM USE ODT TO SET THE  PROGRAMS  SOFTWARE
SWITCH REGISTER TO THE DESIRED VALLUE(SEE SECTION 5.1 FOR SWITCH
REGISTER BIT FUNCTIONS).  START THE PROGRAM AT LOCATION 000200.
THE  PROGRAM  WILL  DISPLAY INSTRUCTIONS FOR THE OPERATOR ON THE
VT71 SCREEN AS NEEDED.
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4.2 END OF PASS

THE PROGRAM, UPON COMPLETION OF A PASS WILL CAUSE THE VT71 'CLICKER' TO MAKE A TONE. THE PASS COUNT IS THEN DISPLAYED AND THE PROGRAM LOOPS BACK TO BEGIN ANOTHER PASS.

5. OPERATING PROCEDURE

5.1 SOFTWARE SWITCH REGISTER SETTINGS

SW<15> = 1 HALT IF AN ERROR OCCURS
SW<14> = 1 LOOP ON THE CURRENT TEST
SW<13> = 1 INHIBIT ERROR MESSAGE DISPLAY. THIS DOES NOT AFFECT THE DISPLAYING OF INSTRUCTIONS FOR THE OPERATOR, OR END OF PASS MESSAGES.
SW<12> = 1 STALL FOR 2 SECONDS AT THE END OF EACH TEST.
SW<11< = 1 DO TESTS 27 THRU 34 AND TEST 41
SW<10> = 1 SOUND BELL ON ERROR-VT71 BEEPS ON ERROR
SW<09> = 1 LOOP ON ERROR TEST
SW<08> = 1 LOOP ON TEST WHOSE NUMBER IS IN SW<7:0>

THE SOFTWARE SWITCH REGISTER IS AT LOCATION 000176.

5.3 RESTART PROCEDURE

THIS PROGRAM MAY BE RESTARTED AT LOCATION 000200 AT ANY TIME IF NEED BE. THIS CAN BE DONE MANUALY, BY STOPING THE VT71 AND USING ODT, OR IF AN ADDITIONAL TERMINAL IS AVAILABLE, BY TYPING CNTL-P ON ITS KEYBOARD.

6. PROGRAM/OPERATOR ACTION

6.1 ERROR HALTS

THE FOLLOWING THINGS CAN CAUSE ERROR HALTS,
  A. ANY INTERRUPT, EXCEPT FOR THOSE CAUSED BY THE VT71
  B. ANY TRAP CONDITION THAT DOES NOT USE EITHER VECTOR 4 OR VECTOR 10
  C. ANY ERROR THAT OCCURS WHILE SWR<15> IS SET.

CONDITIONS A AND B ABOVE CAUSE A HALT AT THE SECOND WORD OF THE TRAP OR INTERRUPT VECTOR. TO FIND OUT WHERE THE ERROR OCCURED, USE ODT TO EXAMINE THE CONTENTS OF R6, THEN EXAMINE THE CONTENTS OF THE LOCATION POINTED TO BY R6. THIS VALUE IS THE PC VALUE AT THE TIME OF THE ERROR. CONDITION C CAUSES A HALT AT LOCATION 'HALTER' IN THE ERRMES ROUTINE. NO OTHER ERROR HALTS ARE PROVIDED FOR.

6.2 ERROR PRINTOUTS

UNLESS SOFTWARE SWITCH REGISTER BIT 13 IS SET, IF THE PROGRAM DETECTS AN ERROR, UNLESSS IT IS ON TEST 1 OR 2 OR 3, AN ERROR

MESSAGE WILL BE DISPLAYED ON THE VT71 SCREEN. IF AN ADDITIONAL
TERMINAL IS INTERFACED WITH THE VT71, THEN THE ERROR MESSAGE IS
PAGE 3

SENT TO IT REGARDLESS OF WHAT TEST IS RUNNING. (UNLESS BIT 13
OF THE SOFTWARE SWITCH REGISTER IS SET.

7. MISCELLANEOUS

7.1 TESTING A VT71 WITH NON-STANDARD VECTORS/ADDRESSES

THIS PROGRAM CAN TEST THE VT71 THAT USES NON-STANDARD ADDRESSES
AND/OR VECTORS IF THE CORRECT INFORMATION IS SUPLIED TO THE
PROGRAM. THE STANDARD ADDRESSES ARE CONTAINED STARTING AT
LOCATION 000774("TPS"). IF ANY OF THESE ADDRESSES ARE NOT
CORRECT FOR THE VT71 TO BE TESTED, USE ODT TO MODIFY LOCATION
"LEAVEC" TO ANY NON ZERO VALUE, THEN CHANGE THOSE ADDRESSES THAT
ARE NOT CORRECT, BEFORE STARTING THE PROGRAM.

7.2 SPECIAL TESTS

TWO TEST ROUTINES, T0036 T0037 ARE INCLUDED TO ALLOW TIGHT SCOPE
LOOPING OF VERY BASIC VT71 FUNCTIONS. THESE TEST ROUTINES ARE
NOT RUN AUTOMATICLY AS PART OF THE STANDARD DIAGNOSTIC TEST
PASS. THEY CAN ONLY BE ENTERED MANUALY. THERE ARE TWO WAYS TO
DO THIS. ONE IS TO PUT THE DESIRED TEST NUMBER INTO THE
SOFTWARE SWITCH REGISTER AND START THE LSI11 AT LOCATION 000200.
OR, EACH TEST CAN BE STARTED AT ITS FIRST INSTRUCTION, SINCE
BOTH OF THESE TEST ROUTINES IS SELF SUFFICIENT. UNLIKE ALL
OTHER TESTS, ONCE ONE OF THESE TESTS IS ENTERED, IT WILL
AUTOMATICLY LOOP UNTIL IT IS MANUALY STOPPED, REGARDLESS OF THE
SOFTWARE SWITCH REGISTER BITS. ALSO, NO ATTEMPTS ARE MADE
WITHIN THESE TEST ROUTINES TO REPORT ANY ERRORS.

T0036 ALLOWS SCOPE LOOPING ON EITHER THE WRITING OF A SINGLE
CHARACTER, OR THE DISPLAYING OF A SINGLE CHARACTER. IS
THE ROUTINE IS SIMPLY STARTED AFTER THE PROGRAM HAS BEEN
LOADED, THE ROUTINE WILL CONTINOUSLY WRITE CHARACTER 101
THERE ARE TWO LOCATIONS THAT CAN BE MANUALY MODIFYED, TO
CAUSE THE TEST ROUTINE TO DO OTHERWISE.

XCODE WHATEVER VALUE IS IN LOCATION "XCODE" IS THE
VALUE OF THE CHARACTER THAT WILL BE WRITTEN.

XDISP IF LOCATION "XDISP" IS SET TO ANY NON-ZERO
VALUE THE TEST WILL SETUP TO DISPLAY THE
XHARACTER AFTER IS IS WRITEN FOR THE FIRST
TIME, THEN IT WILL TURN ON THE DISPLAY.
WHILE THE CHARACTER IS BEING DISPLAYED, THE
ROUTINE WILL BE IN A "DO NOTHING" LOOP.

T0037 ALLOWS SCOPE LOOPING WHILE DISPLAYINGA PREDETERMINED
CHARACTERS PER LINE, AND LINES PER SCREEN. LINES PER
SCREEN, CHARACTERS PER LINE, AND THE CODE FOR THE
CHARACTER TO BE DISPLAYED ARE MANUALY INPUTED INTO
LOCATIONS THAT T0037 READS AND USES.

YCODE SET LOACATION "YCODE" TO THE VALUE OF THE

```
                                        CHARACTER YOU WANT DISPLAYED.
                                YBLOCK  SET LOCATION "YBLOCK TO THE   OF  CHARACTERS
                                        TO  BE  DISPLAYED  PER  LINE.   DEFAULT IS 1
                                        CHARACTER PER LINE
                                                                              PAGE 4


                                YLINES  SET LOCATION "YLINES" TO THE   OF LINES  YOU
                                        WISH  TO  HAVE  DISPLAYED.  DEFAULT IS FOR 1
                                        LINE

                        7.3 ADITIONAL TELLETYPE
                        IF A TELLETYPE OR EQUIVILENT TERMINAL  IS  INTERFACED  WITH  THE
                        VT71.  THERE  IS 1 CHARACTER THAT CAN BE TYPED ON THAT TERMINALS
                        KEYBOARD, THAT WILL AFFECT THE RUNNING OF THIS  PROGRAM.   THESE
                        CHARACTERS ARE...

                        CTRL-B WHEN THE PROGRAM SEES CTRL-B IT WILL,  ON  COMPLETION  OF
                                THE CURRENT TEST, RESTART ITSELF.

                .ENDR
```

```
                                .ENABLE AMA
                                .NLIST CND,MC,ME
                                .LIST ME
                                ;VT71 CONTROL/VIDEO TEST        V E R S I O N     T H R E E
                                .ABS
            167400              $SWR=167400
                                .TITLE  MAINDEC-11-DZKVB-B  VT71 CONTROL/VIDEO PROGRAM
                                ;*COPYRIGHT (C) 1976
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*PROGRAM BY J. COMFAU
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-D7UAC-C2), SEPT 14, 1976.
                                ;*
            000001              $TN=1


                                ;*****************************************************************
                                ;SOFTWARE SWITCH REGISTER IS AT LOCATION 176
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                        .SBTTL  COMMON TAGS

                        ;;*****************************************************************
                        ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                        ;*USED IN THE PROGRAM.

                                .=600
001600                  $CMTAG:                         ;;START OF COMMON TAGS
001600 000000   $PASS:  .WORD   0                       ;;CONTAINS PASS COUNT
001602    000   $TSTNM: .BYTE   0                       ;;CONTAINS THE TEST NUMBER
001603    000   $ERFLG: .BYTE   0                       ;;CONTAINS ERROR FLAG
001604 000000   $ICNT:  .WORD   0                       ;;CONTAINS SUBTEST ITERATION COUNT
001606 000000   $LPADR: .WORD   0                       ;;CONTAINS SCOPE LOOP ADDRESS
001610 000000   $LPERR: .WORD   0                       ;;CONTAINS SCOPE RETURN FOR ERRORS
001612 000000   $ERTTL: .WORD   0                       ;;CONTAINS TOTAL ERRORS DETECTED
001614    000   $ITEMB: .BYTE   0                       ;;CONTAINS ITEM CONTROL BYTE
001615    001   $ERMAX: .BYTE   1                       ;;CONTAINS MAX. ERRORS PER TEST
001616 000000   $ERRPC: .WORD   0                       ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001620 000000   $GDADR: .WORD   0                       ;;CONTAINS ADDRESS OF 'GOOD' DATA
001622 000000   $BDADR: .WORD   0                       ;;CONTAINS ADDRESS OF 'BAD' DATA
001624 000000   $GDDAT: .WORD   0                       ;;CONTAINS 'GOOD' DATA
001626 000000   $BDDAT: .WORD   0                       ;;CONTAINS 'BAD' DATA
001630 000000           .WORD   0                       ;;RESERVED--NOT TO BE USED
001632 000000           .WORD   0
001634    003   $AUTOR: .BYTE   0                       ;;AUTOMATIC MODE INDICATOR
001635    000   $INTAG: .BYTE   0                       ;;INTERRUPT MODE INDICATOR
001636 000000           .WORD   0
001640 177570   SWR:    .WORD   DSWR                    ;;ADDRESS OF SWITCH REGISTER
001642 177570   DISPLAY: .WORD  DDISP                   ;;ADDRESS OF DISPLAY REGISTER
001644 177560   $TKS:   177560                          ;;TTY KBD STATUS
001646 177562   $TKB:   177562                          ;;TTY KBD BUFFER
001650 177564   $TPS:   177564                          ;;TTY PRINTER STATUS REG. ADDRESS
001652 177566   $TPB:   177566                          ;;TTY PRINTER BUFFER REG. ADDRESS
001654    200   $NULL:  .BYTE   0                       ;;CONTAINS NULL CHARACTER FOR FILLS
001655    002   $FILLS: .BYTE   2                       ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001656    012   $FILLC: .BYTE   12                      ;;INSERT FILL CHARS. AFTER A "LINE FEED"
001657    000   $TPFLG: .BYTE   0                       ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
001660 000000   $REGAD: .WORD   0                       ;;CONTAINS THE ADDRESS FROM
                                                       ;;WHICH  ($REG0) WAS OBTAINED
001662 000000   $REG0:  .WORD   0                       ;;CONTAINS (($REGAD)+0)
001664 000000   $REG1:  .WORD   0                       ;;CONTAINS (($REGAD)+2)
001666 000000   $REG2:  .WORD   0                       ;;CONTAINS (($REGAD)+4)
001670 000000   $REG3:  .WORD   0                       ;;CONTAINS (($REGAD)+6)
001672 000000   $REG4:  .WORD   0                       ;;CONTAINS (($REGAD)+10)
001674 000000   $REG5:  .WORD   0                       ;;CONTAINS (($REGAD)+12)
001676 000000   $REG6:  .WORD   0                       ;;CONTAINS (($REGAD)+14)
001700 000000   $REG7:  .WORD   0                       ;;CONTAINS (($REGAD)+16)
001702 000000   $TMP0:  .WORD   0                       ;;USER DEFINED
001704 000000   $TMP1:  .WORD   0                       ;;USER DEFINED
001706 000000   $TMP2:  .WORD   0                       ;;USER DEFINED
001710 000000   $TMP3:  .WORD   0                       ;;USER DEFINED
001712 000000   $TMP4:  .WORD   0                       ;;USER DEFINED
001714 000000   $TMP5:  .WORD   0                       ;;USER DEFINED
001716 000000   $TMP6:  .WORD   0                       ;;USER DEFINED
001720 000000   $TMP7:  .WORD   0                       ;;USER DEFINED
001722 000000   $TIMES: 0                               ;;MAX. NUMBER OF ITERATIONS
```

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000724  000000                     $ESCAPE: 0                           ;;ESCAPE ON ERROR ADDRESS
000726  177607  000377             $BELL:   .ASCIZ  <207><377><377>     ;;CODE FOR BELL
000732     077                     $QUES:   .ASCII  /?/                 ;;QUESTION MARK
000733     015                     $CRLF:   .ASCII  <15>                ;;CARRIAGE RETURN
000734  000012                     $LF:     .ASCIZ  <12>                ;;LINE FEED
                                   ;;*****************************************************************
000736  000000                     CNXFER: 000000
000740  000000                     CNCHAR: 000000
000742  000000                     CNRECV: 000000
000744  000000                     CNERRO: 000000
000746  000000                     BM0:    000000
000750  000000                     BM1:    000000
000752  000000                     BM2:    000000
000754  000000                     SPMODE: 000000
000756  000000                     TUBSWT: 000000                       ;SWITCH
000760  000000                     LEAVEC: 000000                       ;SET IF DEVICE ADDRESSES AND VECTOR ADDRESSES
                                                                        ;ARE TO BE LEFT ALONE BY
                                                                        ;THE FINDTT ROUTINE
000762  000001                     UPFAST: 000001                       ;THIS IS THE SPEED CONSTANT FOR FAST PANNING UP
000764  000001                     DOWNFA: 000001                       ;THIS IS THE SPEED CONSTANT FOR FAST PANNING DOWN
000766  000000                     TEMP:   000000
000770  000000                     LINCNT: 000000                       ;COUNT OF # OF LINES TO BE DISPLAYED
000772  000000                     STLCNT: 000000                       ;COUNTER DEVOTED TO THE STALL ROUTINE
000774  177564                     TPS:    177564                       ;POINTS TO ANY ADDITIONAL TELLEPRINTER STATUS WORD
000776  177566                     TPB:    177566                       ;POINTS TO ANY ADDITIONAL TELLEPRINTER BUFFERS
001000  177570                     KBSR:   177570                       ;POINTS TO THE VT71 KEYBOARD STATUS REG
001002  177572                     KBUF:   177572                       ;POINTS TO THE VT71 KEYBOARD BUFFER REGISTER
001004  177574                     LCSR:   177574                       ;POINTS TO THE LED STATUS/CONTROL REGISTER
001006  177576                     LBUF:   177576                       ;POINTS TO THE LED BUFFER
001010  000070                     KBVAD1: 000070                       ;POINTS TO THE 1ST WORD OF THE KEYBOARD INT VECTOR
001012  000072                     KBVAD2: 000072                       ;POINTS TO THE 2ND WORD OF THE KEYBOARD INT VECTOR
001014  000074                     LDVAD1: 000074                       ;VECTOR PC WORD
001016  000076                     LDVAD2: 000076                       ;VECTOR STATUS WORD
001020  000360                     DSVAD1: 000360                       ;POINTS TO THE 1ST WORD OF THE DISPLAY INTERRUPT VECTOR
001022  000362                     DSVAD2: 000362                       ;POINTS TO THE 2ND WORD OF THE DISPLAY INTERRUPT VECTOR
001024  000000                     WCHAR:  000000
001026  177670                     DCSR:   177670                       ;POINTS TO THE DISPLAYS CONTROL/STATUS WORD
001030  000370                     IDTP:   000370                       ;POINTS TO THE INITIAL DISPLAY TABLE POINTER
001032  000366                     CDTP:   000366                       ;POINTS TO THE CURRENT DISPLAY TABLE POINTER
001034  000364                     DCP:    000364                       ;POINTS TO THE DISPLAY CHARACTER POINTER
001036  000000                     CHRCNT: 000000                       ;COUNT OF CHARACTERS IN A MESSAGE
001040  000000                     PASCNT: 000000                       ;TALLY OF PASSES COMPLETED BY THIS PROG
001042  000000                     TTYAVA: 000000                       ;SET TO = 1 IF A TTY IS AVAILABLE
001044  000000                     TUBTM0: 000000                       ;TEMPORARY STORAGE FOR DISPLAY ROUTINES
001046  000000                     TUBTM1: 000000                       ;TEMPORARY STORAGE FOR DISPLAY ROUTINES
001050  000000                     INTCNT: 000000                       ;HOLDS COUNT OF # OF INTERRUPTS
001052  000200                     FAKEY:  000200                       ;FAKE TTY STATUS REG
001054  000000                     KBID0:  000000                       ;TEMP STORAGE FOR ID# TEST
001056  000000                     ERRPAS: 000000                       ;# OF ERRORS ON THIS PASS
001060  000022                     MAXBLK: 000022                       ;MAXIMUM # OF BLOCKS/LINE IN TEST 5
```

```
                        .SBTTL  ERROR POINTER TABLE

                        ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                        ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                        ;*LOCATION SITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                        ;*NOTE1:        IF SITEMB IS 0 THE ONLY PERTINENT DATA IS (SERRPC).
                        ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                        ;*      FM              ;;POINTS TO THE ERROR MESSAGE
                        ;*      DH              ;;POINTS TO THE DATA HEADER
                        ;*      DT              ;;POINTS TO THE DATA
                        ;*      DF              ;;POINTS TO THE DATA FORMAT

001062                  $ERRTB:
                        ;*****************************************************************
                        .SBTTL  OPERATIONAL SWITCH SETTINGS
                        ;*
                        ;*      SWITCH                  USE
                        ;*      ------          ------------------
                        ;*        15            HALT ON ERROR
                        ;*        14            LOOP ON TEST
                        ;*        11            INHIBIT ITERATIONS
                        ;*        10            BELL ON ERROR
                        ;*         9            LOOP ON ERROR
                        ;*         8            LOOP ON TEST IN SWR<7:0>
                        ;*       7-0            SOFT TEST TO LOOP ON IF SWR<8> IS SET
                        ;*      13              DISABLE ERROR MESSAGES
                        ;*      12              STALL AT EACH TEST FOR A SECOND OR T=0
                        .SBTTL  BASIC DEFINITIONS

                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                  STACK=  1100
                        .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                        ;*MISCELLANEOUS DEFINITIONS
000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                  LF=     12              ;;CODE FOR LINE FEED
000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER

                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000004                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
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                        R7=     %7              ;;GENERAL REGISTER
                        SP=     %6              ;;STACK POINTER
                        PC=     %7              ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
                        PR0=    0               ;;PRIORITY LEVEL 0
                        PR1=    40              ;;PRIORITY LEVEL 1
                        PR2=    100             ;;PRIORITY LEVEL 2
                        PR3=    140             ;;PRIORITY LEVEL 3
                        PR4=    200             ;;PRIORITY LEVEL 4
                        PR5=    240             ;;PRIORITY LEVEL 5
                        PR6=    300             ;;PRIORITY LEVEL 6
                        PR7=    340             ;;PRIORITY LEVEL 7

                        ;*"SWITCH REGISTER" SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
000400                  SW08=   400
000200                  SW07=   200
000100                  SW06=   100
000040                  SW05=   40
000020                  SW04=   20
000010                  SW03=   10
000004                  SW02=   4
000002                  SW01=   2
000001                  SW00=   1
                        .EQUIV  SWR9,SW9
                        .EQUIV  SWR8,SWR
                        .EQUIV  SWR7,SW7
                        .EQUIV  SWR6,SW6
                        .EQUIV  SWR5,SW5
                        .EQUIV  SWR4,SW4
                        .EQUIV  SWR3,SW3
                        .EQUIV  SWR2,SW2
                        .EQUIV  SWR1,SW1
                        .EQUIV  SWR0,SWR

                        ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
100000                  BIT15=  100000
040000                  BIT14=  40000
020000                  BIT13=  20000
010000                  BIT12=  10000
004000                  BIT11=  4000
002000                  BIT10=  2000
001000                  BIT09=  1000
000400                  BIT08=  400
000200                  BIT07=  200
000100                  BIT06=  100
000040                  BIT05=  40
000020                  BIT04=  20
000010                  BIT03=  10
```

```
                        ;
                        BIT2=  4
                        BIT1=  2
                        BIT0=  1
                        .EQUIV  BIT9,BIT9
                        .EQUIV  BIT8,BIT8
                        .EQUIV  BIT7,BIT7
                        .EQUIV  BIT6,BIT6
                        .EQUIV  BIT5,BIT5
                        .EQUIV  BIT4,BIT4
                        .EQUIV  BIT3,BIT3
                        .EQUIV  BIT2,BIT2
                        .EQUIV  BIT1,BIT1
                        .EQUIV  BIT0,BIT0
                        ;
                        ;*BASIC "CPU" TRAP VECTOR ADDRESSES
                        ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
                        RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
                        TBITVEC=14              ;;"T" BIT
                        TPTVEC= 14              ;;TRACE TRAP
                        BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
                        IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
                        PWRVEC= 24              ;;POWER FAIL
                        EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
                        TRAPVEC=34              ;;"TRAP" TRAP
                        TKVEC=  60              ;;TTY KEYBOARD VECTOR
                        TPVEC=  64              ;;TTY PRINTER VECTOR
                        PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
                        .SBTTL  TRAP CATCHER
                        ;
                                .=0
                        ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
                        ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                        ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
                        ;
                                .=174
000174  000000        DISPREG: .WORD  0               ;;SOFTWARE DISPLAY REGISTER
000176  000000        SWREG:   .WORD  0               ;;SOFTWARE SWITCH REGISTER
                        .SBTTL  STARTING ADDRESS(ES)
001000  000137  001062        JMP     @#START ;;JUMP TO STARTING ADDRESS OF PROGRAM
                        ;VARIABLES AND POINTERS AND CONSTANTS AND STUFF
```

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                        .SBTTL  COMMON TAGS

                        ;;*******************************************************************
                        ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                        ;*USED IN THE PROGRAM.

                                .=600
001600                  $CMTAG:                         ;;START OF COMMON TAGS
001600  000000          $PASS:  .WORD   0               ;;CONTAINS PASS COUNT
001602  000             $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
001603  000             $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
001604  000000          $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
001606  000000          $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
001610  000000          $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
001612  000000          $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
001614  000             $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
001615  001             $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
001616  000000          $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001620  000000          $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
001622  000000          $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
001624  000000          $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
001626  000000          $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
001630  000000                  .WORD   0               ;;RESERVED--NOT TO BE USED
001632  000000                  .WORD   0
001634  000             $AUTOR: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
001635  000             $INTAC: .BYTE   0               ;;INTERRUPT MODE INDICATOR
001636  000000                  .WORD   0
001640  177570          $SWR:   .WORD   SSWR            ;;ADDRESS OF SWITCH REGISTER
001642  177570          DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
001644  177560          $TKS:   177560                  ;;TTY KBD STATUS
001646  177562          $TKB:   177562                  ;;TTY KBD BUFFER
001650  177564          $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
001652  177566          $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
001654  000             $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
001655  002             $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001656  012             $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A 'LINE FEED'
001657  000             $TPFLG: .BYTE   0               ;;'TERMINAL AVAILABLE' FLAG (BIT<07>=0=YES)
001660  000000          $REGAD: .WORD   0               ;;CONTAINS THE ADDRESS FROM
                                                        ;;WHICH  ($REG0) WAS OBTAINED
001662  000000          $REG0:  .WORD   0               ;;CONTAINS (($REGAD)+0)
001664  000000          $REG1:  .WORD   0               ;;CONTAINS (($REGAD)+2)
001666  000000          $REG2:  .WORD   0               ;;CONTAINS (($REGAD)+4)
001670  000000          $REG3:  .WORD   0               ;;CONTAINS (($REGAD)+6)
001672  000000          $REG4:  .WORD   0               ;;CONTAINS (($REGAD)+10)
001674  000000          $REG5:  .WORD   0               ;;CONTAINS (($REGAD)+12)
001676  000000          $REG6:  .WORD   0               ;;CONTAINS (($REGAD)+14)
001700  000000          $REG7:  .WORD   0               ;;CONTAINS (($REGAD)+16)
001702  000000          $TMP0:  .WORD   0               ;;USER DEFINED
001704  000000          $TMP1:  .WORD   0               ;;USER DEFINED
001706  000000          $TMP2:  .WORD   0               ;;USER DEFINED
001710  000000          $TMP3:  .WORD   0               ;;USER DEFINED
001712  000000          $TMP4:  .WORD   0               ;;USER DEFINED
001714  000000          $TMP5:  .WORD   0               ;;USER DEFINED
001716  000000          $TMP6:  .WORD   0               ;;USER DEFINED
001720  000000          $TMP7:  .WORD   0               ;;USER DEFINED
001722  000000          $TIMES: 0                       ;;MAX. NUMBER OF ITERATIONS
```

```
000724  000000                  $ESCAPE:0                              ;;ESCAPE ON ERROR ADDRESS
000726  177607  000377          $BELL:   .ASCIZ  <207><377><377>       ;;CODE FOR BELL
000732     077                  $QUES:   .ASCII  /?/                   ;;QUESTION MARK
000733     015                  $CRLF:   .ASCII  <15>                  ;;CARRIAGE RETURN
000734  000012                  $LF:     .ASCIZ  <12>                  ;;LINE FEED
                                ;;*************************************************************
000736  000000                  CNXFER: 000000
000740  000000                  CNCHAR: 000000
000742  000000                  CNRECV: 000000
000744  000000                  CNERRO: 000000
000746  000000                  BM0:    000000
000750  000000                  BM1:    000000
000752  000000                  BM2:    000000
000754  000000                  SPMODE: 000000
000756  000000                  TUBSWT: 000000                         ;SWITCH
000760  000000                  LEAVEC: 000000                         ;SET IF DEVICE ADDRESSES AND VECTOR ADDRESSES
                                                                       ;ARE TO BE LEFT ALONE BY
                                                                       ;THE FINDTT ROUTINE
000762  000001                  UPFAST: 000001                         ;THIS IS THE SPEED CONSTANT FOR FAST PANNING UP
000764  000001                  DOWNFA: 000001                         ;THIS IS THE SPEED CONSTANT FOR FAST PANNING DOWN
000766  000000                  TEMP:   000000
000770  000000                  LINCNT: 000000                         ;COUNT OF # OF LINES TO BE DISPLAYED
000772  000000                  STLCNT: 000000                         ;COUNTER DEVOTED TO THE STALL ROUTINE
000774  177564                  TPS:    177564                         ;POINTS TO ANY ADDITIONAL TELLEPRINTER STATUS WORD
000776  177566                  TPB:    177566                         ;POINTS TO ANY ADDITIONAL TELLEPRINTER BUFFERS
001000  177570                  KBSR:   177570                         ;POINTS TO THE VT71 KEYBOARD STATUS REG
001002  177572                  KBUF:   177572                         ;POINTS TO THE VT71 KEYBOARD BUFFER REGISTER
001004  177574                  LCSR:   177574                         ;POINTS TO THE LED STATUS/CONTROL REGISTER
001006  177576                  LBUF:   177576                         ;POINTS TO THE LED BUFFER
001010  000070                  KBVAD1: 000070                         ;POINTS TO THE 1ST WORD OF THE KEYBOARD INT VECTOR
001012  000072                  KBVAD2: 000072                         ;POINTS TO THE 2ND WORD OF THE KEYBOARD INT VECTOR
001014  000074                  LDVAD1: 000074                         ;VECTOR PC WORD
001016  000076                  LDVAD2: 000076                         ;VECTOR STATUS WORD
001020  000360                  DSVAD1: 000360                         ;POINTS TO THE 1ST WORD OF THE DISPLAY INTERRUPT VECTOR
001022  000362                  DSVAD2: 000362                         ;POINTS TO THE 2ND WORD OF THE DISPLAY INTERRUPT VECTOR
001024  000000                  WCHAR:  000000
001026  177670                  DCSR:   177670                         ;POINTS TO THE DISPLAYS CONTROL/STATUS WORD
001030  000370                  IDTP:   000370                         ;POINTS TO THE INITIAL DISPLAY TABLE POINTER
001032  000366                  CDTP:   000366                         ;POINTS TO THE CURRENT DISPLAY TABLE POINTER
001034  000364                  DCP:    000364                         ;POINTS TO THE DISPLAY CHARACTER POINTER
001036  000000                  CHRCNT: 000000                         ;COUNT OF CHARACTERS IN A MESSAGE
001040  000000                  PASCNT: 000000                         ;TALLY OF PASSES COMPLETED BY THIS PROG
001042  000000                  TTYAVA: 000000                         ;SET TO = 1 IF A TTY IS AVAILABLE
001044  000000                  TUBTM0: 000000                         ;TEMPORARY STORAGE FOR DISPLAY ROUTINES
001046  000000                  TUBTM1: 000000                         ;TEMPORARY STORAGE FOR DISPLAY ROUTINES
001050  000000                  INTCNT: 000000                         ;HOLDS COUNT OF # OF INTERRUPTS
001052  000000                  FAKEY:  000000                         ;FAKE TTY STATUS REG
001054  000000                  KRID0:  000000                         ;TEMP STORAGE FOR ID# TEST
001056  000000                  ERRPAS: 000000                         ;# OF ERRORS ON THIS PASS
001060  000022                  MAXBLK: 000022                         ;MAXIMUM # OF BLOCKS/LINE IN TEST 5
```

M1

```
                                    .SBTTL  ERROR POINTER TABLE
                                    ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                                    ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                                    ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                                    ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERPPC).
                                    ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:
                                    ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                                    ;*      DH              ;;POINTS TO THE DATA HEADER
                                    ;*      DT              ;;POINTS TO THE DATA
                                    ;*      DF              ;;POINTS TO THE DATA FORMAT

001062                              $ERPTR:

001062                              START:
                                    .SBTTL  INITIALIZE THE COMMON TAGS
                                    ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
001062  012706  000600              MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
001066  005026                      CLR     (R6)+           ;;CLEAR MEMORY LOCATION
001070  022706  000640              CMP     #$WR,R6 ;;DONE?
001074  001374                      BNE     .-6             ;;LOOP BACK IF NO
001076  012706  000600              MOV     #600,SP         ;;SETUP THE STACK POINTER
                                    ;;INITIALIZE A FEW VECTORS
001102  012737  014210  000020      MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
001110  012737  000340  000022      MOV     #340,@#IOTVEC+2 ;;LEVEL 7
001116  013737  012762  012754      MOV     $ENDCT,$ENDPCT  ;;SETUP END-OF-PROGRAM COUNTER
001124  005037  000722              CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
001130  012737  001130  000046      MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
001136  012737  001136  000610      MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
                                    ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                    ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
001144  013746  000004              MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
001150  012737  001204  000004      MOV     #668,@#ERRVEC   ;;SET UP ERROR VECTOR
001156  012737  177570  000640      MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
001164  012737  177570  000642      MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
001172  022777  177777  177440      CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
001200  001012                      BNE     668             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                            ;;AND  THE HARDWARE SWR IS NOT = -1
001202  000403                      BR      658             ;;BRANCH IF NO TIMEOUT
001204  012716  001212      648:    MOV     #658,(SP)       ;;SET UP FOR TRAP RETURN
001210  000002                      RTI
001212  012737  000176  000640  658:  MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
001220  012737  000174  000642      MOV     #DISPREG,DISPLAY
001226  012637  000004      668:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR

001232  012737  000176  000640      MOV     #SWREG,SWR      ;SETUP SOFTWARE SWITCH REGISTERS ADDRESS
001240  012737  000174  000642      MOV     #DISPREG,DISPLAY;AND THE SOFTWARE LIGHTS REGISTER
001246  012777  015246  177544      MOV     #DIHAN,@DSVAD1  ;SETUP DISPLAY INTERRUPT VECTOR
001254  012777  000340  177540      MOV     #340,@DSVAD2    ;VECTOR PRIORITY = 7
001262  004737  014136              JSR     PC,CLRTUR       ;CLEAR THE VT71 DISPLAY TABLE
001266  012777  015760  177534      MOV     #DISTRL,@IDTP   ;SETUP POINTER TO DISPLAY TABLE
001274  012737  000001  000600      MOV     #1,$PASS        ;INITIALIZE THE PASS COUNT
001302  005037  000612              CLR     $ERTTL          ;ZERO ERROR TOTAL FOR ALL PASSES
```

```
                                        ;FINDOUT IF AN EXTRA TERMINAL IF HOOKED UP TO THE VT71
001306  005737  000764          FINDTT: TST     LEAVEC          ;SHOULD WE LEAVE ADDRESSES ALONE?
001312  001100                          BNE     T0000           ;IF SO DO RIGHT INTO THE TESTS
001314  012737  001426  000004          MOV     #10$,@#4        ;SETUP VECTOR IN CASE OF TRAP
001322  005037  000006                  CLR     @#6             ;VECTOR PRIORITY = 0
001326  005737  177570                  TST     @#177570        ;TRY TO ACCESS ADDRESS 1 HIGHER THAN THE
                                                                ;STANDARD VT71 KEYBOARD CONTROL REGISTER ADDRESS
001332  000240                          NOP                     ;WE DIDNT TRAP, WE NOW ASSUME THAT AN ADDITIONAL
001334  012737  177570  001000          MOV     #177570,KBSP    ;TERMINAL IS IN USE
001342  012737  177572  001002          MOV     #177572,KBUF    ;THAT USES THE STANDARD ADDRESS
001350  012737  177574  001004          MOV     #177574,LCSR    ;AND THAT THE VT71 ITSELF IS IN
001356  012737  177576  001006          MOV     #177576,LBUF    ;THE NEXT HIGHEST ADDRESS
001364  012737  000070  001010          MOV     #70,KBVAD1      ;SET KEYBOARD VECTOR ADDRESS
001372  012737  000072  001012          MOV     #72,KBVAD2      ;SETUP VECTOR PRIORITY ADDRESS
001400  012737  000074  001014          MOV     #74,LDVAD1      ;SETUP LED VECTOR ADDRESS
001406  012737  000076  001016          MOV     #76,LDVAD2      ;AND THE LED VECTOR PRIORITY
001414  012737  000001  001042          MOV     #1,TTYAVA       ;SET XTRA TTY AVAILABLE SWITCH
001422  000137  001514                  JMP     T0000           ;GO TO THE FIRST TEST

001426  012737  177560  001000  10$:    MOV     #177560,KBSP    ;WE TRAPED, ASSUME THAT NO ADDITIONAL
001434  012737  177562  001002          MOV     #177562,KBUF    ;TERMINAL IS IN USE
001442  012737  177564  001004          MOV     #177564,LCSR    ;AND THAT THE VT71 ITSELF USES
001450  012737  177566  001006          MOV     #177566,LBUF    ;THE STANDARD ADDRESS
001456  012737  000060  001010          MOV     #60,KBVAD1      ;SET KEYBOARD VECTOR ADDRESS
001464  012737  000062  001012          MOV     #62,KBVAD2      ;SETUP VECTOR PRIORITY ADDRESS
001472  012737  000064  001014          MOV     #64,LDVAD1      ;SETUP LED VECTOR ADDRESS
001500  012737  000066  001016          MOV     #66,LDVAD2      ;AND THE LED VECTOR PRIORITY
001506  012737  000000  001042          MOV     #0,TTYAVA       ;CLEAR XTRA TTY AVAILABLE SWITCH
001514  004737  015002          T0000:  JSR     PC,LSTALL       ;MAKE IT LOOK NICE
001520  005037  001056                  CLR     ERRPAS          ;CLEAR OUT # OF ERRORS ON THIS PASS
001524  012737  015420  000004          MOV     #TRAPER,@#4     ;SETUP TRAP VECTOR TO POINT TO HANDLING ROUTINE
001532  012737  000340  000006          MOV     #340,@#6        ;SETUP VECTOR PRIORITY = NO INTERRUPTS
001540  012777  015244  177242          MOV     #KBSRV,@KBVAD1  ;SETUP VECTOR IN CASE OF A KEYBOARD INTERRUPT
001546  012777  000340  177236          MOV     #340,@KBVAD2    ;VECTOR PRIORITY = 7
001554  012777  015244  177232          MOV     #LDSRV,@LDVAD1  ;SETUP VECTOR IN CASE OF A LED INTERRUPT
001562  012777  000340  177226          MOV     #340,@LDVAD2    ;LED VECTOR PRIORITY = 7
001570  004737  014136                  JSR     PC,CLRTUB       ;CLEAR OUT THE DISPLAY TABLE
001574  012777  015760  177226          MOV     #DISTBL,@IDTP   ;SETUP THE POINTER TO THE DISPLAY TABLE
001602  023727  000600  000001          CMP     $PASS,#1        ;IS THIS THE 1ST PASS?
001610  001067                          BNE     T0001           ;IF NOT, GO TO THE FIRST TEST
001612  017700  177022                  MOV     @SWR,R0         ;GET TEST #
001616  042700  177600                  BIC     #177600,R0      ;CLEAR ALL BITS EXCEPT FOR TEST # BITS
001622  010037  000602                  MOV     R0,@TSTNM       ;SET TEST # FOR SCOPE ROUTINE
001626  001460                          BEQ     T0001           ;IF SWR<7-0> = 0 GO DIRECTLY TO THE FIRST TEST
001630  005337  000602                  DEC     @TSTNM          ;1ST SCOPE INCREMENTS THE TEST #
001634  000241                          CLC                     ;MAKE SURE THE C BIT ROTATES IN CLEAR
001636  006100                          ROL     R0              ;MULT TEST # BY 2
001640  062700  023050                  ADD     #TSTLST,R0      ;BUILD POINTER TO TABLE OF TEST ADDRESSES
001644  011001                          MOV     (R0),R1
001646  012737  015420  000004          MOV     #TRAPER,@#4     ;SETUP THE TIMEOUT TRAP VECTOR
001654  012737  000340  000006          MOV     #340,@#6        ;SETUP THE TRAP VECTOR ALSO
001662  023727  000602  000037          CMP     @TSTNM,#37      ;IS IT TEST 37?
```

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741  001670  001431                    BEQ     2$              ;IF SO, DONT WRITE THE CHAR SET FIRST
742  001672  023727  000602  000036     CMP     $TSTNM,#36      ;IS IT TEST 36?
743  001700  001425                    BEQ     2$              ;IF SO, DONT WRITE THE CHAR SET FIRST
744  001702  023727  000602  000003     CMP     $TSTNM,#3       ;IS IT TEST 1 OR 2 OR 3?
745  001710  103421                    BLO     2$              ;IF SO, SKIP OVER THE LOADING OF THE CHARACTER SET
746  001712  005037  000756             CLR     TURSAT          ;NO ERROR MESSAGE ON VT71 SCREEN
747  001716  012777  000146  177102     MOV     #146,@DCSR      ;START UP THE DISPLAY
748  001724  004737  015172             JSR     PC,@#STALL      ;STALL TO MAKE SURE IT IS GOING
749  001730  012705  022340             MOV     #ENDCHR,R5      ;SETUP CHAR SET END ADDRESS
750  001734  012777  016110  177072     MOV     #CHARS,@DCP     ;LOAD THE CHARACTER SET
751  001742  012777  100146  177056     MOV     #100146,@DCSR   ;START LOADING
752  001750  004737  015254             JSR     PC,TSTLOD       ;MAKE SURE IT HAPPENS CORRECTLY
753  001754  010137  000606         2$: MOV     R1,@LPADR       ;SETUP AN INITIAL SCOPE LOOPBACK ADDRESS
754  001760  062737  000002  000606     ADD     #2,@LPADR       ;MAKE IT RIGHT AFTER THE "SCOPE"
755  001766  000111                    JMP     (R1)            ;GO TO TEST SPECIFIED
756
757
758                                  .SBTTL  TEST THAT THE DCSR REGISTER CAN BE ACCESSED WITHOUT TRAPPING
759                                  ;T0001  THIS TEST FIRST SETS UP VECTOR LOCATIONS 4 & 6 IN CASE OF A TRAP.
760                                  ;       THEN IT WRITES INTO THE DCSR REGISTER LOCATION WITH A "CLR"
761                                  ;       INSTRUCTION.  IF A TRAP RESULTS, AN ERROR MESSAGE IS PRINTED.
762                                  ;       ***WARNING***  THIS TEST DOES NOT ATTEMPT TO DISPLAY ANY MESSAGES
763                                  ;       ON THE VT71 SCREEN. ERROR MESSAGES WILL BE SENT ONLY TO THE
764                                  ;       ADDITIONAL TERMINAL IF AVAILABLE.
765  001770  000004                  T0001:  SCOPE
766  001772  004737  015102             JSR     PC,@#XTST       ;DISPLAY TEST #
767  001776  012737  002020  000606     MOV     #1$,@LPADR      ;LOOP BACK TO 1$ IF ERROR AND SWR<14>=1
768  002004  012737  002040  000004     MOV     #2$,@#4         ;SETUP ERROR TRAP VECTOR
769  002012  012737  000340  000006     MOV     #340,@#6        ;SETUP TRAP VECTOR PRIORITY
770  002020  106427  000340         1$: MTPS    #340            ;NO INTERRUPTS PLEASE
771  002024  012706  000600             MOV     #600,SP         ;SETUP THE STACK POINTER
772  002030  012777  000000  176770     MOV     #0,@DCSR        ;ACCESS THE DCSR REG. SEE IF WE TRAP
773  002036  000415                    BR      T0002           ;NO TRAP! GO ON TO THE NEXT TEST
774  002040  032777  040000  176572 2$: BIT     #40000,@SWR     ;LOOP?
775  002046  001364                    BNE     1$              ;YUP. DO IT NOW IN THE INTRESTS OF A TIGHT LOOP
776  002050  012705  024733             MOV     #MSG22,R5       ;TRAPPED. GET THE ERROR MESSAGE ADDRESS
777  002054  004737  014722             JSR     PC,TTYOUT       ;AND PRINT THE ERROR MESSAGE
778  002060  105237  000631         3$: INCB    @ERFLG          ;SET THE ERROR FLAG
779  002064  001775                    BEQ     3$              ;MAKE SURE IT IS NOT 0
780  002066  005237  001056             INC     ERRPAS          ;ADD 1 TO THE TOTAL # OF ERRORS ON THIS PASS
781
782
783                                  .SBTTL  TEST THAT A SMALL PORTION OF THE CHARACTER SET CAN BE LOADED
784                                  ;T0002  THIS TEST TRIES TO LOAD 1 CHARACTER INTO THE CHARACTER GENERATOR
785                                  ;       RAM. IF LOADING IS NOT FINISHED AT THE  END OF A 2 SECOND WAIT,
786                                  ;       THE FOLLOWING ERROR MESSAGE IS DISPLAYED...
787                                  ;        CHARACTER SET DID NOT LOAD PROPERLY
788                                  ;        DCP WAS ??????
789                                  ;        DCP SHOULD HAVE BEEN XXXXX
790                                  ;       ***WARNING***  THIS TEST DOES NOT ATTEMPT TO DISPLAY ANY MESSAGES
791                                  ;       ON THE VT71 SCREEN. ERROR MESSAGES WILL BE SENT ONLY TO THE
792                                  ;       ADDITIONAL TERMINAL IF AVAILABLE.
793  002072  000004                  T0002:  SCOPE
794  002074  004737  015102             JSR     PC,@#XTST       ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
795  002100  012737  002122  000606     MOV     #1$,@LPADR      ;LOOP BACK TO 1$ IF ERROR, AND SWR<13> IS CLEAR
796  002106  012737  015420  000004     MOV     #TRAPER,@#4     ;SETUP TRAP VECTOR
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                        TEST THAT A SMALL PORTION OF THE CHARACTER SET CAN BE LOADED

 797  002114  012737  000340  000006          MOV     #340,4          ;SETUP VECTOR PRIORITY
 798
 799  002122  012777  022342  176784  18:     MOV     #PIUSS,@DCP     ;SETUP ADDRESS OF A CHARACTER TO LOAD
 800  002130  012777  100000  176670          MOV     #100000,@DCSR   ;SET LOAD BIT
 801  002136  012705  022412                  MOV     #ENDPIS,R5      ;SETUP END ADDRESS
 802  002142  005237  000756                  INC     TUBSWT          ;NO OUTPUT TO THE SCREEN
 803  002146  004737  015254                  JSP     PC,TSTLOD       ;WAIT FOR A GOOD LOAD
 804
 805
 806                                  .SBTTL  TEST THAT THE CHARACTER SET CAN BE LOADED
 807                                  ;T0003  THIS TEST TRIES TO LOAD THE ENTIRE CHARACTER SET. IF IT IS
 808                                  ;       NOT FINISHED LOADING AFTER A 2 SECOND PERIOD, THEN THE FOLLOWING
 809                                  ;       ERROR MESSAGE IS DISPLAYED...
 810                                  ;        CHARACTER SET DID NOT LOAD PROPERLY
 811                                  ;        DCP WAS ??????
 812                                  ;        DCP SHOULD HAVE BEEN XXXXX
 813                                  ;
 814  002152  000004                  T0003:  SCOPE
 815  002154  004737  014136                  JSR     PC,CLRTUB       ;START THIS TEST WITH A CLEAR SCREEN
 816  002160  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
 817  002164  004737  015002                  JSP     PC,LSTALL       ;NOT SO FAST
 818  002170  012737  002176  000606          MOV     #18,$LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
 819  002176  012777  016110  176630  18:     MOV     #CHARS,@DCP     ;SETUP ADDRESS OF THE CHARACTER SET TO LOAD
 820  002204  012777  100000  176614          MOV     #100000,@DCSR   ;SET LOAD BIT
 821  002212  012705  022340                  MOV     #ENDCHR,R5      ;SETUP END ADDRESS FOR COMPARE
 822  002216  005237  000756                  INC     TUBSWT          ;NO ERROR OUTPUT TO THE SCREEN YET.
 823  002222  004737  015254                  JSP     PC,TSTLOD       ;WAIT FOR LOAD TO BE COMPLETE
 824
 825
 826                                  .SBTTL  TEST CHARACTER SET ADDRESSING
 827                                  ;T0004  IN THIS TEST EVERY CHARACTER IS LOADED WITH SOMETHING
 828                                  ;       CHARACTER 000 IS LOADED WITH ALL BITS SET, CHARACTER 001 WITH
 829                                  ;       ALL BITS SET SAVE THOSE OF THE 1ST SCAN LINE, CHARACTER 002 WITH
 830                                  ;       ALL BITS SET EXCEPT FOR THE 1ST 2 SCANN LINES,
 831                                  ;       AND SO ON, UNTIL CHARACTER 012 IS LOADED WITH ALL BITS CLEAR.
 832                                  ;       THEN THE PATERN REPEATS ITSELF, STARTING WITH CHARACTER 013
 833                                  ;       WHICH IS LOADED WITH ALL BITS SET, AND SO ON AND SO ON
 834                                  ;       UNTIL THE END OF THE CHARACTER SET IS REACHED
 835                                  ;       AFTER LOADING IS DONE, A TEXT STRING IS DISPLAYED, THAT SHOULD
 836                                  ;       RESULT IN 24 "DECENDING STAIRCASE" PATTERNS
 837                                  ;       BEING DISPLAYED, ONE PER LINE OF THE SCREEN. EACH "STEP"
 838                                  ;       REPRESENTS A CHARACTER SET LOCATION, MISSING OR UNEVEN STEPS
 839                                  ;       INDICATE THAT EITHER THE CHARACTER REPRESENTED BY THE DEFECTIVE
 840                                  ;       STEP DID NOT LOAD PROPERLY, OR THET IT WAS AFFECTED BY THE
 841                                  ;       WRITING OF ANOTHER CHARACTER.
 842                                  ;
 843  002226  000004                  T0004:  SCOPE
 844  002230  004737  014136                  JSR     PC,CLRTUB       ;CLEAR OUT THE VT71 DISPLAY TABLE
 845  002234  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
 846  002240  012777  003054  176562          MOV     #108,@IDTP      ;SETUP DISPLAY TABLE POINTER
 847  002246  012777  000146  176552          MOV     #146,@DCSP      ;START UP THE DISPLAY
 848  002254  004737  015172                  JSR     PC,MSTALL       ;STALL TO MAKE SURE IT IS GOING
 849  002260  012737  002310  000606          MOV     #18,$LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
 850  002266  012705  027727                  MOV     #MSG39,R5       ;GET ADDRESS OF THE "DONT PANIC- SCREEN IS
 851  002272  004737  014722                  JSP     PC,TTYOUT       ;GOING BLANK" MESSAGE, AND DISPLAY IT
 852  002276  004737  015002                  JSR     PC,LSTALL       ;WAIT
```

```
853  002302  012777  002544  176520          MOV     #98,@IDTP       ;SET UP A DISPLAY POINTER TO A DISPLAY TABLE
854  002310                          10$:     ;CLR    @DCSR           ;TURN OFF THE DISPLAY FOR A MOMENT
855  002310  012704  000340                  MOV     #340,R4         ;LEFT SIDE
856  002314  012701  000300                  MOV     #300,R1         ;RIGHT SIDE
857  002320  012702  000013          20$:    MOV     #11.,R2         ;11 CHARS THEN BEGIN A NEW LINE
858  002324  012703  000012          30$:    MOV     #10.,R3         ;SET FOR 20 WORDS PER CHARACTER DESCRIPTION
859  002330  012700  022776                  MOV     #NUMBER,R0      ;SETUP ADDR OF THE CHARACTER
860  002334  042704  000037          40$:    BIC     #37,R4
861  002340  042701  000037                  BIC     #37,R1
862  002344  020302                          CMP     R3,R2
863  002346  103004                          BHIS    50
864  002350  052704  000037                  BIS     #37,R4
865  002354  052701  000037                  BIS     #37,R1
866  002360  010420                  50$:    MOV     R4,(R0)+
867  002362  010120                          MOV     R1,(R0)+        ;RIGHT SIDE
868  002364  005303                          DEC     R3
869  002366  001362                          BNE     40
870  002370  005020                          CLR     (R0)+
871  002372  012777  022776  176434          MOV     #NUMBER,@DCP    ;SETUP ADDR OF CHARACTER SET PORTION
872  002400  012777  100146  176420          MOV     #100146,@DCSR   ;AND LOAD THE PORTION
873  002406  012705  023046                  MOV     #ENDNUM,R5      ;SETUP END OF CHAR SET ADDRESS FOR COMPARE
874  002412  004737  015254                  JSR     PC,TSTLOD       ;WAIT FOR LOADING TO FINISH
875  002416  062704  000400                  ADD     #400,R4         ;BUMP LEFT SIDE TO REFLECT THE NEXT CODE
876  002422  062701  000400                  ADD     #400,R1         ;BUMP RIGHT SIDE TO REFLECT THE NEXT CODE
877  002426  020127  000337                  CMP     R1,#337
878  002432  001403                          BEQ     70
879  002434  005302                          DEC     R2
880  002436  001332                          BNE     30
881  002440  000727                          BR      20
882                          ;NOW DISPLAY THE THE WHOLE THING AT ONCE
883  002442  000240                  70$:    NOP
884  002444  012777  002550  176356          MOV     #90,@IDTP       ;SETUP A NEW DISPLAY TABLE
885  002452  012777  000106  176346          MOV     #106,@DCSR
886  002460  004737  015002                  JSR     PC,ISTALL
887  002464  004737  015002                  JSR     PC,LSTALL
888  002470  004737  014136                  JSR     PC,CLRTUB       ;CLEAR OUT THE REGULAR DISPLAY TABLE
889  002474  012777  000146  176324          MOV     #146,@DCSR      ;ENABLE SPECIAL CHARACTERS AGAIN, SINCE 1ST CHAR
890                                                                  ;IN THE CURRENT DISPLAY TEXT IS AN (EOS), THE
891                                                                  ;SCREEN SHOULD GO BLANK
892  002502  004737  015002                  JSR     PC,LSTALL       ;GIVE TIME
893  002506  012777  016110  176320          MOV     #CHARS,@DCP     ;SETUP POINTER TO REGULAR CHARACTER SET
894  002514  012705  022340                  MOV     #ENDCHR,R5      ;SETUP END OF CHAR SET ADDRESS
895  002520  012777  100146  176300          MOV     #100146,@DCSR   ;LOAD THE REGULAR CHARACTER SET
896  002526  004737  015254                  JSR     PC,TSTLOD       ;WAIT FOR LOAD TO FINISH
897  002532  012777  015760  176270          MOV     #DISTBL,@IDTP   ;POINT DISPLAY TABLE POINTER TO REGULAR DISPLAY TABLE
898  002540  000137  003064                  JMP     TPASS           ;GO ON TO THE NEXT TEST
899
900  002544  003776                  88$:    3776
901  002546  030F64                          MSG41
902
903  002550                          98$:
904  002550  003764                          3764
905  002552  026715                          MSG35A
906  002554  003672                          3672
907  002556  027325                          MSG35Y
908  002560  003764                          3764
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909  002562  026730                    MSG35A
910  002564  003672                    3672
911  002566  027325                    MSG35Y
912  002570  003764                    3764
913  002572  026743                    MSG35C
914  002574  003672                    3672
915  002576  027325                    MSG35Y
916  002600  003764                    3764
917  002602  026756                    MSG35D
918  002604  003672                    3672
919  002606  027325                    MSG35Y
920  002610  003764                    3764
921  002612  026771                    MSG35F
922  002614  003672                    3672
923  002616  027325                    MSG35Y
924  002620  003764                    3764
925  002622  027004                    MSG35F
926  002624  003672                    3672
927  002626  027325                    MSG35Y
928  002630  003764                    3764
929  002632  027017                    MSG35G
930  002634  003672                    3672
931  002636  027325                    MSG35Y
932  002640  003764                    3764
933  002642  027032                    MSG35H
934  002644  003672                    3672
935  002646  027325                    MSG35Y
936  002650  003764                    3764
937  002652  027045                    MSG35I
938  002654  003672                    3672
939  002656  027325                    MSG35Y
940  002660  003764                    3764
941  002662  027062                    MSG35J
942  002664  003672                    3672
943  002666  027325                    MSG35Y
944  002670  003764                    3764
945  002672  027073                    MSG35K
946  002674  003672                    3672
947  002676  027325                    MSG35Y
948  002700  003764                    3764
949  002702  027106                    MSG35L
950  002704  003672                    3672
951  002706  027325                    MSG35Y
952  002710  003764                    3764
953  002712  027121                    MSG35M
954  002714  003672                    3672
955  002716  027325                    MSG35Y
956  002720  003764                    3764
957  002722  027134                    MSG35N
958  002724  003672                    3672
959  002726  027325                    MSG35Y
960  002730  003764                    3764
961  002732  027147                    MSG350
962  002734  003672                    3672
963  002736  027325                    MSG35Y
964  002740  003764                    3764
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 965  002742  027162                        MSG35P
 966  002744  003672                        3672
 967  002746  027325                        MSG35Y
 968  002750  003764                        3764
 969  002752  027175                        MSG35Q
 970  002754  003672                        3672
 971  002756  027325                        MSG35Y
 972  002760  003764                        3764
 973  002762  027210                        MSG35R
 974  002764  003672                        3672
 975  002766  027325                        MSG35Y
 976  002770  003764                        3764
 977  002772  027223                        MSG35S
 978  002774  003672                        3672
 979  002776  027325                        MSG35Y
 980  003000  003764                        3764
 981  003002  027236                        MSG35T
 982  003004  003672                        3672
 983  003006  027325                        MSG35Y
 984  003010  003764                        3764
 985  003012  027251                        MSG35U
 986  003014  003672                        3672
 987  003016  027325                        MSG35Y
 988  003020  003764                        3764
 989  003022  027264                        MSG35V
 990  003024  003672                        3672
 991  003026  027325                        MSG35Y
 992  003030  003764                        3764
 993  003032  027277                        MSG35W
 994  003034  003672                        3672
 995  003036  027325                        MSG35Y
 996  003040  003764                        3764
 997  003042  027312                        MSG35X
 998  003044  003672                        3672
 999  003046  027325                        MSG35Y
1000  003050  100000                        100000
1001  003052  002550                        98
1002  003054  003761                T98:    3761
1003  003056  024611                        MSG17
1004  003060  003706                        3706
1005  003062  027727                        MSG39
1006
1007
1008                                  .SBTTL  DISPLAY A NUMBER OF BLOCKS PER LINE ON ALL LINES
1009                                  ;T0005  THIS TEST SIMPLY DISPLAYS ALTERNATING BLOCKS OF
1010                                  ;       "A"'S, "B"'S, AND "C"'S.
1011                                  ;TO MODIFY THE # OF BLOCKS TO BE DISPLAYED, MODIFY LOCATION "MAXBLK".
1012                                  ;ITS DEFAULT VALUE IF 8.
1013                                  ;THE LAST BLOCK ON EACH LINE   CONTAINS A EOL CHAR
1014  003064  000004                T0005:  SCOPE
1015                                  ;
1016                                  ;
1017  003066  004737  015102                JSR     PC,FXTST        ;DISPLAY THE TEST #
1018  003072  012737  003336  000506        MOV     #98,@LPADR      ;SETUP ERROR LOOP ADDRESS
1019  003100  012701  000117               MOV     #79.,R1         ;# OF POSITIONS TO BE FILLED
1020  003104  005002                       CLR     R2              ;ZERO BLOCK LENGTH
```

```
                        ;DISPLAY A NUMBER OF BLOCKS PER LINE ON ALL LINES

1021  003106  013703  001060          MOV     MAXBLK,R3       ;COPY MAXIMUN BLOCK #
1022  003112  042703  177740          BIC     #177740,R3      ;DONT DO TEST FOR MORE THAN 32 BLOCKS/LINE
1023  003116  001507                  BEQ     8$              ;AND IF 0 BLOCKS SPECIFIED, DO 1 INSTEAD
1024  003120  005303                  DEC     R3              ;RESERVE 1 FOR EOL
1025  003122  160301          1$:     SUB     R3,R1           ;DIVIDE BY SUBTRACTION
1026  003124  100402                  BMI     2$
1027  003126  005202                  INC     R2              ;ADD 1 TO BLOCK LENGTH
1028  003130  000774                  BR      1$              ;KEEP DIVIDING
1029  003132  060301          2$:     ADD     R3,R1           ;GET THE REMAINDER OF THE DIVISION
1030  003134  060201                  ADD     R2,R1           ;LENGTH OF 1ST BLOCK IS REGULAR LENGTH PLUS REMAINDER
1031  003136  005101                  COM     R1              ;NEGATE IT TO MAKE IT A BLOCK COUNT FOR THE DISPLAY TABL
1032  003140  042701  174000          BIC     #174000,R1      ;DONT LEAVE ANY SPECIAL DISPLAY MODE BITS SET.
1033  003144  005102                  COM     R2              ;DO THE SAME THING TO THE REGULAR BLOCK COUNT
1034  003146  042702  174000          BIC     #174000,R2      ;NO SPECIAL DISPLAY MODE BITS SET
1035  003152  005037  000766          CLR     TEMP            ;START OFF WITH A'S
1036                                  ;NOW R1=LENGTH OF THE 1ST BLOCK
1037                                  ;    R2=LENGTH OF OTHER BLOCKS
1038                                  ;    R3=# OF BLOCKS PER LINE -1
1039  003156  012703  003352              MOV     #9$,R3  ;SETUP ADDRESS OF DISPLAY TABLE BEGINING
1040  003162  012704  000024              MOV     #20.,R4 ;INIT LINE COUNT TO 20
1041  003166  013703  000766          3$: MOV     R4,TEMP         ;FIGURE OUT WHICH LETTER TO START WITH BY THE
1042  003172  042737  177774  000766      BIC     #177774,TEMP    ;LINE # WE ARE DOING NOW
1043  003200  010305                      MOV     R3,R5           ;SETUP THE COUNT OF BLOCKS ON A LINE
1044  003202  010120                      MOV     R1,(R0)+        ;PUT COUNT FOR 1ST BLOCK INTO THE DISPLAY TABLE
1045  003204  005337  000766          4$: DEC     TEMP            ;FIND OUT WHICH CHARACTER TO DISPLAY 1ST
1046  003210  001003                      BNE     5$
1047  003212  012720  025374              MOV     #MSG23D,(R0)+   ;USE "D"'S
1048  003216  000423                      BR      7$
1049  003220  023727  000766  000001  5$: CMP     TEMP,#1
1050  003226  001003                      BNE     6$
1051  003230  012720  025252              MOV     #MSG23C,(R0)+   ;USE "C"'S
1052  003234  000414                      BR      7$
1053  003236  023727  000766  000002  6$: CMP     TEMP,#2         ;SHOULD WE BE USING "A" OR "D"
1054  003244  001003                      BNE     10$
1055  003246  012720  025130              MOV     #MSG23B,(R0)+   ;USE "B"'S
1056  003252  000405                      BR      7$
1057  003254  012720  025006          10$:MOV     #MSG23A,(R0)+   ;USE "A"'S
1058
1059  003260  012737  000003  000766          MOV     #3,TEMP
1060  003266  010220                  7$: MOV     R2,(R0)+
1061  003270  005305                      DEC     R5              ;MORE BLOCKS TO DO ON THIS LINE?
1062  003272  001344                      BNE     4$              ;IS SO, GO BACK AND DO EM
1063  003274  012760  003776  177776      MOV     #3776,-2(R0)    ;MODIFY BLOCK LENGTH FOR FINAL BLOCK
1064  003302  012720  024315              MOV     #MSG15,(R0)+    ;TEXT IS A EOL
1065  003306  005304                      DEC     R4              ;TAKE 1 FROM THE # OF LINES LEFT TO DO
1066  003310  001326                      BNE     3$              ;IF ANY REMAIN TO BE DONE, DO THEM
1067  003312  012720  100000              MOV     #100000,(R0)+   ;PUT A JUMP INTO THE DISPLAY TABLE
1068  003316  012720  003352              MOV     #9$,(R0)+       ;BACK TO THE BEGINING
1069  003322  012777  003352  175500      MOV     #9$,@IDTP       ;USE A SPECIAL DISPLAY TABLE FOR THIS TEST
1070  003330  012777  000146  175470      MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1071  003336  004737  015002          8$: JSR     PC,LSTALL       ;LET THE RESULTS BE SEEN
1072  003342  004737  015002              JSR     PC,LSTALL       ;AND SEEN WELL
1073  003346  000137  007352              JMP     @#7352          ;NOW GO ON TO THE NEXT TEST
1074
1075  003352  002000          9$: .BLKW    2000
1076
```

```
                                        MAKE SURE THAT THE DISPLAY DOES INTERRUPTS AT LEVEL 0

                                .SBTTL  MAKE SURE THAT THE DISPLAY DOES INTERRUPTS AT LEVEL 0
                                ;T0006  IN THIS TEST, THE LSI-11 PRIORITY IS SET TO 0
                                ;       AND THE RUNNING DISPLAY IS EXPECTED TO INTERRUPT WITHIN
                                ;       ABOUT A TENTH  OF A SECOND. IF IT DOES NOT INTERRUPT, THE FOLLOWING
                                ;       ERROR MESSAGE IS DISPLAYED....
                                ;        DISPLAY DID NOT INTERRUPT FOR A FULL TENTH  OF A SECOND
                                ;
007352  000006                T0006:  SCOPE
007354  004737  014136                  JSR     PC,CLRTUB       ;CLEAR OUT THE DISPLAY TABLE
007360  012737  007412  000606        MOV     #18,@LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
007366  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII
007372  012777  007454  171430        MOV     #98,@TDTP       ;SETUP DISPLAY TABLE POINTER
007406  012777  000146  171420        MOV     #146,@DCSR      ;TURN ON THE DISPLAY
007412  004737  015002                  JSR     PC,LSTALL       ;LEAVE THE TEST # ON THE SCREEN FOR A SECOND
007416  005037  001050          18:     CLR     INTCNT          ;ZERO THE INTERRUPT COUNT
007422  106427  000000                  MTPS    #0              ;ENABLE INTERRUPTS
007426  004737  015172                  JSR     PC,MSTALL       ;WAIT
007432  106427  000340                  MTPS    #340            ;THATS ENOUGH TIME FOR AT LEAST ONE INTERRUPT
007436  005737  001050                  TST     INTCNT          ;DID ANY INTERRUPTS HAPPEN WHILE WE WERE WAITING?
007442  001012                          BNE     T0007           ;IF SO JUST GO ON TO THE NEXT TEST
007444  012705  026161                  MOV     #MSG2B,R5       ;NO INTERRUPTS, SETUP ADDRESS OF ERROR MESSAGE TEXT
007450  004737  014532                  JSR     PC,ERMES        ;AND DISPLAY THE ERROR MESSAGE
007454  000137  007464                  JMP     T0007           ;GO TO THE NEXT TEST
007460  003761          98:             3761
007462  026611                          MSG17
007464  003776                          3776
007466  030064                          MSG41


                                        MAKE SURE THAT THE DISPLAY DOES NOT INTERRUPT AT LEVEL 7

                                .SBTTL  MAKE SURE THAT THE DISPLAY DOES NOT INTERRUPT AT LEVEL 7
                                ;T0007  IN THIS TEST THE LSI-11 PRIORITY IS SET TO 7. IF THE RUNNING
                                ;       DISPLAY CAUSES AN INTERRUPT WITHIN 1/10 OF A SECOND, THE FOLLOWING
                                ;       ERROR MESSAGE IF DISPLAYED....
                                ;        DISPLAY INTERRUPTED WITH LSI 11 PRIORITY SET TOO HIGH
                                ;
007464  000004                T0007:  SCOPE
007466  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII
007472  012777  007556  171330        MOV     #98,@TDTP       ;SETUP DISPLAY TABLE POINTER
007500  012737  007520  000606        MOV     #18,@LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
007506  012777  000146  171312        MOV     #146,@DCSR      ;TURN ON THE DISPLAY
007514  004737  015002                  JSR     PC,LSTALL       ;LEAVE THE TEST # ON THE SCREEN FOR A SECOND
007520  005037  001050          18:     CLR     INTCNT          ;ZERO THE INTERRUPT COUNT
007524  106427  000340                  MTPS    #340            ;DISABLE INTERRUPTS
007530  004737  015172                  JSR     PC,MSTALL       ;WAIT
007534  005737  001050                  TST     INTCNT          ;DID ANY INTERRUPTS HAPPEN WHILE WE WERE WAITING?
007540  001412                          BEQ     T0010           ;IF NOT JUST GO ON TO THE NEXT TEST
007542  012705  027636                  MOV     #MSG3B,R5       ;NO INTERRUPTS, SETUP ADDRESS OF ERROR MESSAGE TEXT
007546  004737  014532                  JSR     PC,ERMES        ;AND DISPLAY THE ERROR MESSAGE
007552  000137  007566                  JMP     T0010           ;GO TO THE NEXT TEST
007556  003761          98:             3761
007560  026611                          MSG17
007562  003776                          3776
007564  030064                          MSG41


                                .SBTTL  MAKE SURE 'END OF LINE' CHARACTERS ARE RECOGNIZED
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```
                                        ;T0010  THIS TEST DISPLAYS A LINE OF TEXT THAT HAS END OF LINE CHARACTERS IN IT,
                                        ;       IF EACH WORD OF THE MESSAGE IS NOT ON A SEPARATE LINE,
                                        ;       IT MEANS THAT AN END OF LINE CHARACTER
                                        ;       WAS NOT RECOGNIZED. IF THE END  OF LINE CHARACTERS WORK, THEN THE
                                        ;       FOLLOWING SHOULD APPEAR ON THE SCREEN
                                        ;       TEST # 000010
                                        ;        EACH 1
                                        ;        WORD 2
                                        ;        OF 3
                                        ;        THIS 201
                                        ;        MESSAGE 202
                                        ;        SHOULD 203
                                        ;        BE 202
                                        ;        ON 201
                                        ;        A 3
                                        ;        SEPARATE 2
                                        ;        LINE 1
                                        ;THE NUMBER AFTER EACH WORD REPRESENTS THE VALUE OF THE EOL CHAR THAT
                                        ;IS AT THE END OF THE LINE. IF TWO WORDS OR MORE APPEAR ON THE SAME LINE, LOOK
                                        ;EMBEDDED WITHIN THE LINE, THEY ARE THE EOL CHAR VALUES
                                        ;THAT ARE NOT RECOGNIZED
                                        ;
007566  000004                        T0010:  SCOPE
007570  004737  015102                        JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
007574  012737  007616  000606              MOV     #28,@LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
007602  012777  007640  171220              MOV     #98,@IDTP       ;SETUP POINTER TO SPECIAL DISPLAY TABLE
007610  012777  000146  171210              MOV     #146,@DCSR      ;TURN ON THE DISPLAY
007616  004737  015002                28:     JSR     PC,LSTALL       ;WAIT TO MAKE MESSAGE READABLE
007622  004737  015002                        JSR     PC,LSTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
007626  004737  015002                        JSR     PC,LSTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
007632  004737  015002                        JSR     PC,LSTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
007636  000406                              BR      T0011
007640  003761                        98:     3761
007642  024611                              MSG17
007644  003630                              3630
007646  024315                              MSG15
007650  100000                              100000
007652  016074                              TBL22
                                        .SBTTL  MAKE SURE "END OF LINE" CHARACTERS ARE  BE IGNORED IF  DCSR BIT 5 IS CLEAR
                                        ;T0011  THIS TEST DISPLAYS A LINE OF TEXT THAT HAS END OF LINE CHARACTERS IN IT,
                                        ;       IF ALL WORDS OF THE MESSAGE ON THE SCREEN ARE NOT ON THE SAME LINE,
                                        ;       IT MEANS THAT AN END OF LINE CHARACTER
                                        ;       WAS  RECOGNIZED. IF THE END  OF LINE CHARACTERS ARE IGNORED, THEN THE
                                        ;       FOLLOWING SHOULD APPEAR ON THE SCREEN
                                        ;
                                        ;       TEST # 000011 ALL 1 WORDS 2 SHOULD 3 BE 201 ON 202 THE 203 SAME LINE
                                        ;
                                        ;THE NUMBER AFTER EACH WORD REPRESENTS THE VALUE OF THE EOL CHAR THAT
                                        ;IS THERE, IF TWO OR MORE LINES APPEAR ON THE SCREEN, LOOK
                                        ;AT THE NUMBERS AT THE END OF THE LINE. THEY ARE THE EOL CHARS THAT ARE NOT IGNORED
                                        ;
007654  000004                        T0011:  SCOPE
007656  004737  015102                        JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
007662  012737  007710  000606              MOV     #28,@LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
007670  012777  007732  171132              MOV     #98,@IDTP       ;SETUP POINTER TO SPECIAL DISPLAY TABLE
007676  004737  015210                        JSR     PC,XSTALL       ;WAIT FOR AN INTERRUPT
```

```
                        ;MAKE SURE "END OF LINE" CHARACTERS ARE  BE IGNORED IF  DCSR BIT 5 IS CLEAR

1189  007702  012777  000106  171116          MOV     #106,@DCSR      ;TURN ON THE DISPLAY
1190  007710  004737  015002          28:     JSR     PC,ISTALL       ;WAIT TO MAKE MESSAGE READABLE
1191  007714  004737  015002                  JSR     PC,ISTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
1192  007720  004737  015002                  JSR     PC,ISTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
1193  007724  004737  015002                  JSR     PC,LSTALL       ;LEAVE TIME FOR THE TEST TO BE VIEWED
1194  007730  000406                          BR      T0012
1195  007732  003660                  98:     3660
1196  007734  025514                          MSG24
1197  007736  003734                  108:    3734
1198  007740  030624                          MSG57
1199  007742  100000                          100000
1200  007744  007736                          108
1201
1202                                  .SBTTL  MAKE SURE CHAR CODE 200 IS RECOGNIZED AS A EOS CHAR
1203
1204                                  ;MAKE SURE "END OF TEXT" CHAR IS RECOGNIZED
1205                                  ;T0012  THIS TEST DISLAYS A END OF SCREEN CHARACTER(200)
1206                                  ;       FOLLOWED BY A ERROR MESSAGE. THE ERROR MESSAGE
1207                                  ;       SHOULD NEVER BE SEEN
1208  007746  000004                  T0012:  SCOPE
1209  007750  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1210  007754  012737  010046  000606          MOV     #28,@IPADR      ;LOOP BACK TO 28 IF ERROR, AND SW8<13> IS CLEAR
1211  007762  012777  010104  171040          MOV     #98,@YDTP       ;RESET DISPLAY POINTER
1212  007770  012777  000146  171030          MOV     #146,@DCSR      ;RECOGNIZE EOL & EOS CHARS
1213  007776  004737  015210                  JSR     PC,XSTALL       ;WAIT LONG ENOUGH FOR AN INTERRUPT
1214  010002  012777  016110  171024          MOV     #CHARS,@DCP     ;POINT POINTER AT CHAR SET
1215  010010  012777  100146  171010          MOV     #100146,@DCSR   ;LOAD THE CHARACTER SET
1216  010016  012705  022340                  MOV     #ENDCHR,R5      ;SET UP ADDRESS OF CHAR SET END
1217  010022  004737  015254                  JSR     PC,TSTLOD       ;WAIT FOR LOAD TO BE FINISHED
1218  010026  012777  010104  170774          MOV     #98,@YDTP       ;NEW DISPLAY TABLE
1219  010034  012700  000100                  MOV     #100,R0         ;SETUP A COUNTER
1220  010040  012777  000146  170760          MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1221  010046  004737  015172          28:     JSR     PC,MSTALL       ;THIS WAIT MAKES THE DISPLAY READABLE
1222  010052  017701  170754                  MOV     @CDTP,R1        ;GET CURRENT DISPLAY POINTER
1223  010056  020127  010114                  CMP     R1,#108         ;IS THE DISPLAY POINTER OUT OF BOUNDS?
1224  010062  100003                          BPL     38              ;IF SO, GO REPORT AN ERROR
1225  010064  005300                          DEC     R0              ;ITS OK, ADD 1 TO COUNT
1226  010066  001367                          BNE     28              ;AND TRY AGAIN
1227  010070  000413                          BR      T0013           ;GO ON TO THE NEXT TEST
1228  010072  012705  024464          38:     MOV     #MSG16A,R5      ;SETUP ADDRESS OF THE ERROR MESSAGE
1229  010076  004737  014532                  JSR     PC,ERMES        ;REPORT THE ERROR
1230  010102  000406                          BR      T0013           ;GO ON TO THE NEXT TEST
1231  010104  003761                  98:     3761
1232  010106  024611                          MSG17
1233  010110  003744                          3744
1234  010112  024534                          MSG16B
1235  010114  100000                  108:    100000
1236  010116  016074                          TRL22
1237
1238
1239                                  .SBTTL  MAKE SURE CHAR CODE 000 IS RECOGNIZED AS A EOS CHAR
1240                                  ;MAKE SURE "END OF TEXT" CHAR IS RECOGNIZED
1241                                  ;T0013  THIS TEST DISLAYS A END OF SCREEN CHARACTER(000)
1242                                  ;       FOLLOWED BY A ERROR MESSAGE. THE ERROR MESSAGE
1243                                  ;       SHOULD NEVER BE SEEN
1244  010120  000004                  T0013:  SCOPE
```

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1245  010122  004737  015102                JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1246  010126  012737  010154  000606        MOV     #18,@LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
1247  010134  012777  010212  170666        MOV     #98,@IDTP       ;NEW DISPLAY TABLE
1248  010142  012702  000100                MOV     #100,R0         ;SETUP A COUNTER
1249  010146  012777  000146  170652        MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1250  010154  004737  015172        18:     JSR     PC,@STALL       ;THIS WAIT MAKES THE DISPLAY READABLE
1251  010160  017701  170646                MOV     @CDTP,R1        ;GET CURRENT DISPLAY POINTER
1252  010164  020127  010222                CMP     R1,#108         ;IS THE DISPLAY POINTER OUT OF BOUNDS?
1253  010170  100003                        BPL     28              ;IF SO, GO REPORT AN ERROR
1254  010172  005300                        DEC     R0              ;ITS OK, ADD 1 TO COUNT
1255  010174  001367                        BNE     18              ;AND TRY AGAIN
1256  010176  000413                        BR      T0014           ;GO ON TO THE NEXT TEST
1257  010200  012705  024464        28:     MOV     #MSG16A,R5      ;SETUP ADDRESS OF THE ERROR MESSAGE
1258  010204  004737  014532                JSR     PC,ERMES        ;REPORT THE ERROR
1259  010210  000406                        BR      T0014           ;GO ON TO THE NEXT TEST
1260  010212  003761                98:     3761
1261  010214  024611                        MSG17
1262  010216  003744                        3744
1263  010220  024457                        MSG16
1264  010222  100000                100:    100000
1265  010224  016074                        TBL22
1266
1267
1268                                  .SBTTL  TEST THAT DCSR BIT 6 CLEAR, DISSABLES THE END OF SCREEN CHARACTER
1269                                  ;T0014  A SPECIAL DISPLAY TABLE IS DISPLAYED FROM IN THIS TEST.
1270                                  ;       IT HAS IN IT A POINTER TO THE TEST # ASCII, A POINTER TO A TEXT
1271                                  ;       MESSAGE CONTAINING TWO EOS(@ & 200) CHARACTERS, AND A JUMP BACK TO THE
1272                                  ;       BEGINING OF THE DISPLAY TABLE. IF THE END OF SCREEN CHARACTERS
1273                                  ;       ARE TRUELY DISABLED, THE TEST # AND TEXT MESSAGE SHOULD
1274                                  ;       APPEAR ON THE SCREEN 24 TIMES, IF AN END OF SCREEN CHARACTER IS
1275                                  ;       RECOGNIZED, THE MESSAGE WILL APPEAR LESS THAN THAT.
1276                                  ;
1277  010226  000004                T0014:  SCOPE
1278  010230  012737  010256  000606        MOV     #18,@LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
1279  010236  004737  015102                JSR     PC,FXTST        ;CHANGE THE TEST # TO ASCII
1280  010242  012777  010276  170560        MOV     #98,@IDTP       ;SETUP POINTER TO THE CUTE LITTLE DISPLAY TABLE
1281  010250  012777  000106  170550        MOV     #106,@DCSR      ;TURN ON THE DISPLAY, WITH SPECIAL CHARACTER BIT CLEAR
1282  010256  004737  015002        18:     JSR     PC,LSTALL       ;LET THE OPERATOR SEE THE RESULTS
1283  010262  004737  015002                JSR     PC,LSTALL       ;ALLOW MORE TIME
1284  010266  004737  015002                JSR     PC,LSTALL       ;ALLOW MORE TIME
1285  010272  000137  010312                JMP     T0015           ;GO ON TO THE NEXT TEST
1286  010276  003761                98:     3761
1287  010300  024611                        MSG17
1288  010302  003675                        3675
1289  010304  030464                        MSG41
1290  010306  100000                100:    100000
1291  010310  010276                        98
1292
1293
1294
1295
1296
1297                                  .SBTTL  TEST THAT A SFT BIT IS IN A PARAMETER CAUSES "JUMP"
1298                                  ;       TO A NEW PLACE IN THE DISPLAY TABLE
1299                                  ;T0015  A DISPLAY TABLE IS DISPLAYED FROM IN WHICH THERE IS A TEST #
1300                                  ;       TEXT POINTER, A DISPLAY TABLE JUMP INSTRUCTION, AND A MESSAGE
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                                        ;       THAT SAYS THAT THE JUMP DID NOT WORK.
                                        ;       IF THE JUMP DOES NOT WORK, THE MESSAGE THAT SAYS IT WONT WILL BE DISPLAYED.
                                        ;       ALSO THE VALUE OF THE CDTP IS WATCHED, AND IF IT HAS A VALUE
                                        ;       THAT IT SHOULD NOT HAVE, THE JUMP IS ASSUMED TO BE AT FAULT,
                                        ;       AND A ERROR MESSAGE SAYING SO IS DISPLAYED
                                        ;
010312  000004                 T0015:  SCOPE
010314  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
010320  012777  000146  170500         MOV     #146,@DCSR      ;ENABLE SPECIAL CHARACTERS
010326  012737  010346  000604         MOV     #18,$LPADR      ;LOOP BACK TO 18 IF ERROR, AND SWR<13> IS CLEAR
010334  012777  010404  170466         MOV     #38,@IDTP       ;NEW DISPLAY TABLE
010342  012700  000100                 MOV     #100,R0         ;SETUP A COUNTER
010346  004737  015172          18:    JSR     PC,WSTALL       ;THIS WAIT MAKES THE DISPLAY READABLE
010352  017701  170454                 MOV     @CDTP,R1        ;GET CURRENT DISPLAY TABLE POINTER
010356  021127  010420                 CMP     @R1,#48         ;IS THE DISPLAY POINTER OUT OF BOUNDS?
010362  001401                        BEQ     28              ;IF SO, GO REPORT AN ERROR
010364  005300                        DEC     R0              ;ITS OK, ADD 1 TO COUNT
010366  001367                        BNE     18              ;AND TRY AGAIN
010370  000415                        BR      T0016           ;GO ON TO THE NEXT TEST
010372  012705  026067          28:    MOV     #MSG27,R5       ;SETUP ADDRESS OF THE ERROR MESSAGE
010376  004737  014532                 JSR     PC,FPMES        ;REPORT THE ERROR
010402  000410                        BR      T0016           ;GO ON TO THE NEXT TEST
010404  003761          38:    3761
010406  026011                 MSG17
010410  100000                 100000
010412  010420                 48
010414  003710                 3710
010416  026067                 MSG27
010420  003772          48:    3772
010422  024457                 MSG16


                                        .SBTTL  ZERO BLOCK COUNT TEST
                                        ;T0016  DISPLAY 80 CHAR LINES WITH A 0 CHAR LINE BETWEEN EVERY OTHER ONE
                                        ;       IF THE ZERO COUNT DOES NOT DISPLAY AS 0, THE BAR TO THE RIGHT
                                        ;       SIDE OF THE SCREEN WILL BE CROOKED OR BROKEN, INSTEAD OF STRAIGHT
                                        ;       AND SOLID DOWN THE ENTIRE LENGTH OF THE SCREEN.
                                        ;       ALSO THE FOLLOWING ERROR MESSAGE MAY APPEAR ON THE SCREEN...
                                        ;
                                        ;         ERROR  :  ZERO BLOCK COUNT NOT RECOGNIZED AS SUCH
                                        ;
010424  000004                 T0016:  SCOPE
010426  004737  015102                  JSR     PC,FXTST
010432  012737  000001  000606         MOV     #1,$LPADR       ;LOOPBACK ADDRESS FOR THIS TEST
010440  012777  000146  170360         MOV     #146,@DCSR      ;REGULAR DISPLAY
010446  012777  010470  170354         MOV     #98,@IDTP       ;SETUP DISPLAY TABLE
010454  004737  015002          18:    JSR     PC,ISTALL       ;LET IT BE SEEN
010460  004737  015002                 JSR     PC,LSTALL       ;A LITTLE LONGER
010464  000137  010514                 JMP     T0017
010470  003761          98:    3761
010472  024611                 MSG17
010474  003657          100:   3657
010476  030333                 MSG44
010500  003657                 3657
010502  030333                 MSG44
010504  003777                 3777
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010506  076001                                  MSG26
010510  100000                                  100000
010512  010476                                  10$


                                        .SBTTL  DISPLAY FROM DIFFERENT MEMORY AREAS TEST
                                        ;T0017  SIZE MEMORY AND DISPLAY FROM EACH 2K HUNK OF MEMORY
                                        ;       A DISPLAY TABLE AND SOME TEXT IS PLACED IN EACH 2K HUNK OF
                                        ;       MEMORY, AND USED TO DISPLAY WITH.
010514  000004                          T0017:  SCOPE
010516  004737  015102                          JSR     PC,EXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
010522  012706  000600                          MOV     #600,SP         ;NEED ROOM ON STACK, SO RESET IT
010526  004737  014136                          JSR     PC,CLRTUB       ;CLEAR OUT DISPLAY TABLE
010532  012777  010762  170270                  MOV     #T0017C,@IDTP   ;SETUP THE POINTER TO THE DISPLAY TABLE
010540  012777  000146  170260                  MOV     #146,@DCSR      ;TURN ON THE DISPLAY
010546  005000                                  CLR     R0              ;SET MEMORY COUNT TO 0
010550  012737  010612  000004                  MOV     #3$,@#4         ;SETUP VECTOR IN CASE OF NON EXISTANT MEMORY
010556  012737  000140  000006                  MOV     #140,@#6        ;SETUP TRAP VECTOR
010564  010001                          1$:     MOV     R0,R1           ;SETUP WORKING ADDRESS
010566  062700  010000                          ADD     #10000,R0       ;BUMP REAL ADDRESS TO BEGINING OF NEXT 2K HUNK
010572  005721                          2$:     TST     (R1)+           ;FIND OUT IF THE MEMORY IS THERE
010574  020100                                  CMP     R1,R0           ;IT IS, IS ALL OF 2K THERE?
010576  001375                                  BNE     2$              ;DONT KNOW YET, GO BACK AND KEEP TESTING
010600  010046                                  MOV     R0,-(SP)        ;ITS ALL THERE, PUT ADDRESS ON THE STACK
010602  162716  010000                          SUB     #10000,(SP)     ;MAKE IT THE BEGINING ADDRESS
010606  162706  000004                          SUB     #4,SP           ;ANTICIPATING WHAT WILL HAPPEN NEXT
010612  062706  000004                  3$:     ADD     #4,SP           ;KEEP THE STACK WHERE IT BELONGS
010616  020027  160000                          CMP     R0,#160000      ;REACHED END OF POSIBLE MEMORY?
010622  001360                                  BNE     1$              ;IF NOT GO BACK AND CHECK ANOTHER HUNK
010624  004737  015002                          JSR     PC,LSTALL       ;LEAVE TEST # ON THE SCREEN FOR A MOMENT
                                        ;WE NOW HAVE A BUNCH OF ADDRESSES ON THE STACK
010630  012600                          T0017A: MOV     (SP)+,R0        ;GET AN ADDRESS
010632  001002                                  BNE     1$              ;CONTINUE ON ANY ADDR BUT 0
010634  000137  010772                          JMP     T0020           ;NEED NOT TRY 1ST 2K HUNK, GO TO NEXT TEST
010640  020027  030001                  1$:     CMP     R0,#30001       ;IS THE ADDRESS IN THE 1ST 6K?
010644  103771                                  BLO     T0017A          ;IF SO GET ANOTHER
010646  020027  040000                          CMP     R0,#40000       ;IS IT IN THE 2ND 4K?
010652  103000                                  BHIS    2$              ;IF NOT WE GO DISPLAY FROM THAT AREA
                                                                        ;NOW TRY TO DISPLAY FROM IT
010654  010037  000766                  2$:     MOV     R0,TEMP         ;SETUP HUNK VALUE
010660  012705  026523                          MOV     #MSG33T,R5      ;SO THAT IT CAN BE
010664  004737  015504                          JSR     PC,BIOCT        ;CONVERTED TO ASCII
010670  010037  000766                          MOV     R0,TEMP
010674  062737  000004  000766                  ADD     #4,TEMP         ;ASCII TEXT STARTS AT 4TH CHARACTER
010702  013737  000766  026470                  MOV     TEMP,MSTB1      ;IN THE HUNK, SETUP DISPLAY TABLE ENTRY CORRECTLY
010710  012705  026555                          MOV     #MSG33A,R5      ;ADDRESS TO PUT ASCII VALUE
010714  004737  015504                          JSR     PC,BIOCT        ;OF THE ASCII TEXT ADDRESS
010720  012701  026466                          MOV     #MSTB0,R1       ;ADDRESS OF STUFF TO MOVE INTO THE HUNK
010724  012702  000037                          MOV     #37,R2          ;SETUP COUNT FOR # OF WORDS TO MOVE
010730  012120                          4$:     MOV     (R1)+,(R0)+     ;MOVE A WORD INTO THE HUNK
010732  005302                                  DEC     R2              ;IS IT THE LAST WORD?
010734  001375                                  BNE     4$              ;IF NOT, GO BACK AND DO ANOTHER
010736  162737  000004  026470                  SUB     #4,MSTB1        ;BACK UP POINTER TO THE DISPLAY TABLE ADDRESS
010744  013777  026470  170056                  MOV     MSTB1,@IDTP     ;IF DONE, START DISPLAYING STUFF FROM THE HUNK
010752  004737  015002                          JSR     PC,LSTALL       ;AND ALLOW TIME FOR THE MESSAGE TO BE SEEN
010756  000137  010630                          JMP     T0017A          ;GO TRY DISPLAYING FROM ANOTHER AREA
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1413
1414  010762  003761                    T0017C: 3761
1415  010764  024611                            MSG17
1416  010766  003776                            3776
1417  010770  030064                            MSG41
1418
1419
1420
1421
1422                                    .SBTTL  MAKE SURE THAT THE CHARACTER GENERATOR CAN BE LOADED WHILE DISPLAY IS GOING
1423                                    ;T0020  A TEXT MESSAGE IS PUT ONTO THE SCREEN AND THE DISPLAY IS KEPT RUNNING,
1424                                    ;       THEN CHARACTER CODE 41 IS LOADED WITH A CROSS PATTERN,
1425                                    ;       SINCE THERE ARE A LOT OF 041 CODES IN THE MESSAGE BEING DISPLAYED
1426                                    ;       THE OPERATOR SHOULD BE  ABLE TO OBSERVE THE CHANGE. CHARACTER CODE 41 IS
1427                                    ;       THEN LOADED WITH A TRIANGLE PATTERN, AND AGAIN THE CHANGE SHOULD BE
1428                                    ;       VISABLE. THEN CHARACTER CODE 41 IS LOADED WITH ALTERNATING TRIANGLES,
1429                                    ;       THEN CROSSES, 10 MORE TIMES
1430                                    ;
1431  010772  000004                    T0020:  SCOPE
1432  010774  004737  015102                    JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1433  011000  012737  011020  000506            MOV     #18,@#PADR      ;SETUP THE ERROR LOOPBACK ADDRESS
1434  011006  012706  000600                    MOV     #600,SP         ;INIT THE STACK
1435  011012  012777  011144  170010            MOV     #98,@#IDTP      ;DISPLAY SPECIAL MESSAGE
1436  011020  012703  000024            18:     MOV     #20.,R3         ;SETUP COUNT FOR 20 CHANGES
1437  011024  012777  022342  170002    28:     MOV     #PLUS5,@#DCP    ;ADDRESS OF THE "+" FOR CODE 21
1438  011032  012777  100146  167766            MOV     #100146,@#DCSR  ;LOAD CHARACTER SET
1439  011040  012705  022412            38:     MOV     #ENDPLS,R5      ;SETUP ADDRESS OF CHAR SET ENDING FOR COMPARE
1440  011044  004737  015254                    JSR     PC,TSTLOD       ;WAIT FOR LOAD TO FINISH
1441  011050  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1442  011054  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1443  011060  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1444  011064  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1445  011070  012777  022270  167736            MOV     #FAKE,@#DCP     ;SETUP ADDRESS OF TRIANGLE CHARACTER FOR CODE 41
1446  011076  012705  022340                    MOV     #ENDCHR,R5      ;SETUP ADDRESS OF CHAR SET ENDING
1447  011102  012777  100146  167716            MOV     #100146,@#DCSR  ;LOAD CHARACTER SET
1448  011110  004737  015254                    JSR     PC,TSTLOD       ;WAIT FOR CHAR SET LOAD TO BE DONE
1449  011114  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1450  011120  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1451  011124  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1452  011130  004737  015172                    JSR     PC,MSTALL       ;TRANSITIONS MUST BE VIEWABLE
1453  011134  005303                            DEC     R3              ;DONE 20 CHANGES YET?
1454  011136  001332                            BNE     28              ;IF NOT GO BACK AND DO MORE
1455  011140  000137  011160                    JMP     T0021           ;GO ON TO THE NEXT TEST
1456  011144  003761                    98:     3761
1457  011146  024611                            MSG17
1458  011150  003660                            3660
1459  011152  024157                            MSG14
1460  011154  003771                            3771
1461  011156  024457                            MSG16
1462
1463
1464                                    .SBTTL  TEST UNDERLINE MODE
1465                                    ;T0021  THIS TEST DISPLAYS THE WORDS "UNDERLINE MODE", IN UNDERLINE MODE,
1466                                    ;
1467  011160  000004                    T0021:  SCOPE
1468  011162  004737  015102                    JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
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1469  011166  012737  011262  000606          MOV     #28,@LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
1470  011174  004737  014136                  JSR     PC,CLRTAB       ;CLEAN OUT THE DISPLAY TABLE
1471  011200  012777  015760  167622          MOV     #DISTBL,@IDTP   ;SETUP THE POINTER TO THE DISPLAY TABLE
1472  011206  012777  000146  167612          MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1473  011214  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1474  011220  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1475  011224  012700  000013                  MOV     #13,R0          ;COUNT TO FILL SCREEN
1476  011230  012705  024632          18:     MOV     #MSG18,R5       ;SETUP ADDRESS OF THE MESSAGE
1477  011234  012737  010000  000754          MOV     #10000,SPMODE   ;AND ITS MODE BITS
1478  011242  004737  013750                  JSR     PC,TUROUT       ;SEND MESSAGE TO THE SCREEN
1479  011246  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1480  011252  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1481  011256  005300                          DEC     R0              ;COUNT 1 MESSAGE MORE
1482  011260  001363                          BNE     18              ;FILLED SCREEN? GO BACK IF NOT.
1483  011262  004737  015002          28:     JSR     PC,ISTALL       ;WAIT, SO MESSAGE STAYS ON SCREEN LONG ENOUGH TO SEE
1484
1485
1486                                  .SBTTL  TEST REGULAR MODE
1487                                  ;T0022  THIS TEST DISPLAYS THE WORDS "REGULAR MODE" IN REGULAR MODE
1488  011266  000004                  T0022:  SCOPE
1489  011270  012737  011356  000606          MOV     #28,@LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
1490  011276  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1491  011302  012777  000146  167516          MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1492  011310  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1493  011314  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1494  011320  012700  000013                  MOV     #13,R0          ;COUNT TO FILL SCREEN
1495  011324  012705  026403          18:     MOV     #MSG31,R5       ;SETUP ADDRESS OF THE MESSAGE
1496  011330  012737  000000  000754          MOV     #0000,SPMODE    ;AND ITS MODE BITS
1497  011336  004737  013750                  JSR     PC,TUROUT       ;SEND MESSAGE TO THE SCREEN
1498  011342  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1499  011346  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1500  011352  005300                          DEC     R0              ;COUNT 1 MESSAGE MORE
1501  011354  001363                          BNE     18              ;FILLED SCREEN? GO BACK IF NOT.
1502  011356  004737  015002          28:     JSR     PC,ISTALL       ;WAIT, SO MESSAGE STAYS ON SCREEN LONG ENOUGH TO SEE
1503
1504
1505                                  .SBTTL  TEST REVERSE VIDEO MODE
1506                                  ;T0023  THIS TEST DISPLAYS THE WORDS "REVERSE VIDEO MODE" IN REVERSE
1507                                  ;       VIDEO MODE
1508  011362  000004                  T0023:  SCOPE
1509  011364  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1510  011370  012737  011452  000606          MOV     #28,@LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
1511  011376  012777  000146  167422          MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1512  011404  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1513  011410  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1514  011414  012700  000013                  MOV     #13,R0          ;COUNT TO FILL SCREEN
1515  011420  012705  024707          18:     MOV     #MSG21,R5       ;SETUP ADDRESS OF THE MESSAGE
1516  011424  012737  004000  000754          MOV     #4000,SPMODE    ;AND ITS MODE BITS
1517  011432  004737  013750                  JSR     PC,TUROUT       ;SEND MESSAGE TO THE SCREEN
1518  011436  012705  024611                  MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1519  011442  004737  013750                  JSR     PC,TUROUT       ;DISPLAY THE TEST #
1520  011446  005300                          DEC     R0              ;COUNT 1 MESSAGE MORE
1521  011450  001363                          BNE     18              ;FILLED SCREEN? GO BACK IF NOT.
1522  011452  004737  015002          28:     JSR     PC,ISTALL       ;WAIT, SO MESSAGE STAYS ON SCREEN LONG ENOUGH TO SEE
1523
1524
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1525                                        .SBTTL  TEST BOLD MODE
1526                                        ;T0024  THIS TEST DISPLAYS THE WORDS "BOLD MODE" IN BOLD MODE
1527  011656  000004                        T0024:  SCOPE
1528  011660  004737  015102                        JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1529  011664  012737  011546  000006              MOV     #28,$LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
1530  011672  012777  000146  167326              MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1531  011700  012705  024611                      MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1532  011704  004737  013750                      JSR     PC,TUROUT       ;DISPLAY THE TEST #
1533  011710  012700  000013                      MOV     #13,R0          ;COUNT TO FILL SCREEN
1534  011714  012705  024652              18:     MOV     #MSG19,R5       ;SETUP ADDRESS OF THE MESSAGE
1535  011720  012737  020000  000754              MOV     #20000,SPMODE   ;AND ITS MODE BITS
1536  011726  004737  013750                      JSR     PC,TUROUT       ;SEND MESSAGE TO THE SCREEN
1537  011732  012705  024611                      MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1538  011736  004737  013750                      JSR     PC,TUROUT       ;DISPLAY THE TEST #
1539  011742  005300                            DEC     R0              ;COUNT 1 MESSAGE MORE
1540  011744  001363                            BNE     18              ;FILLED SCREEN? GO BACK IF NOT.
1541  011746  004737  015002              28:     JSR     PC,LSTALL       ;WAIT, SO MESSAGE STAYS ON SCREEN LONG ENOUGH TO SEE
1542
1543
1544                                        .SBTTL  TEST BLANK MODE
1545                                        ;T0025  THIS TEST DISPLAYS THE WORDS "BLANK MODE ERROR" IN BLANKING MODE. (YOU
1546                                        ;       SHOULD NOT SEE THE WORDS "BLANK MODE ERROR".)
1547  011752  000004                        T0025:  SCOPE
1548  011754  004737  015102                        JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1549  011760  012737  011642  000006              MOV     #28,$LPADR      ;LOOP BACK TO 28 IF ERROR, AND SWR<13> IS CLEAR
1550  011766  012777  000146  167232              MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1551  011774  012705  024611                      MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1552  012000  004737  013750                      JSR     PC,TUROUT       ;DISPLAY THE TEST #
1553  012004  012700  000013                      MOV     #13,R0          ;COUNT TO FILL SCREEN
1554  012010  012705  024665              18:     MOV     #MSG20,R5       ;SETUP ADDRESS OF THE MESSAGE
1555  012014  012737  040000  000754              MOV     #40000,SPMODE   ;AND ITS MODE BITS
1556  012022  004737  013750                      JSR     PC,TUROUT       ;SEND MESSAGE TO THE SCREEN
1557  012026  012705  024611                      MOV     #MSG17,R5       ;GET ADDR OF TEST # MESSAGE
1558  012032  004737  013750                      JSR     PC,TUROUT       ;DISPLAY THE TEST #
1559  012036  005300                            DEC     R0              ;COUNT 1 MESSAGE MORE
1560  012040  001363                            BNE     18              ;FILLED SCREEN? GO BACK IF NOT.
1561  012042  004737  015002              28:     JSR     PC,LSTALL       ;WAIT, SO MESSAGE STAYS ON SCREEN LONG ENOUGH TO SEE
1562
1563
1564                                        .SBTTL  TEST PANNING UPWARDS(FAST)
1565                                        ;T0026  THIS IS A TEST OF THE PAN OFFSET BITS. PANNING UPWARDS IS DONE AT A
1566                                        ;       DONE AT A REASONABLY FAST RATE. THE PANNING SHOULD LOOK SMOOTH.
1567                                        ;       IF IT DOESNT, THAT INDICATES THAT THE PAN OFFSET BITS ARE NOT ALL
1568                                        ;       WORKING PROPERLY.
1569  012046  000004                        T0026:  SCOPE
1570  012050  004737  015102                        JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1571  012054  012737  011662  000606              MOV     #18,$LPADR      ;SETUP THE ERROR LOOPBACK ADDRESS
1572  012062  012737  000140  000766      18:     MOV     #140,TEMP
1573  012070  012706  000600                      MOV     #600,SP         ;INIT THE STACK
1574  012074  012777  012056  167126              MOV     #68,@TDTP       ;DISPLAY THE PAN MESSAGE
1575  012102  012700  000145                      MOV     #145,R0         ;PAN REGISTERS FIRST VALUE-1
1576  012106  005200                      28:     INC     R0              ;PAN FURTHER
1577  012110  010077  167112                      MOV     R0,@DCSR        ;SET PAN BITS
1578  012114  106427  000000                      MTPS    #0              ;MAKE SURE INTERRUPTS ARE ALLOWED
1579  012120  005037  000772                      CLR     STLCNT          ;ZERO OUT A COUNTER LOCATION
1580  012124  005037  001050                      CLR     INTCNT          ;ZERO INTERRUPT SWITCH
```

```
011730  023737  000762  001050  3$:     CMP     UPFAST,INTCNT   ;ENOUGH DISPLAY INTERRUPTS YET?
011736  001420                          BEQ     4$              ;IF SO GO SERVICE
011740  005237  000772                  INC     STLCNT          ;IF NOT, IS ONE LONG OVERDUE?
011744  001371                          BNE     3$              ;IF NOT WAIT MORE
011746  004737  014136                  JSR     PC,CLRTUB       ;OVERDUE, CLEAR OUT THE REGULAR DISPLAY TABLE
011752  012777  015760  167050          MOV     #DISTBL,@IDTP   ;SET TO DISPLAY FROM IT
011760  004737  015102                  JSR     PC,FXTST        ;DISPLAY TEST #
011764  012705  026161                  MOV     #MSG20,R5       ;SETUP THE ADDRESS OF THE ERROR MESSAGE
011770  004737  014532                  JSR     PC,ERMES        ;DISPLAY THE ERROR MESSAGE
011774  000137  012102                  JMP     TP027           ;AND GO ON TO THE NEXT TEST
012000  020027  000157          4$:     CMP     R0,#157         ;GONE ALL THE WAY YET?
012004  001360                          BNE     2$              ;IF NOT GO BACK AND PAN SOME MORE
012006  062777  000004  167014          ADD     #4,@IDTP        ;TAKE ONE LINE FROM THE TOP OF THE DISPLAY LIST
012014  012777  000146  167004          MOV     #146,@DCSR      ;SET PAN TO 0
012022  027727  167002  012066          CMP     @IDTP,#7$       ;DISPLAY SAME AS INITIAL?
012030  001003                          BNE     5$              ;IF NOT LEAVE IT ALONE
012032  012777  012056  166770          MOV     #6$,@IDTP       ;IF SO RESET IT SO WE DONT RUN OUT OF ROOM
012040  012700  000145          5$:     MOV     #145,R0
012044  005337  000766                  DEC     TEMP
012050  001316                          BNE     2$
012052  000137  012102                  JMP     TP027           ;GO ON TO THE NEXT TEST(PAN DOWN)
012056  003660                  6$:     3660
012060  024021                          MSG12
012062  003761                          3761
012064  024611                          MSG17
012066  003660                  7$:     3660
012070  024021                          MSG12
012072  003761                          3761
012074  024611                          MSG17
012076  100000                          100000
012100  012056                  8$:     6$


                                .SBTTL  TEST PANNING DOWN (FAST)
                                ;TP027  THIS IS A TEST OF THE PAN OFFSET BITS. PANNING DOWNWARDS IS
                                ;       DONE AT A REASONABLY FAST RATE. THE PANNING SHOULD LOOK SMOOTH.
                                ;       IF IT DOESNT, THAT INDICATES THAT THE BITS ARE NOT WORKING PROPERLY.
012102  000004                  TP027:  SCOPE
012104  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
012110  012737  012116  000606          MOV     #1$,$LPADR      ;SETUP THE ERROR LOOPBACK ADDRESS
012116  012737  000140  000766  1$:     MOV     #140,TEMP
012124  012706  000600                  MOV     #600,SP         ;INIT THE STACK
012130  012777  012330  166672          MOV     #9$,@IDTP       ;DISPLAY THE PAN MESSAGE
012136  012700  000160                  MOV     #160,R0         ;PAN REGISTERS FIRST VALUE+1
012142  005300                  2$:     DEC     R0              ;PAN FURTHER
012144  010077  166656                  MOV     R0,@DCSR        ;SET PAN BITS
012150  106427  000000                  MTPS    #0              ;MAKE SURE INTERRUPTS ARE ALLOWED
012154  005037  000772                  CLR     STLCNT          ;ZERO OUT A COUNTER LOCATION
012160  005037  001050                  CLR     INTCNT          ;ZERO INTERRUPT SWITCH
012164  023737  000764  001050  3$:     CMP     DOWNFA,INTCNT   ;GOT ENOUGH DISPLAY INTERRUPTS YET?
012172  001420                          BEQ     4$              ;IF SO GO SERVICE
012174  005237  000772                  INC     STLCNT          ;IF NOT, IS ONE LONG OVERUE?
012200  001371                          BNE     3$              ;IF NOT WAIT MORE
012202  004737  014136                  JSR     PC,CLRTUB       ;OVERDUE, CLEAR OUT THE REGULAR DISPLAY TABLE
012206  012777  015760  166614          MOV     #DISTBL,@IDTP   ;SET TO DISPLAY FROM IT
012214  004737  015102                  JSR     PC,FXTST        ;DISPLAY TEST #
```

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1637  012220  012705  026161                  MOV     #MSG28,R5       ;SETUP THE ADDRESS OF THE ERROR MESSAGE
1638  012224  004737  014532                  JSR     PC,ERMES        ;DISPLAY THE ERROR MESSAGE
1639  012230  000137  012350                  JMP     T0030           ;AND GO ON TO THE NEXT TEST
1640  012234  020027  000146          48$:    CMP     R0,#146         ;GONE ALL THE WAY YET?
1641  012240  001343                          BNE     2$              ;IF NOT GO BACK AND PAN SOME MORE
1642  012242  162777  000004  166560          SUB     #4,@IDTP        ;ADD ONE LINE TO THE TOP OF THE DISPLAY LIST
1643  012250  012777  000157  166550          MOV     #157,@DCSR      ;SET PAN TO 0
1644  012256  027727  166546  012324          CMP     @IDTP,#68       ;DISPLAY SAME AS INITIAL?
1645  012264  001003                          BNE     5$              ;IF NOT LEAVE IT ALONE
1646  012266  012777  012334  166534          MOV     #78,@IDTP       ;IF SO RESET IT SO WE DONT RUN OUT OF ROOM
1647  012274  012700  000160          5$:     MOV     #160,R0
1648  012300  005337  000766                  DEC     TEMP
1649  012304  001316                          BNE     2$
1650  012306  004737  014136                  JSR     PC,CLRTUB       ;CLEAR OUT THE REGULAR DISPLAY TABLE
1651  012312  012777  015760  166510          MOV     #DISTBL,@IDTP   ;DISPLAY FROM IT
1652  012320  000137  012350                  JMP     T0030           ;GO ON TO THE NEXT TEST
1653  012324  003660                  6$:     3660
1654  012326  024021                          MSG12
1655  012330  003761                  9$:     3761
1656  012332  024611                          MSG17
1657  012334  003660                  7$:     3660
1658  012336  024021                          MSG12
1659  012340  003761                          3761
1660  012342  024611                          MSG17
1661  012344  100000                          100000
1662  012346  012124                  8$:     6$
1663
1664
1665
1666
1667                                  .SBTTL  PUT A GRID ON THE SCREEN TO CHECK FOR PROPPER ALIGNMENT
1668                                  ;T0030  PUT A GRID ON THE SCREEN TO CHECK FOR PROPPER
1669                                  ;       ALIGNMENT AND LINIERITY
1670  012350  000004                  T0030:  SCOPE
1671  012352  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1672  012356  012737  012422  000606          MOV     #18,$LPADR      ;IF ERROR, AND SWR<13>=0, THEN LOOP BACK TO 18
1673  012364  012777  022342  166442          MOV     #PLUS5,@DSP     ;ADDRESS OF THE "+" FOR CODE 21
1674  012372  012777  100146  166426          MOV     #100146,@DCSR   ;LOAD CHARACTER SET
1675  012400  012705  022412                  MOV     #ENDPLS,R5      ;SETUP END OF CHAR SET ADDRESS
1676  012404  004737  015254                  JSR     PC,TSTLOD       ;WAIT FOR LOADING TO BE DONE
1677  012410  004737  015002                  JSR     PC,LSTALL       ;WAIT, SO RESULTS CAN BE SEEN
1678  012414  012777  012432  166406          MOV     #38,@IDTP       ;DISPLAY GRID
1679  012422  004737  015002          18$:    JSR     PC,LSTALL       ;AND WAIT SO OPERATOR CAN SEE IT
1680  012426  000137  012442                  JMP     T0031
1681  012432  003660                  38$:    3660
1682  012434  026570                          MSG34
1683  012436  100000                          100000
1684  012440  012432                          38
1685
1686
1687                                  .SBTTL  PUT ANOTHER GRID ON THE SCREEN TO CHECK FOR PROPPER ALIGNMENT
1688                                  ;T0031  THIS IS ANOTHER GRID EXCEPT WITH LARGER BOXES
1689                                  ;       IN THIS TEST A GRID IS DISPLAYED. ALL OF THE BOXES
1690                                  ;       SHOULD HAVE APPROXAMATLY THE SAME SIZE AND SHOULD HAVE
1691                                  ;       REASONABLY STRAIGHT SIDES
1692  012442  000004                  T0031:  SCOPE
```

```
1693  012444  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1694  012450  012737  012514  000606          MOV     #18,$LPADR      ;IF ERROR, AND SWR<13>=0, THEN LOOP BACK TO 18
1695  012456  012777  022342  166350          MOV     #PLUS5,@DCP     ;ADDRESS OF THE "+" FOR CODE 21
1696  012464  012777  100146  166334          MOV     #100146,@DCSR   ;LOAD CHARACTER SET
1697  012472  012705  022412                  MOV     #ENDPIS,R5      ;SETUP END OF CHAR SET ADDRESS
1698  012476  004737  015254                  JSR     PC,TSTLOD       ;WAIT FOR LOADING TO BE DONE
1699  012502  004737  015002                  JSR     PC,LSTALL       ;WAIT, SO RESULTS CAN BE SEEN
1700  012506  012777  012524  166314          MOV     #38,@IDTP       ;DISPLAY GRID
1701  012514  004737  015002          18$:    JSR     PC,ISTALL       ;AND WAIT SO OPERATOR CAN SEE IT
1702  012520  000137  012554                  JMP     TST32
1703  012524  003657                  38$:    3657
1704  012526  026570                          MSG34
1705  012530  003657                          3657
1706  012532  030206                          MSG43
1707  012534  003657                          3657
1708  012536  030206                          MSG43
1709  012540  003657                          3657
1710  012542  030206                          MSG43
1711  012544  003657                          3657
1712  012546  030206                          MSG43
1713  012550  100000                          100000
1714  012552  012524                          38
1715
1716
1717
1718                                  .SBTTL  END OF PASS INDICATING
1719  012554  000004                  TST32:  SCOPE
1720  012556  004737  015102                  JSR     PC,FXTST        ;CHANGE TEST # TO ASCII IN CASE IT IS NEEDED
1721  012562  012777  016100  166240          MOV     #TRL23,@IDTP    ;NEW POINTER TO NOTHING
1722  012570  004737  015172                  JSR     PC,MSTALL       ;WAIT FOR A NOTHING DISPLAY
1723  012574  012777  000046  166224          MOV     #46,@DCSR       ;TURN OFF THE DISPLAY
1724  012602  004737  015172                  JSR     PC,MSTALL       ;NO GLITCHES
1725  012606  000005                          RESET                   ;TURN EVERYTHING OFF
1726  012610  013737  000612  000766          MOV     $ERTTL,TEMP     ;GET ERROR TOTAL FOR ALL PASSES
1727  012616  012705  025745                  MOV     #MSG25Y,R5      ;POINTER TO ASCII
1728  012622  004737  015504                  JSR     PC,BIOCT        ;CONVERT TOTAL # TO ASCII
1729  012626  013737  001056  000766          MOV     ERRPAS,TEMP     ;GET # OF ERRORS FOR THIS PASS
1730  012634  012705  025706                  MOV     #MSG25,R5       ;SETUP ADDRESS OF 6 BYTES
1731  012640  004737  015504                  JSR     PC,BIOCT        ;CHANGE # OF ERRORS TO ASCII
1732  012644  012705  025734                  MOV     #MSX25,R5       ;SETUP ADDR TO PUT ASCII OF PASS COUNT
1733  012650  013737  000600  000766          MOV     $PASS,TEMP      ;GET PASS COUNT #
1734  012656  004737  015504                  JSR     PC,BIOCT        ;CONVERT IT INTO ASCII
1735  012662  012777  013012  166140          MOV     #EOPTRL,@IDTP   ;SETUP POINTER TO DISPLAY TABLE
1736  012670  012777  000146  166130          MOV     #146,@DCSR      ;TURN ON THE DISPLAY
1737  012676  012705  025706                  MOV     #MSG25,R5       ;GET ADDR OF END OF PASS MESSAGE
1738  012702  004737  014722                  JSR     PC,TTYOUT       ;DISPLAY IT
1739  012706  012777  016110  166120          MOV     #CHARS,@DCP     ;GET THE ADDRESS OF THE CHARACTER SET
1740  012714  012777  100146  166104          MOV     #100146,@DCSR   ;START LOADING IT
1741  012722  004737  015002                  JSR     PC,LSTALL       ;GIVE IT TIME TO LOAD
1742
1743
1744                                  .SBTTL  END OF PASS ROUTINE
1745
1746                                  ;;++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
1747                                  ;+INCREMENT THE PASS NUMBER ($PASS)
1748                                  ;+IF THERES A MONITOR GO TO IT
```

```
1749                                            ;*IF THERE ISN'T JUMP TO TRAP
1750
1751  012726                                    $EOP:
1752  012726  000004                                   SCOPE
1753  012730  005037  000602                           CLR     $TSTNM          ;;ZERO THE TEST NUMBER
1754  012734  005037  000722                           CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
1755  012740  005237  000600                           INC     $PASS           ;;INCREMENT THE PASS NUMBER
1756  012744  042737  100000  000600                   BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
1757  012752  005327                                   DEC     (PC)+           ;;LOOP?
1758  012754  000001                              $EOPCT: .WORD   1
1759  012756  003413                                   BGT     $DOAGN          ;;YES
1760  012760  012737                                   MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
1761  012762  000001                              $ENDCT: .WORD   1
1762  012764  012754                                   $EOPCT
1763  012766  013700  000042                     $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
1764  012772  001405                                   BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
1765  012774  000005                                   RESET                   ;;CLEAR THE WORLD
1766  012776  004710                              $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
1767  013002  000240                                   NOP                     ;;SAVE ROOM
1768  013004  000240                                   NOP                     ;;FOR
1769  013006  000240                                   NOP                     ;;ACT11
1770  013010                                    $DOAGN:
1771  013010  000137                                   JMP     @(PC)+          ;;RETURN
1772  013014  001514                              $RTNAD: .WORD   TRAP
1773  013016  003700                              EOPTBL: 3700
1774  013020  025726                                   MSG25
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1780
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```
                                    .SBTTL  SPECIAL TEST FOR SCOPE LOOPING
                                    ;T0036  WRITE A CHARACTER, IF "XDISP" EQUALS 0(DEFAULT), WRITE
                                    ;       THE CHARACTER OVER AND OVER AND OVER, DO NOTHING BUT WAIT FOR IT TO BE  FINISHED
                                    ;       IF "XDISP" IS NOT EQUAL TO 0, THE CHARACTER WILL BE DISPLAYED AFTER IT IS LOADED
                                    ;       BEFORE STARTING SET LOCATION "XCODE" TO THE VALUE OF THE CODE YOU WISH TO WRITE
                                    ;       THE DEFAULT IS "A"(CODE 101)
013016                              T0036:
013016  106427  000340              XSTART: MTPS    #340            ;NO INTERRUPTS
013022  012706  001000                      MOV     #1000,SP        ;SETUP STACK POINTER
013026  004737  013654                      JSR     PC,GITCOD       ;GET ADDRESS OF STUFF TO LOAD
                                    ;HERE IS THE ACTUAL WRITE LOOP
013032  012777  013602  165774      10:     MOV     #SINCHR,@DCP    ;SETUP ADDRESS OF CHARACTER TO LOAD
013040  012777  100000  165760              MOV     #100000,@DCSR   ;SET LOAD BIT IN CONTROL REG
013046  027727  165762  013652      20:     CMP     @DCP,#ENDSIN    ;POINTER AT END OF CHAR DESCRIBING WORDS YET?
013054  001374                              BNE     20              ;IF NOT, WAIT TILL IT IS
013056  005737  013112                      TST     XDISP           ;SHOULD WE NOW DISPLAY THE CHARACTER?
013062  001763                              BEQ     10              ;NOT IF THE "XDISP" SWITCH IS 0
                                    ;
013064  012777  013104  165736              MOV     #XDSPTR,@IDTP   ;POINT POINTER AT THE DISPLAY TABLE
013072  012777  000146  165726              MOV     #146,@DCSR      ;START UP THE DISPLAY
                                    ;
013100  000137  013100          30:     JMP     30              ;JUST DISPLAY, DO NOTHING ELSE
                                                                    ;WE ARE NOW DISPLAYING THE SPECIFIED CHARACTER,
                                                                    ;PLUS AN END OF SCREEN CHARACTER
                                    ;
                                    ;
013104  003775                      XDSPTR: 3775                    ;2 CHARACTERS
013106  013110                              XCODE                   ;POINTS AT THE SPECIFIED CODE
                                    ;
                                    ;USER SETTABLE SWITCHES
013110  000101                      XCODE:  000101                  ;CODE # TO WRITE.(DEFAULT "A")
013112  000000                      XDISP:  000000                  ;SET THIS TO A 1 TO MAKE THE CHARACTER BE DISPLAYED
                                                                    ;LEAVE IT 0 TO MAKE THE CHARACTER BE LOADED OVER AND OVE
```

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1853
1854
```

```
                                        .SBTTL  SPECIAL TEST FOR SCOPE LOOPING
                                        ;T0037  YOU CAN DISPLAY ANY CHARACTER UP TO 80 TIMES PER LINE, AND UP TO 24 LINES PER SC
                                        ;       TO DO THIS SIMPLY SET LOCATION "YCODE" TO THE CHARACTER CODE YOU WISH TO DISPLAY
                                        ;       THEN SET LOCATION "YBLOCK" TO THE # OF TIMES THE CHARACTER SHOULD APPEAR ON EACH
                                        ;       THEN SET LOCATION "YLINES" TO THE # OF LINES YOU WANT DISPLAYED
013114  000101                  YCODE:  000101                  ;CODE, DEFAULT IS "A"
013116  000001                  YBLOCK: 000001                  ;# OF CHARS PER LINE, DEFAULT IS 1
013120  000002                  YLINES: 000002                  ;# OF LINES, DEFAULT IS 2

                                        ;       AFTER SETTING THE ABOVE, START HERE
013122                          T0037:
013122  106427  000340          YSTART: MTPS    #340            ;NO INTERRUPTS
013126  012706  001000                  MOV     #6000,SP        ;SETUP THE STACK POINTER
013132  013737  013114  013110          MOV     YCODE,XCODE
013140  004737  013654                  JSR     PC,GITCOD       ;GET ADDRESS OF CHARACTER TO LOAD
013144  012777  013602  165662          MOV     #SINCHR,@DCP    ;SET ADDR OF CHAR
013152  012777  100006  165646          MOV     #100006,@DCSR   ;START IT LOADING
013160  027727  165650  013652  10:     CMP     @DCP,#ENDBIN    ;LOADED YET?
013166  001374                          BNE     10              ;WAIT TILL IT IS
                                        ;THE CHARACTER HAS BEEN LOADED.

                                        ;NOW BUILD TEXT AT LOCATION "MSGY"
013170  013700  013116                  MOV     YBLOCK,R0
013174  012701  013312                  MOV     #MSGY,R1
013200  112721  013114          30:     MOVB    YCODE,(R1)+     ;ADD A CHAR TO THE TEXT BLOCK
013204  005300                          DEC     R0
013206  001374                          BNE     30              ;LONG ENOUGH BLOCK YET? IF NOT, GO BACK AND ADD MORE
013210  112721  000001                  MOVB    #1,(R1)+        ;END THE BLOCK WITH A EOL CHAR
                                        ;THE TEXT THAT WE WILL DISPLAY ON EACH LINE IS NOW SITTING AT LOCATION "MSGY"

                                        ;NOW BUILD A DISPLAY TABLE AT LOCATION "YDSPTB"
013214  013700  013116                  MOV     YBLOCK,R0       ;GET # OF CHARS/LINE
013220  005200                          INC     R0              ;ADD 1 FOR EOL
013222  005100                          COM     R0              ;MAKE IT NEGATIVE
013224  042700  174000                  BIC     #174000,R0      ;CLEAR OUT THE MODE BITS
013230  012704  000031                  MOV     #25.,R4         ;COUNT IN CASE "YLINES" IS TOO BIG
013234  013701  013120                  MOV     YLINES,R1       ;LINE COUNT
013240  012705  013436                  MOV     #YDSPTBL,R5     ;POINTER AT THE DISPLAY TABLE
013244  010025                  50:     MOV     R0,(R5)+        ;PUT A COUNT INTO THE DISPLAY TABLE
013246  012725  013312                  MOV     #MSGY,(R5)+     ;PUT A POINTER TO THE TEXT IN ALSO
013252  005304                          DEC     R4              ;MORE THAN 24 LINES SPECIFIED?
013254  001406                          BEQ     70              ;OH NO YOU DONT.
013256  005301                          DEC     R1              ;DONE SPECIFIED # OF LINES YET?
013260  001371                          BNE     50              ;IF NOT, GO BACK AND PUT ANOTHER IN THE DISPLAY TABLE
013262  012725  003776                  MOV     #3776,(R5)+     ;YES. POLISH OFF THE TABLE
013266  012725  013434                  MOV     #MSGYA,(R5)+    ;WITH A EOS CHAR
                                        ;THE DISPLAY TABLE IS NOW SET UP

                                        ;ALL THER IS LEFT TO DO NOW IS TO START THE DISPLAY
013272  012777  013436  165530  70:     MOV     #YDSPTB,@IDTP   ;POINTER AT DISPLAY TABLE
013300  012777  000146  165520          MOV     #146,@DCSR      ;START UP THE DISPLAY
                                        ;WE SHOULD BE DISPLAYING ANY MOMENT NOW.

                                        ;GO INTO A DO NOTHING LOOP WHILE THE DISPLAY RUNS
013306  000137  013306          90:     JMP     90              ;JUMP HERE FOREVER, OR TILL MANUALY STOPPED
```

```
1911
1912  013312  020040  020040  020040  MSGY:   .ASCII  /
1913  013320  020040  020040  020040
1914  013326  020040  020040  020040
1915  013334  020040  020040  020040
1916  013342  020040  020040  020040
1917  013350  020040  020040  020040
1918  013356  020040  020040  020040
1919  013364  020040  020040  020040
1920  013372  020040  020040  020040
1921  013400  020040  020040  020040
1922  013406  020040  020040  020040
1923  013414  020040  020040  020040
1924  013422  020040  020040  020040
1925  013430  020040    040
1926          013434                .EVEN
1927  013434  000000                MSGYA:  .WORD   000000                ;THIS IS THE END OF SCREEN TEXT
1928  013436  000031                YDSPTR:
1929  013436  000000                        000000                  ;COUNT
1930  013440  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1931  013442  000000                        000000                  ;COUNT
1932  013444  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1933  013446  000000                        000000                  ;COUNT
1934  013450  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1935  013452  000000                        000000                  ;COUNT
1936  013454  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1937  013456  000000                        000000                  ;COUNT
1938  013460  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1939  013462  000000                        000000                  ;COUNT
1940  013464  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1941  013466  000000                        000000                  ;COUNT
1942  013470  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1943  013472  000000                        000000                  ;COUNT
1944  013474  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1945  013476  000000                        000000                  ;COUNT
1946  013500  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1947  013502  000000                        000000                  ;COUNT
1948  013504  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1949  013506  000000                        000000                  ;COUNT
1950  013510  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1951  013512  000000                        000000                  ;COUNT
1952  013514  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1953  013516  000000                        000000                  ;COUNT
1954  013520  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1955  013522  000000                        000000                  ;COUNT
1956  013524  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1957  013526  000000                        000000                  ;COUNT
1958  013530  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1959  013532  000000                        000000                  ;COUNT
1960  013534  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1961  013536  000000                        000000                  ;COUNT
1962  013540  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1963  013542  000000                        000000                  ;COUNT
1964  013544  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
1965  013546  000020                        000020                  ;COUNT
1966  013550  013312                        MSGY                    ;POINTS TO TEXT BLOCKS
```

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1967  013552  000000                  000000                  ;COUNT
1968  013554  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1969  013556  000000                  000000                  ;COUNT
1970  013560  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1971  013562  000000                  000000                  ;COUNT
1972  013564  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1973  013566  000000                  000000                  ;COUNT
1974  013570  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1975  013572  000000                  000000                  ;COUNT
1976  013574  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1977  013576  000000                  000000                  ;COUNT
1978  013600  013312                  MSGY                    ;POINTS TO TEXT BLOCKS
1979
1980
1981  013602  000003          SINCHR: .WORD   3
1982  013604  000000          .WORD   0
1983  013606  000003          .WORD   3
1984  013610  000000          .WORD   0
1985  013612  000000          .WORD   0
1986  013614  000000          .WORD   0
1987  013616  000000          .WORD   0
1988  013620  000000          .WORD   0
1989  013622  000003          .WORD   3
1990  013624  000000          .WORD   0
1991  013626  000000          .WORD   0
1992  013630  000000          .WORD   0
1993  013632  000000          .WORD   0
1994  013634  000000          .WORD   0
1995  013636  000000          .WORD   0
1996  013640  000000          .WORD   0
1997  013642  000000          .WORD   0
1998  013644  000000          .WORD   0
1999  013646  000000          .WORD   0
2000  013650  000000          .WORD   0
2001  013652  000000          ENDSIN: .WORD   0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015  013654  012700  016110  GITCOD: MOV     #CHARS,R0
2016  013660  012037  000766  1$:     MOV     (R0)+,TEMP
2017  013664  123737  013110  000767  CMPB    XCODF,TEMP+1
2018  013672  001406          BEQ     2$
2019  013674  020027  022340  CMP     R0,#ENDCHR
2020  013700  001367          BNE     1$
2021  013702  012700  016730  MOV     #SPCHAR,R0
2022  013706  000402          BR      3$
```

```
013710  162700  000002      2$:     SUB     #2,R0
013714  012701  000024      3$:     MOV     #20.,R1
013720  012702  013602              MOV     #SINCHR,R2
013724  112022              4$:     MOVB    (R0)+,(R2)+     ;XFR 1
013726  113722  013110              MOVB    XCODE,(R2)+     ;XFR CODE
013732  005200                      INC     R0
013734  005301                      DEC     R1
013736  001372                      BNE     4$
013740  005022                      CLR     (R2)+
013742  105037  013111              CLRB    XCODE+1         ;EOS CHAR
013746  000207                      RTS     PC
```

H4

```
                                        .SBTTL  TUBE OUTPUT SUBROUTINE
                                        ;SUBROUTINE TO TAKE TEXT, COUNT CHARACTERS & HAVE EACH LINE
                                        ;INSERTED INTO THE DISPLAY QUEUE
                                        ;CALL WITH ADDRESS OF MESSAGE IN R5
014750  012777  015760  165052  TUBOUT: MOV     #DISTBL,@IDTP   ;SETUP DISPLAY TABLE ADDRESS
014756  012777  000146  165042          MOV     #146,@DCSR      ;MAKE SURE DISPLAY IS GOING
014764  010546                          MOV     R5,-(SP)        ;SAVE ADDR OF MESSAGE
014766  010537  001046          18:     MOV     R5,TURTM1       ;MAKE A WORKING COPY
014772  012737  003777  001036          MOV     #3777,CHRCNT    ;ZERO THE CHARACTER COUNT
015000  112537  001044          28:     MOVB    (R5)+,TUBTMP    ;GET A CHARACTER
015004  001012                          BNE     48              ;IS FINAL END OF MESSAGE?
015006  023727  001036  003777          CMP     CHRCNT,#3777    ;YES, FIND OUT HOW MANY CHARACTERS ARE IN IT
015014  001402                          BEQ     38              ;ANY AT ALL?
015016  004737  014056                  JSR     PC,INSERT       ;YES, INSERT THEM INTO THE BUFFER
015022  012605          38:     MOV     (SP)+,R5        ;RESTORE THE ADDRESS OF THE MESSAGE
015024  005037  000754                  CLR     SPMODE          ;CLEAR OUT SPECIAL MODE BITS
015030  000207                          RTS     PC              ;RETURN
015032  023727  001044  000012  48:     CMP     TUBTMP,#12      ;END OF A LINE?
015040  001003                          BNE     58              ;IF NOT, GO FIX THE CHARACTER COUNT
015042  004737  014056                  JSR     PC,INSERT       ;IF IT IS THE END PUT THE LINE INTO THE MESSAGE BUFFER
015046  000747                          BR      18              ;AND SETUP TO DO THE SAME FOR THE OTHER LINES IN THE MES
015050  005337  001036          58:     DEC     CHRCNT          ;ADD 1 TO THE CHARACTER COUNT
015054  000751                          BR      28              ;GO COUNT THE REST OF THE CHARACTERS


                                        .SBTTL  DISPLAY TABLE ENRTY INSERTER ROUTINE
                                        ;SUBROUTINE TO ADD A NEW ENTRY TO THE DISPLAY QUEUE
                                        ;CALL WITH CHARACTER COUNT IN CHRCNT
                                        ;AND WITH THE TEXT ADDRESS IN TUBTM1
015056  010546          INSERT: MOV     R5,-(SP)        ;COMMANDEER 3 REGISTERS
015060  010446                  MOV     R4,-(SP)        ;FIRST SAVE THIER CONTENTS
015062  010346                  MOV     R3,-(SP)        ;SO THAT WE CAN RESTORE THEM LATER
015064  053737  000754  001036  BIS     SPMODE,CHRCNT   ;SET ANY SPECIFIED MODE BITS
015072  012705  000023          MOV     #19.,R5         ;SETUP A COUNT OF 19 SHIFTS
015076  012704  015760          MOV     #DISTBL,R4      ;DISPLAY TABLE ADDRESS IN R4
015102  012703  015764          MOV     #DISTBL+4,R3    ;ADDRESS OF 2ND ENTRY OF DISPLAY TABLE
015106  012324          18:     MOV     (R3)+,(R4)+     ;SHIFT THE COUNT BY 1 ENTRY
015110  012324                  MOV     (R3)+,(R4)+     ;SHIFT THE ADDRESS BY 1 ENTRY
015112  005305                  DEC     R5              ;DONE 10 ENTRYS YET?
015114  001374                  BNE     18              ;IF NOT DO SOME MORE
015116  013724  001036          MOV     CHRCNT,(R4)+    ;YES WE HAVE DONE 10, PUT NEW CHAR COUNT INTO TABLE
015122  013724  001046          MOV     TURTM1,(R4)+    ;PUT NEW TEXT POINTER INTO THE TABLE
015126  012603                  MOV     (SP)+,R3        ;RESTORE THE REGISTERS
015130  012604                  MOV     (SP)+,R4        ;THAT WE USED SO THAT WE
015132  012605                  MOV     (SP)+,R5        ;DONT CONFUSE OTHER ROUTINES
015134  000207          28:     RTS     PC              ;RETURN


                                        .SBTTL  DISPLAY TABLE CLEARING ROUTINE
                                        ;SUBROUTINE TO CLEAR OUT THE DISPLAY TABLE
015136  012777  000146  164662  CLRTUB: MOV     #146,@DCSR      ;TELL THE DISPLAY TO GO
015144  004737  015226                  JSR     PC,SSTALL       ;WAIT FOR IT TO STOP
015150  010046                          MOV     R0,-(SP)        ;SAVE R0
015152  012700  015760                  MOV     #DISTBL,R0      ;SET ADDR OF DISPLAY TABLE
015156  012720  003740          18:     MOV     #3740,(R0)+     ;PUT COUNT IN THE TABLE
```

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2091  014162  012720  027552          MOV     #MSG37,(R0)+    ;PUT MESSAGE ADDRESS IN THE TABLE
2092  014166  020027  016074          CMP     R0,#TBL22       ;ALMOST FULL?
2093  014172  001371                  BNE     1$              ;IF NOT GO BACK AND FILL IT SOMORE
2094  014174  012720  003766          MOV     #3766,(R0)+     ;ALMOST FULL
2095  014200  012720  027552          MOV     #MSG37,(R0)+    ;THIS SHOULD FILL IT
2096  014204  012600                  MOV     (R6)+,R0        ;RESTORE R0
2097  014206  000207                  RTS     PC              ;RETURN
2098                                .SBTTL  SCOPE HANDLER ROUTINE
2099
2100                                ;;*************************************************************
2101                                ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS, IT WILL INCREMENT
2102                                ;*AND LOAD THE TEST NUMBER(STSTNM) INTO THE DISPLAY REG,(DISPLAY<7:0>)
2103                                ;*AND LOAD THE ERROR FLAG (SERFLG) INTO DISPLAY<15:08>
2104                                ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
2105                                ;*SW14=1        LOOP ON TEST
2106                                ;*SW11=1        INHIBIT ITERATIONS
2107                                ;*SW09=1        LOOP ON ERROR
2108                                ;*SW08=1        LOOP ON TEST IN SWR<7:0>
2109                                ;*CALL
2110                                ;*      SCOPE           ;;SCOPE=IOT
2111
2112  014210                        $SCOPE:
2113  014210  032777  010000  164422          BIT     #10000,@SWR     ;FIND OUT IF SWITCH REG BIT 12 IS SET
2114  014216  001402                  BEQ     14$             ;IF NOT DONT STALL
2115  014220  004737  015002          JSR     PC,LSTALL       ;IT IS SET, STALL FOR A SECOND OR SO
2116  014224  105777  164414          14$:    TSTB    @$TKS           ;CHAR IN ADDITIONAL KEY BUFFER?
2117  014230  100013                  BPL     77$             ;IF NOT
2118  014232  017746  164410          MOV     @$TKB,-(SP)     ;GET CHARS VALUE
2119  014236  042716  177600          BIC     #177600,(SP)    ;CLEAR ITS PARITY BIT
2120  014242  022627  000022          CMP     (SP)+,#22       ;IS A ^R CODE IN THE ADITIONAL KEYBOARD BUFFER?
2121  014246  001004                  BNE     77$             ;IF NOT, JUST GO ABOUT OUR BUSINESS
2122  014250  005037  000602          CLR     $TSTNM          ;ZERO THE TEST #
2123  014254  000137  001514          JMP     T0000           ;YES THERE IS A ^R THERE, RESTART
2124  014260  000240                  77$:    NOP
2125  014262  032777  040000  164350  1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
2126  014270  001111                  BNE     $OVER           ;;YES IF SW14=1
2127                                ;;;;;;START OF CODE FOR THE XOR TESTER;;;;;
2128  014272  000416                  $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
2129                                                                ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
2130  014274  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
2131  014300  012737  014320  000004          MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
2132  014306  005737  177060                  TST     @#177060        ;;TIME OUT ON XOR?
2133  014312  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
2134  014316  000463                  BR      $SVLAD          ;;GO TO THE NEXT TEST
2135  014320  022626                  5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
2136  014322  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
2137  014326  000423                  BR      7$              ;;LOOP ON THE PRESENT TEST
2138  014330                        6$:;;;;;END OF CODE FOR THE XOR TESTER;;;;;
2139  014330  032777  000400  164302          BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
2140  014336  001404                  BEQ     2$              ;;BR IF NO
2141  014340  127737  164274  000602          CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
2142  014346  001462                  BEQ     $OVER           ;;BR IF YES
2143  014350  105737  000603          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
2144  014354  001421                  BEQ     3$              ;;BR IF NO
2145  014356  123737  000615  000603          CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
2146  014364  101015                  BHI     3$              ;;BR IF NO
```

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2147  014366  032777  001000  164244          BIT     $BIT09,@SWR     ;;LOOP ON ERROR?
2148  014374  001404                          BEQ     4$              ;;BR IF NO
2149  014376  013737  000610  000606  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
2150  014404  000443                          BR      $OVER
2151  014406  105037  000603          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
2152  014412  005037  000722                  CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
2153  014416  000415                          BR      1$              ;;ESCAPE TO THE NEXT TEST
2154  014420  032777  004000  164212  3$:     BIT     $BIT11,@SWR     ;;INHIBIT ITERATIONS?
2155  014426  001011                          BNE     1$              ;;BR IF YES
2156  014430  005737  000600                  TST     $PASS           ;;IF FIRST PASS OF PROGRAM
2157  014434  001406                          BEQ     1$              ;;      INHIBIT ITERATIONS
2158  014436  005237  000604                  INC     $ICNT           ;;INCREMENT ITERATION COUNT
2159  014442  023737  000722  000604          CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
2160  014450  002021                          BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
2161  014452  012737  000001  000604  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
2162  014460  013737  014530  000722          MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
2163  014466  105237  000602          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
2164  014472  011637  000606                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
2165  014476  011637  000610                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
2166  014502  005037  000724                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
2167  014506  112737  000001  000615          MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
2168  014514  013777  000602  164120  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
2169  014522  013716  000606                  MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
2170  014526  000002                          RTI                     ;;FIXES PS
2171  014530  000001                  $MXCNT: 1                       ;;MAX. NUMBER OF ITERATIONS
2172                                  .EVEN
2173                                  .SBTTL  SUBROUTINE FOR REPORTING ERROR MESSAGES
2174                                  ;THIS SUBROUTINE DISPLAYS ERROR MESSAGES
2175                                  ;UNLESS THE SOFTWARE SWITCH REGISTER BIT  13 IS SET, IT PUTS THE
2176                                  ;ERROR MESSAGE POINTED TO BY R5 INTO THE REGULAR
2177                                  ;DISPLAY TABLE, THEN SENDS THE MESSAGE TO ANY ADDITIONAL TERMINAL,
2178                                  ;IF SOFTWARE SWITCH REGISTER BIT 10 IS SET, IT ALSO RINGS THE ADDITIONAL
2179                                  ;TERMINALS BELL, AND CAUSES THE VT71 BUZZER TO BUZZ
2180  014532  010546                  ERRMES: MOV     R5,-(SP)        ;SAVE R5 CONTENTS
2181  014534  105237  000603          1$:     INCB    $ERFLG          ;SET ERROR FLAG
2182  014540  001775                          BEQ     1$              ;MAKE SURE IT IS NOT 0
2183  014542  005237  000612                  INC     $ERTTL          ;ADD 1 TO THE ERROR COUNT
2184  014546  032777  002000  164064          BIT     #BIT10,@SWR     ;IS BIT 10 SET
2185  014554  001406                          BEQ     2$              ;IF NOT DONT RING BELL ON ERROR
2186  014556  012705  000726                  MOV     #$BELL,R5       ;IF BIT10 IS SET
2187  014562  004737  014722                  JSR     PC,TTYOUT       ;RING THE BELL
2188  014566  004737  014662                  JSR     PC,BUZZ         ;MAKE THE VT71 BUZZER BUZZ
2189  014572  032777  020000  164040  2$:     BIT     #20000,@SWR     ;INHIBIT ERROR TYPEOUTS?
2190  014600  001402                          BEQ     3$              ;
2191  014602  012605                          MOV     (SP)+,R5        ;YES. RESTORE R5
2192  014604  000207                          RTS     PC              ;AND RETURN
2193  014606  016637  000002  000766  3$:     MOV     2(SP),TEMP      ;GET ERROR PC
2194  014614  012705  030611                  MOV     #^B$G54A,R5     ;SETUP ADDRESS TO PUT ASCII VALUE OF ERROR PC
2195  014620  004737  015504                  JSR     PC,BIOCT        ;CONVERT ERROR PC VALUE TO ASCII
2196  014624  012705  030602                  MOV     #^B$G54,R5      ;SETUP ADDR OF PC PRINTOUT
2197  014630  004737  014752                  JSR     PC,^BGOUT       ;DISPLAY ERROR PC VALUE
2198  014634  012605                          MOV     (SP)+,R5        ;GET ERROR MESSAGE ADDRESS
2199  014636  004737  014752                  JSR     PC,^BGOUT       ;DISPLAY ERROR MESSAGE
2200  014642  004737  015002                  JSR     PC,LSTALL       ;GIVE TIME FOR IT TO BE SEEN
2201  014646  032777  100000  163764          BIT     #BIT15,@SWR     ;HALT ON ERROR BIT SET?
2202  014654  001401                          BEQ     CONER           ;IF NOT, DONT HALT!
```

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                                ;SUBROUTINE FOR REPORTING ERROR MESSAGES

014656  000000          HALTER: HALT                    ;IT IS SET SO WE  DO  HALT
014660  000207          CONER:  RTS     PC

                        .SBTTL  BUZZ NOISE MAKING SUBROUTINE
                        ;THIS SUBROUTINE CAUSES THE VT71 BUZZER TO EMIT A BUZZ
014662  010046          BUZZ:   MOV     R0,-(SP)        ;SAVE R0
014664  005077  164114          CLR     @LCSP           ;DISABLE LED INTERRUPTS
014670  012700  177600          MOV     #177600,R0      ;SETUP A COUNT FOR 200 CLICKS
014674  012777  100000  164104  18:      MOV     #100000,@LBUF   ;DO A CLICK
014702  022777  000200  164074  28:      CMP     #200,@LCSP      ;IS LED READY BIT SET?
014710  001374                  BNE     28              ;IF NOT GO BACK AND TEST IT AGAIN
014712  005300                  DEC     R0              ;CHALK UP ANOTHER CLICK
014714  001367                  BNE     18              ;IF WE HAVEN'T DONE 200 GO BACK AND DO SOME MORE
014716  012600                  MOV     (SP)+,R0        ;IF WE HAVE DONE 200, RESTORE R0
014720  000002                  RTI                     ;AND RETURN


                        .SBTTL  TTY OUTPUT SUBROUTINE
                        ;CALL WITH A 'JSR PC'
                        ;WITH ADDRESS OF THE MESSAGE IN R5
                        ;MESSAGE SHOULD BE IN 8BIT ASCII PACKED
                        ;1 CHARACTER PER WORD WITH A NULL
                        ;CHARACTER ACTING AS A 'END OF MESSAGE' FLAG
014722  005737  001042  TTYOUT: TST     TTYAVA          ;IS A TTY AVAILABLE?
014726  001410                  BEQ     RTNTT           ;IF NOT RETURN RIGHT AWAY
014730  010546                  MOV     R5,-(SP)        ;SAVE R5 IF THERE IS A TTY
014732  105777  164036  TTOUT:  TSTB    @TPS            ;IS THE PRINTER READY?
014736  100375                  BPL     TTOUT           ;IF NOT TEST IT AGAIN
014740  112577  164032          MOVB    (R5)+,@TPB      ;PRINT A CHARACTER
014744  001372                  BNE     TTOUT           ;IF ITS NOT A NULL LOOP BACK AND PRINT ANOTHER
014746  012605                  MOV     (SP)+,R5        ;RESTORE R5
014750  000207          RTNTT:  RTS     PC              ;IF IT IS A NULL RETURN


                        .SBTTL  REGULAR MESSAGE ROUTINE, SCREEN AND TTY
                        ;THIS IS THE MESSAGE OUTPUT ROUTINE
                        ;IT IS CALLED WITH A'JSR PC' INSTRUCTION
                        ;WITH R5 SET TO POINT TO THE ASCII TEXT OF THE MESSAGE
014752  005737  001042  MSGOUT: TST     TTYAVA          ;IS A EXTRA TERMINAL HOOKED UP?
014756  001004                  BNE     18              ;IF SO NO EXTRA STALLING TIME IS NEEDED
014760  004737  015002          JSR     PC,LSTALL       ;MORE TIME PLEASE
014764  004737  015002          JSR     PC,LSTALL       ;IF NOT, WASTE TIME SO THAT THE DISPLAY
                                                        ;DOESNT CHANGE TOO FAST FOR HUMAN EYES
014770  004737  013750  18:      JSR     PC,TUROUT       ;DISPLAY THE MESSAGE ON THE VT71 SCREEN
014774  004737  014722          JSR     PC,TTYOUT       ;DISPLAY MESSAGE ON THE TELLETYPPE IF AVAILABLE
015000  000207                  RTS     PC              ;RETURN

                        .SBTTL  1.5 SECOND TIME WASTING SUBROUTINE
                        ;THIS IS A TIME WASTING ROUTINE
                        ;IT IS USED ANYWHERE A STALL OR WAIT IS  NEEDED.
                        ;THIS ROUTINE PROVIDES ABOUT 1.5 SECONDS OF WAITING TIME
015002  005037  000772  LSTALL: CLR     STLCNT          ;CLEAR OUT THE STALL COUNTER
015006  005737  000772  28:      TST     STLCNT          ;WASTE SOME TIME
015012  005237  000772          INC     STLCNT          ;TICK - INCREMENT COUNT
015016  001373                  BNE     28              ;KEEP WAITING UNTIL THE COUNT REACHES 0
015020  000207                  RTS     PC              ;COUNT=0 - DONE WAITING - RETURN
```

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                                        .SBTTL  KEYBOARD INPUT CHECKING ROUTINE
                                        ;THIS ROUTINE CHECKS THE ADDITIONAL KEYBOARD FOR SPECIAL CHARACTERS
                                        ;AND ACTS UPON THEM ACORDINGLY
015022  000240                  SPCHK:  NOP
015024  105777  163614                  TSTB    @STKS           ;IS A CHAR WAITING IN THE ADITIONAL KEYBOARD BUFFER
015030  100022                          BPL     2$              ;IF NOT, SKIP OVER THE NEXT STUFF
015032  017737  163610  000766          MOV     @STKB,TEMP      ;RESCUE THE CHAR FROM THE BUFFER
015040  042737  000200  000766          BIC     #200,TEMP       ;CLEAR OUT THE PARITY BIT IFIT IS SET
015046  022737  000022  000766          CMP     #22,TEMP        ;IS THE CHAR  ^R  ?
015054  001004                          BNE     1$              ;IF NOT ^R,TRY ^A
015056  012706  000600                  MOV     #600,SP         ;IT IS  ^R, RESET THE STACK
015062  000137  001062                  JMP     START           ;AND RESTART THE PROGRAM
015066  022737  000001  000766  1$:     CMP     #1,TEMP         ;IS CHAR ^A ?
015074  001000                          BNE     2$              ;IF NOT IGNORE IT
015076  000240                  2$:     NOP
015100  000207                          RTS     PC

                                        .SBTTL  TEST INITIALIZATION ROUTINE
                                        ;THIS SUBROUTINE IS CALLED AT THE BEGINING OF EACH TEST.
                                        ;IT DISPLAYS THE TEST # IN THE VT71'S LEDS, IT PRINTS THE TEST
                                        ;# ON THE ADDITIONAL TERMINAL, AND IT LEAVES ASCII TEXT FOR THE
                                        ;CURRENT TEST # AT LOCATION "MSG17", SO THAT INDIVIDUAL TESTS CAN EASILY
                                        ;DISPLAY THE TEST #
015102  005077  163700          FXTST:  CLR     @LBUF           ;0 TO LIGHTS
015106  013737  000602  000766          MOV     #TSTNM,TEMP     ;GET TEST #
015114  105037  000767                  CLRB    TEMP+1          ;DO NOT INCLUDE ERROR COUNT
015120  013777  000766  163660          MOV     TEMP,@LBUF      ;DISPLAY THE TEST # IN THE LEDS
015126  012705  026247                  MOV     #MSG29A,R5      ;SETUP MSG29A OF ASCII
015132  004737  015504                  JSR     PC,BIOCT        ;CONVERT DATA INTO ASCII
015136  012705  026240                  MOV     #MSG29,R5       ;SETUP ADDRESS OF TEST # MESSAGE
015142  004737  014722                  JSR     PC,TTYOUT       ;DISPLAY TEST # ON TTY ONLY(IF AVAILABLE)
015146  013737  000602  000766          MOV     #TSTNM,TEMP     ;GET TEST #
015154  105037  000767                  CLRB    TEMP+1          ;DO NOT INCLUDE ERROR COUNT
015160  012705  026620                  MOV     #MSG17A,R5      ;SETUP MSG17A OF ASCII
015164  004737  015504                  JSR     PC,BIOCT        ;CONVERT DATA INTO ASCII
015170  000207                          RTS     PC

                                        .SBTTL  .1 SECOND OF TIME WASTING SUBROUTINE
                                        ;THIS IS THE MEDIUM STALL ROUTINE
                                        ;IT SATLLS FOR ABOUT A TENTH OF A SECOND
015172  012737  170000  000772  MSTALL: MOV     #170000,STLCNT
015200  005237  000772          1$:     INC     STLCNT          ;INC COUNTER TILL IT REACHES 0
015204  001375                          BNE     1$              ;IF IT HAS NOT REACHED 0 YET GO BACK
015206  000207                          RTS     PC              ;IF IT HAS REACHED 0, RETURN
                                        .SBTTL  .02 SECOND OF TIME WASTING SUBROUTINE
                                        ;THIS IS THE MEDIUM STALL ROUTINE
                                        ;IT SATILS FOR ABOUT TWO HUNDRETHS OF A SECOND
015210  012737  176000  000772  XSTALL: MOV     #176000,STLCNT
015216  005237  000772          1$:     INC     STLCNT          ;INC COUNTER TILL IT REACHES 0
015222  001375                          BNE     1$              ;IF IT HAS NOT REACHED 0 YET GO BACK
015224  000207                          RTS     PC              ;IF IT HAS REACHED 0, RETURN
```

```
                                ;
                                ;
                                ;
                                .SBTTL  400US STALL ROUTINE
                                ;THIS IS ANOTHER TIME WASTING SUBROUTING
                                ;IT STALLS FOR ONLY A FEW HUNDRED MICROSECONDS OR SO
015226  012737  177740  000772  SSTALL: MOV     #177740,STLCNT
015234  005237  000772          10:     INC     STLCNT          ;INC COUNTER TILL IT REACHES 0
015240  001375                          BNE     10              ;IF IT HAS NOT REACHED 0 YET GO BACK
015242  000207                          RTS     PC              ;IF IT HAS REACHED 0, RETURN
                                ;
                                ;
                                ;
                                .SBTTL  LED AND KEYBOARD INTERRUPT SERVICE ROUTINES
                                ;THIS IS A "JUST IN CASE" SERVICE ROUTINE, FOR LED AND KEYBOARD INTERRUPTS
                                ;IT JUST RETURNS CONTROL BACK TO THE INTERRUPTED SECTION
015244                          KBSRV:
015244  000002                  LDSRV:  RTI                     ;RETURN
                                ;
                                ;
                                ;
                                ;
                                ;
                                .SBTTL  DISPLAY INTERRUPT SERVICE ROUTINE
                                ;THIS IS THE DISPLAY INTERRUPT SERVICE ROUTINE,
                                ;IT JUST ADDS 1 TO A INTERRUPT COUNTER LOCATION, THAN IT
                                ;RETURNS USING "RTI"
015246  005237  001050          DIHAN:  INC     INTCNT          ;ADD 1 TO INTERRUPT COUNTER
015252  000002                          RTI                     ;RETURN
                                ;
                                ;
                                .SBTTL  SUBROUTINE TO WAIT ON CHARACTER SET LOADING.
                                ;SUBROUTINE TO WAIT ON CHARACTER SET LOADING.
                                ;IF CHAR SET DOES NOT LOAD WITHIN 2 SECONDS AN ERROR MESSAGE IS
                                ;SENT TO ANY ADDITIONAL TELLETYPE, ALSO IT IS DISPLAYED ON THE VT71
                                ;SCREEN IF LOCATION "TURCNT" IS SET TO A NON-ZERO VALUE BEFORE CALLING
                                ;THIS SUBROUTINE.
                                ;BEFORE CALLING  R5 SHOULD BE EQUAL TO THE ADDRESS OF THE CHARACTER SETS END
015254  010046          TSTLOP: MOV     R0,-(SP)        ;SAVE A REG SO WE CAN USE IT IN THIS SUBROUTINE
015256  012700  170000          MOV     #170000,R0      ;PREPARE IT FOR USE
015262  020577  163546          10:     CMP     R5,@DCP         ;DONE LOADING?
015266  001450                  BEQ     5$              ;IF SO.
015270  004737  015226          JSR     PC,SSTALL       ;NO, WASTE SOME TIME
015274  005200                  INC     R0              ;WASTED 2 SECONDS WAITING YET?
015276  001371                  BNE     10              ;IF NOT GO  BACK AND WASTE SOME MORE
015300  010537  000766          MOV     R5,TEMP         ;ADDRESS OF GOOD
015304  012705  030567          MOV     #MSG45B,R5
015310  004737  015504          JSR     PC,BIOCT        ;CONVERT S/R DATA TO ASCII
015314  017737  163514  000766  MOV     @DCP,TEMP       ;GET WAS DATA
015322  012705  030531          MOV     #MSG45A,R5
015326  004737  015504          JSR     PC,BIOCT        ;CONVERT BAD DATA TO ASCII
015332  004737  014136          JSR     PC,CLRTUB       ;CLEAR OUT THE DISPLAY TABLE
015336  012777  015760  163464  MOV     #DISTRL,@IDTP
015344  032777  020000  163266  BIT     #20000,@SWR     ;IS THE INHIBIT ERROR MESSAGES BIT SET?
015352  001016                  BNE     5$              ;IF SO, DO NO TYPEOUTS
015354  012705  030453          MOV     #MSG45,R5       ;ADDRESS OF ERROR MESSAGE
```

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                        ;SUBROUTINE TO WAIT ON CHARACTER SET LOADING.

015360  004737  014722          JSR     PC,TTYOUT       ;SEND MESSAGE TO THE TTY
015364  005737  000756          TST     TUBSET          ;ALSO TO THE VT71 SCREEN?
015370  001007                  BNE     5$              ;IF NOT, JUST GO AND RETURN
015372  012777  000146  163426  MOV     #146,@DCSR      ;DISPLAY REGULAR MODE
015400  012705  030453          MOV     #MSG49,R5       ;YES TO THE SCREEN, GET MESSAGE ADDRESS
015404  004737  013750          JSR     PC,TUBOUT       ;DISPLAY MESSAGE
015410  012600                  5$:     MOV     (SP)+,R0        ;RESTORE R0 TO ITS FORMER GLORY
015412  005037  000756          CLR     TUBSET          ;INIT THE TUBE DISPLAY SWITCH
015416  000207                  RTS     PC              ;RETURN


                        .SBTTL  TRAP TO VECTOR 4 HANDLING ROUTINE
                        ;IF A TRAP TO LOC 4 OCCURS WHEN WE DO NOT EXPECT ONE, WE END UP HERE
                        ;A ERROR MESSAGE WILL BE PRINTED OUT, AND A RTT INSTRUCTION EXECUTED
015420  005077  163402  TRAPER: CLR     @DCSR           ;STOP THE DISPLAY MOMENTARAIY
015424  004737  015002          JSR     PC,LSTALL       ;GIVE IT TIME TO STOP
015430  004737  014136          JSR     PC,CLRTUB       ;CLEAR OUT DISPLAY TABLE
015434  012737  015760  001034  MOV     #DISTAL,IDTP    ;GIVE THE DISPLAY PROCESSOR ITS ADDRESS
015442  012777  100146  163356  MOV     #100146,@DCSR   ;AND RESTART THE DISPLAY
015450  012705  026453          MOV     #MSX32,R5       ;SETUP ADDRESS OF PLACE TO PUT ASCII OF TRAP PC CONTENTS
015454  011637  000766          MOV     (SP),TEMP       ;GET TRAP PC
015460  162737  000002  000766  SUB     #2,TEMP         ;MAKE IT RIGHT
015466  004737  015504          JSR     PC,BIOCT        ;CHANGE TRAP PC INTO ASCII
015472  012705  026421          MOV     #MSG32,R5       ;GET ADDR OF THE ASCII ERROR MESSAGE
015476  004737  014752          JSR     PC,MSGOUT       ;DISPLAY THE 'TRAP ERROR' MESSAGE
015502  000006                  RTT                     ;TRY TO CONTINUE

                        .SBTTL  BINARY TO ASCII CONVERT SUBROUTINE.
                        ;BINARY TO ASCII CONVERT SUBROUTINE.
                        ;CALL USING A 'JSR PC'
                        ;DERIVES ASCII CHARACTERS REPRESENTING THE CONTENTS
                        ;OF LOCATION 'TEMP', AND PUTS THEM INTO THE 6 BYTES POINTED TO
                        ;BY R5
                        ;THIS IS A STOLEN ROUTINE. IT IS ROTTENLY WRITEN

015504  010446          BIOCT:  MOV     R4,-(SP)        ;SAVE R4
015506  012704  031477          MOV     #BIOTMP,R4      ;SETUP POINTER TO TEMP TEXT SPACE
015512  113764  000766  000005  MOVB    TEMP,5(R4)
015520  006037  000766          ROR     TEMP
015524  113764  000767  000002  MOVB    TEMP+1,2(R4)
015532  006037  000766          ROR     TEMP
015536  006037  000766          ROR     TEMP
015542  113764  000766  000004  MOVB    TEMP,4(R4)
015550  006037  000766          ROR     TEMP
015554  113764  000767  000001  MOVB    TEMP+1,1(R4)
015562  006037  000766          ROR     TEMP
015566  006037  000766          ROR     TEMP
015572  113764  000766  000003  MOVB    TEMP,3(R4)
015600  006037  000766          ROR     TEMP
015604  113714  000767          MOVB    TEMP+1,(R4)
015610  142714  000376          BICB    #376,(R4)
015614  142764  000370  000001  BICB    #370,1(R4)
015622  142764  000370  000002  BICB    #370,2(R4)
015630  142764  000370  000003  BICB    #370,3(R4)
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2427  015436  142764  000370  000004          BICB    #370,4(R4)
2428  015444  142764  000370  000005          BICB    #370,5(R4)
2429  015452  152714  000060                  BISB    #60,(R4)
2430  015456  152764  000060  000001          BISB    #60,1(R4)
2431  015464  152764  000060  000002          BISB    #60,2(R4)
2432  015472  152764  000060  000003          BISB    #60,3(R4)
2433  015500  152764  000060  000004          BISB    #60,4(R4)
2434  015506  152764  000060  000005          BISB    #60,5(R4)
2435  015514  111415                          MOVB    (R4),(R5)
2436  015516  116465  000001  000001          MOVB    1(R4),1(R5)
2437  015524  116465  000002  000002          MOVB    2(R4),2(R5)
2438  015532  116465  000003  000003          MOVB    3(R4),3(R5)
2439  015540  116465  000004  000004          MOVB    4(R4),4(R5)
2440  015546  116465  000005  000005          MOVB    5(R4),5(R5)
2441  015554  012604                          MOV     (SP)+,R4        ;RESTORE R4
2442  015556  000207                          RTS     PC              ;YEAH
2443
2444
2445
2446
2447  015560  003740                  DISTBL: .WORD   3740
2448  015562  030624                          .WORD   MSG57
2449  015564  003740                          .WORD   3740
2450  015566  030624                          .WORD   MSG57
2451  015570  003740                          .WORD   3740
2452  015572  030624                          .WORD   MSG57
2453  015574  003740                          .WORD   3740
2454  015576  030624                          .WORD   MSG57
2455  016000  003740                          .WORD   3740
2456  016002  030624                          .WORD   MSG57
2457  016004  003740                          .WORD   3740
2458  016006  030624                          .WORD   MSG57
2459  016010  003740                          .WORD   3740
2460  016012  030624                          .WORD   MSG57
2461  016014  003740                          .WORD   3740
2462  016016  030624                          .WORD   MSG57
2463  016020  003740                          .WORD   3740
2464  016022  030624                          .WORD   MSG57
2465  016024  003740                          .WORD   3740
2466  016026  030624                          .WORD   MSG57
2467  016030  003740                          .WORD   3740
2468  016032  030624                          .WORD   MSG57
2469  016034  003740                          .WORD   3740
2470  016036  030624                          .WORD   MSG57
2471  016040  003740                          .WORD   3740
2472  016042  030624                          .WORD   MSG57
2473  016044  003740                          .WORD   3740
2474  016046  030624                          .WORD   MSG57
2475  016050  003740                          .WORD   3740
2476  016052  030624                          .WORD   MSG57
2477  016054  003740                          .WORD   3740
2478  016056  030624                          .WORD   MSG57
2479  016060  003740                          .WORD   3740
2480  016062  030624                          .WORD   MSG57
2481  016064  003740                          .WORD   3740
2482  016066  030624                          .WORD   MSG57
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016070  003770                          .WORD   3770
016072  030624                          .WORD   MSG57
016074  003766                  TBL22:  .WORD   3766
016076  030624                          .WORD   MSG57
016100  003774                  TBL23:  .WORD   3774
016102  030064                          .WORD   MSG41
016104  100000                          100000
016106  015760                          DISTBL
                                ;END OF DISPLAY TABLE




                                        .SBTTL  CHARACTER SET
016110     340     064          CHARS:  .BYTE 340,064           ;NUMBER "4"
016112     300     064                  .BYTE 300,064
016114     340     064                  .BYTE 340,064
016116     302     064                  .BYTE 302,064
016120     360     064                  .BYTE 360,064
016122     302     064                  .BYTE 302,064
016124     344     064                  .BYTE 344,064
016126     302     064                  .BYTE 302,064
016130     366     064                  .BYTE 366,064
016132     312     064                  .BYTE 312,064
016134     340     064                  .BYTE 340,064
016136     302     064                  .BYTE 302,064
016140     340     064                  .BYTE 340,064
016142     302     064                  .BYTE 302,064
016144     340     064                  .BYTE 340,064
016146     302     064                  .BYTE 302,064
016150     340     064                  .BYTE 340,064
016152     300     064                  .BYTE 300,064
016154     340     064                  .BYTE 340,064
016156     300     064                  .BYTE 300,064



016160     340     065                  .BYTE 340,065           ;NUMBER "5"
016162     300     065                  .BYTE 300,065
016164     364     065                  .BYTE 364,065
016166     312     065                  .BYTE 312,065
016170     344     065                  .BYTE 344,065
016172     300     065                  .BYTE 300,065
016174     344     065                  .BYTE 344,065
016176     300     065                  .BYTE 300,065
016200     364     065                  .BYTE 364,065
016202     312     065                  .BYTE 312,065
016204     340     065                  .BYTE 340,065
016206     310     065                  .BYTE 310,065
016210     344     065                  .BYTE 344,065
016212     310     065                  .BYTE 310,065
016214     350     065                  .BYTE 350,065
016216     302     065                  .BYTE 302,065
016220     340     065                  .BYTE 340,065
016222     300     065                  .BYTE 300,065
016224     340     065                  .BYTE 340,065
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2539  016226  300  065                .BYTE 300,065
2540
2541
2542  016230  340  001                .BYTE 340,01          ;END OF LINE
2543  016232  300  001                .BYTE 300,01
2544  016234  340  001                .BYTE 340,01
2545  016236  300  001                .BYTE 300,01
2546  016240  340  001                .BYTE 340,01
2547  016242  300  001                .BYTE 300,01
2548  016244  340  001                .BYTE 340,01
2549  016246  300  001                .BYTE 300,01
2550  016250  340  001                .BYTE 340,01
2551  016252  300  001                .BYTE 300,01
2552  016254  340  001                .BYTE 340,01
2553  016256  300  001                .BYTE 300,01
2554  016260  340  001                .BYTE 340,01
2555  016262  300  001                .BYTE 300,01
2556  016264  340  001                .BYTE 340,01
2557  016266  300  001                .BYTE 300,01
2558  016270  340  001                .BYTE 340,01
2559  016272  300  001                .BYTE 300,01
2560  016274  340  001                .BYTE 340,01
2561  016276  300  001                .BYTE 300,01
2562  016300  340  000                .BYTE 340,00          ;END OF SCREEN
2563  016302  300  000                .BYTE 300,00
2564  016304  340  000                .BYTE 340,00
2565  016306  300  000                .BYTE 300,00
2566  016310  340  000                .BYTE 340,00
2567  016312  300  000                .BYTE 300,00
2568  016314  340  000                .BYTE 340,00
2569  016316  300  000                .BYTE 300,00
2570  016320  340  000                .BYTE 340,00
2571  016322  300  000                .BYTE 300,00
2572  016324  340  000                .BYTE 340,00
2573  016326  300  000                .BYTE 300,00
2574  016330  340  000                .BYTE 340,00
2575  016332  300  000                .BYTE 300,00
2576  016334  340  000                .BYTE 340,00
2577  016336  300  000                .BYTE 300,00
2578  016340  340  000                .BYTE 340,00
2579  016342  300  000                .BYTE 300,00
2580  016344  340  000                .BYTE 340,00
2581  016346  300  000                .BYTE 300,00
2582  016350  377  377                .BYTE 377,377         ;CODE 377
2583  016352  337  377                .BYTE 337,377
2584  016354  377  377                .BYTE 377,377
2585  016356  337  377                .BYTE 337,377
2586  016360  377  377                .BYTE 377,377
2587  016362  337  377                .BYTE 337,377
2588  016364  377  377                .BYTE 377,377
2589  016366  337  377                .BYTE 337,377
2590  016370  377  377                .BYTE 377,377
2591  016372  337  377                .BYTE 337,377
2592  016374  377  377                .BYTE 377,377
2593  016376  337  377                .BYTE 337,377
2594  016400  377  377                .BYTE 377,377
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2595  016462  337  377          .BYTE 337,377
2596  016464  377  377          .BYTE 377,377
2597  016466  337  377          .BYTE 337,377
2598  016470  377  377          .BYTE 377,377
2599  016472  337  377          .BYTE 337,377
2600  016474  377  377          .BYTE 377,377
2601  016476  337  377          .BYTE 337,377
2602  016500  340  202          .BYTE 340,202          ;END OF LINE
2603  016502  300  202          .BYTE 300,202
2604  016504  340  202          .BYTE 340,202
2605  016506  300  202          .BYTE 300,202
2606  016510  340  202          .BYTE 340,202
2607  016512  300  202          .BYTE 300,202
2608  016514  340  202          .BYTE 340,202
2609  016516  300  202          .BYTE 300,202
2610  016520  340  202          .BYTE 340,202
2611  016522  300  202          .BYTE 300,202
2612  016524  340  202          .BYTE 340,202
2613  016526  300  202          .BYTE 300,202
2614  016530  340  202          .BYTE 340,202
2615  016532  300  202          .BYTE 300,202
2616  016534  340  202          .BYTE 340,202
2617  016536  300  202          .BYTE 300,202
2618  016540  340  202          .BYTE 340,202
2619  016542  300  202          .BYTE 300,202
2620  016544  340  202          .BYTE 340,202
2621  016546  300  202          .BYTE 300,202
2622  016550  340  002          .BYTE 340,02           ;END OF LINE
2623  016552  300  002          .BYTE 300,02
2624  016554  340  002          .BYTE 340,02
2625  016556  300  002          .BYTE 300,02
2626  016560  340  002          .BYTE 340,02
2627  016562  300  002          .BYTE 300,02
2628  016564  340  002          .BYTE 340,02
2629  016566  300  002          .BYTE 300,02
2630  016570  340  002          .BYTE 340,02
2631  016572  300  002          .BYTE 300,02
2632  016574  340  002          .BYTE 340,02
2633  016576  300  002          .BYTE 300,02
2634  016600  340  002          .BYTE 340,02
2635  016602  300  002          .BYTE 300,02
2636  016604  340  002          .BYTE 340,02
2637  016606  300  002          .BYTE 300,02
2638  016610  340  002          .BYTE 340,02
2639  016612  300  002          .BYTE 300,02
2640  016614  340  002          .BYTE 340,02
2641  016616  300  002          .BYTE 300,02
2642  016620  340  003          .BYTE 340,03           ;END OF LINE
2643  016622  300  003          .BYTE 300,03
2644  016624  340  003          .BYTE 340,03
2645  016626  300  003          .BYTE 300,03
2646  016630  340  003          .BYTE 340,03
2647  016632  300  003          .BYTE 300,03
2648  016634  340  003          .BYTE 340,03
2649  016636  300  003          .BYTE 300,03
2650  016640  340  003          .BYTE 340,03
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2651  016562  300  003          .BYTE 300,03
2652  016564  340  001          .BYTE 340,01
2653  016566  300  003          .BYTE 300,03
2654  016570  340  003          .BYTE 340,03
2655  016572  300  003          .BYTE 300,03
2656  016574  340  003          .BYTE 340,03
2657  016576  300  003          .BYTE 300,03
2658  016600  340  003          .BYTE 340,03
2659  016602  300  003          .BYTE 300,03
2660  016604  340  003          .BYTE 340,03
2661  016606  300  003          .BYTE 300,03
2662  016610  340  201          .BYTE 340,201          ;END OF LINE
2663  016612  300  201          .BYTE 300,201
2664  016614  340  201          .BYTE 340,201
2665  016616  300  201          .BYTE 300,201
2666  016620  340  201          .BYTE 340,201
2667  016622  300  201          .BYTE 300,201
2668  016624  340  201          .BYTE 340,201
2669  016626  300  201          .BYTE 300,201
2670  016630  340  201          .BYTE 340,201
2671  016632  300  201          .BYTE 300,201
2672  016634  340  201          .BYTE 340,201
2673  016636  300  201          .BYTE 300,201
2674  016640  340  201          .BYTE 340,201
2675  016642  300  201          .BYTE 300,201
2676  016644  340  201          .BYTE 340,201
2677  016646  300  201          .BYTE 300,201
2678  016650  340  201          .BYTE 340,201
2679  016652  300  201          .BYTE 300,201
2680  016654  340  201          .BYTE 340,201
2681  016656  300  201          .BYTE 300,201
2682  016660  340  203          .BYTE 340,203          ;END OF LINE
2683  016662  300  203          .BYTE 300,203
2684  016664  340  203          .BYTE 340,203
2685  016666  300  203          .BYTE 300,203
2686  016670  340  203          .BYTE 340,203
2687  016672  300  203          .BYTE 300,203
2688  016674  340  203          .BYTE 340,203
2689  016676  300  203          .BYTE 300,203
2690  016700  340  203          .BYTE 340,203
2691  016702  300  203          .BYTE 300,203
2692  016704  340  203          .BYTE 340,203
2693  016706  300  203          .BYTE 300,203
2694  016710  340  203          .BYTE 340,203
2695  016712  300  203          .BYTE 300,203
2696  016714  340  203          .BYTE 340,203
2697  016716  300  203          .BYTE 300,203
2698  016720  340  203          .BYTE 340,203
2699  016722  300  203          .BYTE 300,203
2700  016724  340  203          .BYTE 340,203
2701  016726  300  203          .BYTE 300,203
2702  016730  340  040  SPCHAR: .BYTE 340,40           ;SPACE
2703  016732  300  040          .BYTE 300,40
2704  016734  340  040          .BYTE 340,40
2705  016736  300  040          .BYTE 300,40
2706  016740  340  040          .BYTE 340,40
```

```
2757  016742  300  040          .BYTE 300,40
2760  016744  340  040          .BYTE 340,40
2761  016746  300  040          .BYTE 300,40
2762  016750  340  040          .BYTE 340,40
2763  016752  300  040          .BYTE 300,40
2764  016754  340  040          .BYTE 340,40
2765  016756  300  040          .BYTE 300,40
2766  016760  340  040          .BYTE 340,40
2767  016762  300  040          .BYTE 300,40
2770  016764  340  040          .BYTE 340,40
2771  016766  300  040          .BYTE 300,40
2772  016770  340  040          .BYTE 340,40
2773  016772  300  040          .BYTE 300,40
2774  016774  340  040          .BYTE 340,40
2775  016776  300  040          .BYTE 300,40
2776  017000  340  200          .BYTE 340,200          ;END OF SCREEN
2777  017002  300  200          .BYTE 300,200
3000  017004  340  200          .BYTE 340,200
3001  017006  300  200          .BYTE 300,200
3002  017010  340  200          .BYTE 340,200
3003  017012  300  200          .BYTE 300,200
3004  017014  340  200          .BYTE 340,200
3005  017016  300  200          .BYTE 300,200
3006  017020  340  200          .BYTE 340,200
3007  017022  300  200          .BYTE 300,200
3010  017024  340  200          .BYTE 340,200
3011  017026  300  200          .BYTE 300,200
3012  017030  340  200          .BYTE 340,200
3013  017032  300  200          .BYTE 300,200
3014  017034  340  200          .BYTE 340,200
3015  017036  300  200          .BYTE 300,200
3016  017040  340  200          .BYTE 340,200
3017  017042  300  200          .BYTE 300,200
3020  017044  340  200          .BYTE 340,200
3021  017046  300  200          .BYTE 300,200
3022  017050  340  000          .BYTE 340,000          ;END OF SCREEN
3023  017052  300  000          .BYTE 300,000
3024  017054  340  000          .BYTE 340,000
3025  017056  300  000          .BYTE 300,000
3026  017060  340  000          .BYTE 340,000
3027  017062  300  000          .BYTE 300,000
3030  017064  340  000          .BYTE 340,000
3031  017066  300  000          .BYTE 300,000
3032  017070  340  000          .BYTE 340,000
3033  017072  300  000          .BYTE 300,000
3034  017074  340  000          .BYTE 340,000
3035  017076  300  000          .BYTE 300,000
3036  017100  340  000          .BYTE 340,000
3037  017102  300  000          .BYTE 300,000
3040  017104  340  000          .BYTE 340,000
3041  017106  300  000          .BYTE 300,000
3042  017110  340  000          .BYTE 340,000
3043  017112  300  000          .BYTE 300,000
3044  017114  340  000          .BYTE 340,000
3045  017116  300  000          .BYTE 300,000
3046  017120  340  040          .BYTE 340,40           ;SPACE
```

```
 2763  017122  300  040                .BYTE 300,40
 2764  017124  340  040                .BYTE 340,40
 2765  017126  300  040                .BYTE 300,40
 2766  017130  340  040                .BYTE 340,40
 2767  017132  300  040                .BYTE 300,40
 2770  017134  340  040                .BYTE 340,40
 2771  017136  300  040                .BYTE 300,40
 2772  017140  340  040                .BYTE 340,40
 2773  017142  300  040                .BYTE 300,40
 2774  017144  340  040                .BYTE 340,40
 2775  017146  300  040                .BYTE 300,40
 2776  017150  340  040                .BYTE 340,40
 2777  017152  300  040                .BYTE 300,40
 2778  017154  340  040                .BYTE 340,40
 2779  017156  300  040                .BYTE 300,40
 2780  017160  340  040                .BYTE 340,40
 2781  017162  300  040                .BYTE 300,40
 2782  017164  340  040                .BYTE 340,40
 2783  017166  300  040                .BYTE 300,40
 2784
 2785
 2786  017170  340  015                .BYTE 340,15          ;CARRIAGE RETURN
 2787  017172  300  015                .BYTE 300,15
 2788  017174  340  015                .BYTE 340,15
 2789  017176  300  015                .BYTE 300,15
 2790  017200  340  015                .BYTE 340,15
 2791  017202  300  015                .BYTE 300,15
 2792  017204  340  015                .BYTE 340,15
 2793  017206  300  015                .BYTE 300,15
 2794  017210  340  015                .BYTE 340,15
 2795  017212  300  015                .BYTE 300,15
 2796  017214  340  015                .BYTE 340,15
 2797  017216  300  015                .BYTE 300,15
 2798  017220  340  015                .BYTE 340,15
 2799  017222  300  015                .BYTE 300,15
 2800  017224  340  015                .BYTE 340,15
 2801  017226  300  015                .BYTE 300,15
 2802  017230  340  015                .BYTE 340,15
 2803  017232  300  015                .BYTE 300,15
 2804  017234  340  015                .BYTE 340,15
 2805  017236  300  015                .BYTE 300,15
 2806
 2807
 2808  017240  340  012                .BYTE 340,12          ;LINE FEED
 2809  017242  300  012                .BYTE 300,12
 2810  017244  340  012                .BYTE 340,12
 2811  017246  300  012                .BYTE 300,12
 2812  017250  340  012                .BYTE 340,12
 2813  017252  300  012                .BYTE 300,12
 2814  017254  340  012                .BYTE 340,12
 2815  017256  300  012                .BYTE 300,12
 2816  017260  340  012                .BYTE 340,12
 2817  017262  300  012                .BYTE 300,12
 2818  017264  340  012                .BYTE 340,12
 2819  017266  300  012                .BYTE 300,12
 2820  017270  340  012                .BYTE 340,12
```

```
2814  017272  340  012          .BYTE 340,12
2815  017274  340  012          .BYTE 340,12
2816  017276  300  012          .BYTE 300,12
2817  017300  340  012          .BYTE 340,12
2818  017302  300  012          .BYTE 300,12
2819  017304  340  012          .BYTE 340,12
2820  017306  300  012          .BYTE 300,12
2821
2822
2823  017310  340  066          .BYTE 340,066          ;NUMBER '6'
2824  017312  300  066          .BYTE 300,066
2825  017314  350  066          .BYTE 350,066
2826  017316  305  066          .BYTE 305,066
2827  017320  344  066          .BYTE 344,066
2828  017322  300  066          .BYTE 300,066
2829  017324  344  066          .BYTE 344,066
2830  017326  300  066          .BYTE 300,066
2831  017330  364  066          .BYTE 364,066
2832  017332  312  066          .BYTE 312,066
2833  017334  344  066          .BYTE 344,066
2834  017336  310  066          .BYTE 310,066
2835  017340  344  066          .BYTE 344,066
2836  017342  310  066          .BYTE 310,066
2837  017344  350  066          .BYTE 350,066
2838  017346  305  066          .BYTE 305,066
2839  017350  340  066          .BYTE 340,066
2840  017352  300  066          .BYTE 300,066
2841  017354  340  066          .BYTE 340,066
2842  017356  300  066          .BYTE 300,066
2843
2844
2845  017360  340  067          .BYTE 340,067          ;NUMBER '7'
2846  017362  300  067          .BYTE 300,067
2847  017364  364  067          .BYTE 364,067
2848  017366  312  067          .BYTE 312,067
2849  017370  340  067          .BYTE 340,067
2850  017372  310  067          .BYTE 310,067
2851  017374  340  067          .BYTE 340,067
2852  017376  304  067          .BYTE 304,067
2853  017400  340  067          .BYTE 340,067
2854  017402  302  067          .BYTE 302,067
2855  017404  340  067          .BYTE 340,067
2856  017406  301  067          .BYTE 301,067
2857  017410  360  067          .BYTE 360,067
2858  017412  300  067          .BYTE 300,067
2859  017414  350  067          .BYTE 350,067
2860  017416  300  067          .BYTE 300,067
2861  017420  340  067          .BYTE 340,067
2862  017422  300  067          .BYTE 300,067
2863  017424  340  067          .BYTE 340,067
2864  017426  300  067          .BYTE 300,067
2865
2866
2867  017430  340  070          .BYTE 340,070          ;NUMBER '8'
2868  017432  300  070          .BYTE 300,070
2869  017434  350  070          .BYTE 350,070
```

```
2875  017436  305  070          .BYTE 305,070
2876  017440  344  070          .BYTE 344,070
2877  017442  310  070          .BYTE 310,070
2878  017444  344  070          .BYTE 344,070
2879  017446  310  070          .BYTE 310,070
2880  017450  350  070          .BYTE 350,070
2881  017452  305  070          .BYTE 305,070
2882  017454  344  070          .BYTE 344,070
2883  017456  310  070          .BYTE 310,070
2884  017460  344  070          .BYTE 344,070
2885  017462  310  070          .BYTE 310,070
2886  017464  350  070          .BYTE 350,070
2887  017466  305  070          .BYTE 305,070
2888  017470  340  070          .BYTE 340,070
2889  017472  300  070          .BYTE 300,070
2890  017474  340  070          .BYTE 340,070
2891  017476  300  070          .BYTE 300,070
2892
2893
2894  017500  340  071          .BYTE 340,071          ;NUMBER '9'
2895  017502  300  071          .BYTE 300,071
2896  017504  350  071          .BYTE 350,071
2897  017506  305  071          .BYTE 305,071
2898  017510  344  071          .BYTE 344,071
2899  017512  310  071          .BYTE 310,071
2900  017514  344  071          .BYTE 344,071
2901  017516  310  071          .BYTE 310,071
2902  017520  364  071          .BYTE 364,071
2903  017522  312  071          .BYTE 312,071
2904  017524  340  071          .BYTE 340,071
2905  017526  310  071          .BYTE 310,071
2906  017530  340  071          .BYTE 340,071
2907  017532  310  071          .BYTE 310,071
2908  017534  360  071          .BYTE 360,071
2909  017536  305  071          .BYTE 305,071
2910  017540  340  071          .BYTE 340,071
2911  017542  300  071          .BYTE 300,071
2912  017544  340  071          .BYTE 340,071
2913  017546  300  071          .BYTE 300,071
2914
2915
2916  017550  340  060          .BYTE 340,060          ;NUMBER '0'
2917  017552  300  060          .BYTE 300,060
2918  017554  360  060          .BYTE 360,060
2919  017556  305  060          .BYTE 305,060
2920  017560  344  060          .BYTE 344,060
2921  017562  314  060          .BYTE 314,060
2922  017564  344  060          .BYTE 344,060
2923  017566  312  060          .BYTE 312,060
2924  017570  344  060          .BYTE 344,060
2925  017572  311  060          .BYTE 311,060
2926  017574  364  060          .BYTE 364,060
2927  017576  310  060          .BYTE 310,060
2928  017600  354  060          .BYTE 354,060
2929  017602  310  060          .BYTE 310,060
2930  017604  350  060          .BYTE 350,060
```

DS

```
2931  017606  305  060                .BYTE 305,060
2932  017610  340  060                .BYTE 340,060
2933  017612  300  060                .BYTE 300,060
2934  017614  340  060                .BYTE 340,060
2935  017616  300  060                .BYTE 300,060
2936
2937
2938
2939
2940  017620  340  043                .BYTE 340,043          ;SPECIAL CHARACTER '0'
2941  017622  300  043                .BYTE 300,043
2942  017624  360  043                .BYTE 360,043
2943  017626  304  043                .BYTE 304,043
2944  017630  360  043                .BYTE 360,043
2945  017632  304  043                .BYTE 304,043
2946  017634  364  043                .BYTE 364,043
2947  017636  315  043                .BYTE 315,043
2948  017640  360  043                .BYTE 360,043
2949  017642  304  043                .BYTE 304,043
2950  017644  364  043                .BYTE 364,043
2951  017646  315  043                .BYTE 315,043
2952  017650  360  043                .BYTE 360,043
2953  017652  304  043                .BYTE 304,043
2954  017654  360  043                .BYTE 360,043
2955  017656  304  043                .BYTE 304,043
2956  017660  340  043                .BYTE 340,043
2957  017662  300  043                .BYTE 300,043
2958  017664  340  043                .BYTE 340,043
2959  017666  300  043                .BYTE 300,043
2960
2961
2962
2963  017670  340  101                .BYTE 340,101          ;UPPER CASE 'A'
2964  017672  300  101                .BYTE 300,101
2965  017674  360  101                .BYTE 360,101
2966  017676  302  101                .BYTE 302,101
2967  017700  350  101                .BYTE 350,101
2968  017702  304  101                .BYTE 304,101
2969  017704  344  101                .BYTE 344,101
2970  017706  310  101                .BYTE 310,101
2971  017710  344  101                .BYTE 344,101
2972  017712  310  101                .BYTE 310,101
2973  017714  364  101                .BYTE 364,101
2974  017716  312  101                .BYTE 312,101
2975  017720  344  101                .BYTE 344,101
2976  017722  310  101                .BYTE 310,101
2977  017724  344  101                .BYTE 344,101
2978  017726  310  101                .BYTE 310,101
2979  017730  340  101                .BYTE 340,101
2980  017732  300  101                .BYTE 300,101
2981  017734  340  101                .BYTE 340,101
2982  017736  300  101                .BYTE 300,101
2983
2984
2985  017740  340  102                .BYTE 340,102          ;UPPER CASE 'B'
2986  017742  300  102                .BYTE 300,102
```

```
 2987  017744  352  102          .BYTE 352,102
 2988  017746  305  102          .BYTE 305,102
 2989  017750  344  102          .BYTE 344,102
 2990  017752  310  102          .BYTE 310,102
 2991  017754  344  102          .BYTE 344,102
 2992  017756  310  102          .BYTE 310,102
 2993  017760  354  102          .BYTE 354,102
 2994  017762  305  102          .BYTE 305,102
 2995  017764  344  102          .BYTE 344,102
 2996  017766  310  102          .BYTE 310,102
 2997  017770  344  102          .BYTE 344,102
 2998  017772  310  102          .BYTE 310,102
 2999  017774  352  102          .BYTE 352,102
 3000  017776  305  102          .BYTE 305,102
 3001  020000  340  102          .BYTE 340,102
 3002  020002  300  102          .BYTE 300,102
 3003  020004  340  102          .BYTE 340,102
 3004  020006  300  102          .BYTE 300,102
 3005
 3006
 3007  020010  340  103          .BYTE 340,103          ;UPPER CASE "C"
 3008  020012  300  103          .BYTE 300,103
 3009  020014  350  103          .BYTE 350,103
 3010  020016  305  103          .BYTE 305,103
 3011  020020  344  103          .BYTE 344,103
 3012  020022  310  103          .BYTE 310,103
 3013  020024  344  103          .BYTE 344,103
 3014  020026  300  103          .BYTE 300,103
 3015  020030  344  103          .BYTE 344,103
 3016  020032  300  103          .BYTE 300,103
 3017  020034  344  103          .BYTE 344,103
 3018  020036  300  103          .BYTE 300,103
 3019  020040  344  103          .BYTE 344,103
 3020  020042  310  103          .BYTE 310,103
 3021  020044  350  103          .BYTE 350,103
 3022  020046  305  103          .BYTE 305,103
 3023  020050  340  103          .BYTE 340,103
 3024  020052  300  103          .BYTE 300,103
 3025  020054  340  103          .BYTE 340,103
 3026  020056  300  103          .BYTE 300,103
 3027
 3028
 3029  020060  340  104          .BYTE 340,104          ;UPPER CASE "D"
 3030  020062  300  104          .BYTE 300,104
 3031  020064  352  104          .BYTE 352,104
 3032  020066  305  104          .BYTE 305,104
 3033  020070  344  104          .BYTE 344,104
 3034  020072  310  104          .BYTE 310,104
 3035  020074  344  104          .BYTE 344,104
 3036  020076  310  104          .BYTE 310,104
 3037  020100  344  104          .BYTE 344,104
 3038  020102  310  104          .BYTE 310,104
 3039  020104  344  104          .BYTE 344,104
 3040  020106  310  104          .BYTE 310,104
 3041  020110  344  104          .BYTE 344,104
 3042  020112  310  104          .BYTE 310,104
```

```
3043  020114  352  104                .BYTE 352,104
3044  020116  305  104                .BYTE 305,104
3045  020120  340  104                .BYTE 340,104
3046  020122  300  104                .BYTE 300,104
3047  020124  340  104                .BYTE 340,104
3048  020126  300  104                .BYTE 300,104
3049
3050
3051  020130  340  105                .BYTE 340,105          ;UPPER CASE 'E'
3052  020132  300  105                .BYTE 300,105
3053  020134  364  105                .BYTE 364,105
3054  020136  312  105                .BYTE 312,105
3055  020140  344  105                .BYTE 344,105
3056  020142  302  105                .BYTE 302,105
3057  020144  344  105                .BYTE 344,105
3058  020146  300  105                .BYTE 300,105
3059  020150  364  105                .BYTE 364,105
3060  020152  302  105                .BYTE 302,105
3061  020154  344  105                .BYTE 344,105
3062  020156  300  105                .BYTE 300,105
3063  020160  344  105                .BYTE 344,105
3064  020162  300  105                .BYTE 300,105
3065  020164  364  105                .BYTE 364,105
3066  020166  312  105                .BYTE 312,105
3067  020170  340  105                .BYTE 340,105
3068  020172  300  105                .BYTE 300,105
3069  020174  340  105                .BYTE 340,105
3070  020176  300  105                .BYTE 300,105
3071
3072
3073  020200  340  106                .BYTE 340,106          ;UPPER CASE 'F'
3074  020202  300  106                .BYTE 300,106
3075  020204  364  106                .BYTE 364,106
3076  020206  312  106                .BYTE 312,106
3077  020210  344  106                .BYTE 344,106
3078  020212  300  106                .BYTE 300,106
3079  020214  344  106                .BYTE 344,106
3080  020216  300  106                .BYTE 300,106
3081  020220  364  106                .BYTE 364,106
3082  020222  302  106                .BYTE 302,106
3083  020224  344  106                .BYTE 344,106
3084  020226  300  106                .BYTE 300,106
3085  020230  344  106                .BYTE 344,106
3086  020232  300  106                .BYTE 300,106
3087  020234  344  106                .BYTE 344,106
3088  020236  300  106                .BYTE 300,106
3089  020240  340  106                .BYTE 340,106
3090  020242  300  106                .BYTE 300,106
3091  020244  340  106                .BYTE 340,106
3092  020246  300  106                .BYTE 300,106
3093
3094
3095  020250  340  107                .BYTE 340,107          ;UPPER CASE 'G'
3096  020252  300  107                .BYTE 300,107
3097  020254  350  107                .BYTE 350,107
3098  020256  305  107                .BYTE 305,107
```

```
3098  020262  344  107          .BYTE 344,107
3099  020264  310  107          .BYTE 310,107
3100  020266  344  107          .BYTE 344,107
3101  020270  300  107          .BYTE 300,107
3102  020272  344  107          .BYTE 344,107
3103  020274  300  107          .BYTE 300,107
3104  020276  344  107          .BYTE 344,107
3105  020300  312  107          .BYTE 312,107
3106  020302  344  107          .BYTE 344,107
3107  020304  310  107          .BYTE 310,107
3108  020306  350  107          .BYTE 350,107
3109  020310  305  107          .BYTE 305,107
3110  020312  340  107          .BYTE 340,107
3111  020314  300  107          .BYTE 300,107
3112  020316  340  107          .BYTE 340,107
3113  020320  300  107          .BYTE 300,107
3114
3115
3116
3117  020322  340  110          .BYTE 340,110          ;UPPER CASE 'H'
3118  020324  300  110          .BYTE 300,110
3119  020326  344  110          .BYTE 344,110
3120  020330  310  110          .BYTE 310,110
3121  020332  344  110          .BYTE 344,110
3122  020334  310  110          .BYTE 310,110
3123  020336  344  110          .BYTE 344,110
3124  020340  310  110          .BYTE 310,110
3125  020342  364  110          .BYTE 364,110
3126  020344  312  110          .BYTE 312,110
3127  020346  344  110          .BYTE 344,110
3128  020350  310  110          .BYTE 310,110
3129  020352  344  110          .BYTE 344,110
3130  020354  310  110          .BYTE 310,110
3131  020356  344  110          .BYTE 344,110
3132  020360  310  110          .BYTE 310,110
3133  020362  340  110          .BYTE 340,110
3134  020364  300  110          .BYTE 300,110
3135  020366  340  110          .BYTE 340,110
3136  020370  300  110          .BYTE 300,110
3137
3138
3139  020372  340  111          .BYTE 340,111          ;UPPER CASE 'I'
3140  020374  300  111          .BYTE 300,111
3141  020376  364  111          .BYTE 364,111
3142  020400  312  111          .BYTE 312,111
3143  020402  340  111          .BYTE 340,111
3144  020404  301  111          .BYTE 301,111
3145  020406  340  111          .BYTE 340,111
3146  020410  301  111          .BYTE 301,111
3147  020412  340  111          .BYTE 340,111
3148  020414  301  111          .BYTE 301,111
3149  020416  340  111          .BYTE 340,111
3150  020420  301  111          .BYTE 301,111
3151  020422  340  111          .BYTE 340,111
3152  020424  301  111          .BYTE 301,111
3153  020426  364  111          .BYTE 364,111
3154  020430  312  111          .BYTE 312,111
```

```
3155  020430  340  111          .BYTE 340,111
3156  020432  300  111          .BYTE 300,111
3157  020434  340  111          .BYTE 340,111
3158  020436  300  111          .BYTE 300,111
3159
3160
3161  020440  340  112          .BYTE 340,112          ;UPPER CASE 'J'
3162  020442  300  112          .BYTE 300,112
3163  020444  364  112          .BYTE 364,112
3164  020446  312  112          .BYTE 312,112
3165  020450  340  112          .BYTE 340,112
3166  020452  302  112          .BYTE 302,112
3167  020454  340  112          .BYTE 340,112
3168  020456  302  112          .BYTE 302,112
3169  020460  340  112          .BYTE 340,112
3170  020462  302  112          .BYTE 302,112
3171  020464  340  112          .BYTE 340,112
3172  020466  302  112          .BYTE 302,112
3173  020470  344  112          .BYTE 344,112
3174  020472  302  112          .BYTE 302,112
3175  020474  350  112          .BYTE 350,112
3176  020476  301  112          .BYTE 301,112
3177  020500  340  112          .BYTE 340,112
3178  020502  300  112          .BYTE 300,112
3179  020504  340  112          .BYTE 340,112
3180  020506  300  112          .BYTE 300,112
3181
3182
3183  020510  340  113          .BYTE 340,113          ;UPPER CASE 'K'
3184  020512  300  113          .BYTE 300,113
3185  020514  344  113          .BYTE 344,113
3186  020516  310  113          .BYTE 310,113
3187  020520  344  113          .BYTE 344,113
3188  020522  304  113          .BYTE 304,113
3189  020524  344  113          .BYTE 344,113
3190  020526  302  113          .BYTE 302,113
3191  020530  354  113          .BYTE 354,113
3192  020532  301  113          .BYTE 301,113
3193  020534  344  113          .BYTE 344,113
3194  020536  302  113          .BYTE 302,113
3195  020540  344  113          .BYTE 344,113
3196  020542  304  113          .BYTE 304,113
3197  020544  344  113          .BYTE 344,113
3198  020546  310  113          .BYTE 310,113
3199  020550  340  113          .BYTE 340,113
3200  020552  300  113          .BYTE 300,113
3201  020554  340  113          .BYTE 340,113
3202  020556  300  113          .BYTE 300,113
3203
3204
3205  020560  340  114          .BYTE 340,114          ;UPPER CASE 'L'
3206  020562  300  114          .BYTE 300,114
3207  020564  344  114          .BYTE 344,114
3208  020566  300  114          .BYTE 300,114
3209  020570  344  114          .BYTE 344,114
3210  020572  300  114          .BYTE 300,114
```

```
3211  020574  344  114          .BYTE 344,114
3212  020576  300  114          .BYTE 300,114
3213  020600  344  114          .BYTE 344,114
3214  020602  300  114          .BYTE 300,114
3215  020604  344  114          .BYTE 344,114
3216  020606  300  114          .BYTE 300,114
3217  020610  344  114          .BYTE 344,114
3218  020612  300  114          .BYTE 300,114
3219  020614  354  114          .BYTE 354,114
3220  020616  305  114          .BYTE 3    114
3221  020620  340  114          .BYTE 340,114
3222  020622  300  114          .BYTE 300,114
3223  020624  340  114          .BYTE 340,114
3224  020626  300  114          .BYTE 300,114
3225
3226
3227  020630  340  115          .BYTE 340,115          ;UPPER CASE "O"
3228  020632  300  115          .BYTE 300,115
3229  020634  344  115          .BYTE 344,115
3230  020636  310  115          .BYTE 310,115
3231  020640  354  115          .BYTE 354,115
3232  020642  314  115          .BYTE 314,115
3233  020644  364  115          .BYTE 364,115
3234  020646  312  115          .BYTE 312,115
3235  020650  344  115          .BYTE 344,115
3236  020652  311  115          .BYTE 311,115
3237  020654  344  115          .BYTE 344,115
3238  020656  310  115          .BYTE 310,115
3239  020660  344  115          .BYTE 344,115
3240  020662  310  115          .BYTE 310,115
3241  020664  344  115          .BYTE 344,115
3242  020666  310  115          .BYTE 310,115
3243  020670  340  115          .BYTE 340,115
3244  020672  300  115          .BYTE 300,115
3245  020674  340  115          .BYTE 340,115
3246  020676  300  115          .BYTE 300,115
3247
3248
3249  020700  340  116          .BYTE 340,116          ;UPPER CASE " N "
3250  020702  300  116          .BYTE 300,116
3251  020704  344  116          .BYTE 344,116
3252  020706  310  116          .BYTE 310,116
3253  020710  354  116          .BYTE 354,116
3254  020712  310  116          .BYTE 310,116
3255  020714  364  116          .BYTE 364,116
3256  020716  310  116          .BYTE 310,116
3257  020720  344  116          .BYTE 344,116
3258  020722  311  116          .BYTE 311,116
3259  020724  344  116          .BYTE 344,116
3260  020726  312  116          .BYTE 312,116
3261  020730  344  116          .BYTE 344,116
3262  020732  314  116          .BYTE 314,116
3263  020734  344  116          .BYTE 344,116
3264  020736  310  116          .BYTE 310,116
3265  020740  340  116          .BYTE 340,116
3266  020742  300  116          .BYTE 300,116
```

```
3267  021744  340  116          .BYTE 340,116
3268  021746  300  116          .BYTE 300,116
3269
3270
3271  021750  340  117          .BYTE 340,117          ;UPPER CASE 'O'
3272  021752  300  117          .BYTE 300,117
3273  021754  350  117          .BYTE 350,117
3274  021756  305  117          .BYTE 305,117
3275  021760  344  117          .BYTE 344,117
3276  021762  310  117          .BYTE 310,117
3277  021764  344  117          .BYTE 344,117
3278  021766  310  117          .BYTE 310,117
3279  021770  344  117          .BYTE 344,117
3280  021772  310  117          .BYTE 310,117
3281  021774  344  117          .BYTE 344,117
3282  021776  310  117          .BYTE 310,117
3283  022000  344  117          .BYTE 344,117
3284  022002  310  117          .BYTE 310,117
3285  022004  350  117          .BYTE 350,117
3286  022006  305  117          .BYTE 305,117
3287  022010  340  117          .BYTE 340,117
3288  022012  300  117          .BYTE 300,117
3289  022014  340  117          .BYTE 340,117
3290  022016  300  117          .BYTE 300,117
3291
3292
3293  022020  340  120          .BYTE 340,120          ;UPPER CASE 'P'
3294  022022  300  120          .BYTE 300,120
3295  022024  350  120          .BYTE 350,120
3296  022026  305  120          .BYTE 305,120
3297  022030  344  120          .BYTE 344,120
3298  022032  310  120          .BYTE 310,120
3299  022034  344  120          .BYTE 344,120
3300  022036  310  120          .BYTE 310,120
3301  022040  350  120          .BYTE 350,120
3302  022042  305  120          .BYTE 305,120
3303  022044  344  120          .BYTE 344,120
3304  022046  300  120          .BYTE 300,120
3305  022050  344  120          .BYTE 344,120
3306  022052  300  120          .BYTE 300,120
3307  022054  344  120          .BYTE 344,120
3308  022056  300  120          .BYTE 300,120
3309  022060  340  120          .BYTE 340,120
3310  022062  300  120          .BYTE 300,120
3311  022064  340  120          .BYTE 340,120
3312  022066  300  120          .BYTE 300,120
3313
3314
3315  022070  340  121          .BYTE 340,121          ;UPPER CASE 'Q'
3316  022072  300  121          .BYTE 300,121
3317  022074  350  121          .BYTE 350,121
3318  022076  305  121          .BYTE 305,121
3319  022100  344  121          .BYTE 344,121
3320  022102  310  121          .BYTE 310,121
3321  022104  344  121          .BYTE 344,121
3322  022106  310  121          .BYTE 310,121
```

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3323  021110  344  121                .BYTE 344,121
3324  021112  312  121                .BYTE 312,121
3325  021114  344  121                .BYTE 344,121
3326  021116  314  121                .BYTE 314,121
3327  021120  344  121                .BYTE 344,121
3328  021122  310  121                .BYTE 310,121
3329  021124  350  121                .BYTE 350,121
3330  021126  325  121                .BYTE 325,121
3331  021130  340  121                .BYTE 340,121
3332  021132  300  121                .BYTE 300,121
3333  021134  340  121                .BYTE 340,121
3334  021136  300  121                .BYTE 300,121
3335
3336
3337  021140  342  122                .BYTE 342,122          ;UPPER CASE 'R'
3338  021142  300  122                .BYTE 300,122
3339  021144  354  122                .BYTE 354,122
3340  021146  305  122                .BYTE 305,122
3341  021150  344  122                .BYTE 344,122
3342  021152  310  122                .BYTE 310,122
3343  021154  344  122                .BYTE 344,122
3344  021156  310  122                .BYTE 310,122
3345  021160  354  122                .BYTE 354,122
3346  021162  305  122                .BYTE 305,122
3347  021164  344  122                .BYTE 344,122
3348  021166  302  122                .BYTE 302,122
3349  021170  344  122                .BYTE 344,122
3350  021172  304  122                .BYTE 304,122
3351  021174  344  122                .BYTE 344,122
3352  021176  310  122                .BYTE 310,122
3353  021200  340  122                .BYTE 340,122
3354  021202  300  122                .BYTE 300,122
3355  021204  340  122                .BYTE 340,122
3356  021206  300  122                .BYTE 300,122
3357
3358
3359  021210  340  123                .BYTE 340,123          ;UPPER CASE 'S'
3360  021212  300  123                .BYTE 300,123
3361  021214  350  123                .BYTE 350,123
3362  021216  305  123                .BYTE 305,123
3363  021220  344  123                .BYTE 344,123
3364  021222  310  123                .BYTE 310,123
3365  021224  344  123                .BYTE 344,123
3366  021226  300  123                .BYTE 300,123
3367  021230  350  123                .BYTE 350,123
3368  021232  305  123                .BYTE 305,123
3369  021234  340  123                .BYTE 340,123
3370  021236  310  123                .BYTE 310,123
3371  021240  344  123                .BYTE 344,123
3372  021242  310  123                .BYTE 310,123
3373  021244  350  123                .BYTE 350,123
3374  021246  305  123                .BYTE 305,123
3375  021250  340  123                .BYTE 340,123
3376  021252  300  123                .BYTE 300,123
3377  021254  340  123                .BYTE 340,123
3378  021256  300  123                .BYTE 300,123
```

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3379
3380
3381  021260  340  124  .BYTE 340,124  ;UPPER CASE 'T'
3382  021262  300  124  .BYTE 300,124
3383  021264  364  124  .BYTE 364,124
3384  021266  312  124  .BYTE 312,124
3385  021270  340  124  .BYTE 340,124
3386  021272  301  124  .BYTE 301,124
3387  021274  340  124  .BYTE 340,124
3388  021276  301  124  .BYTE 301,124
3389  021300  340  124  .BYTE 340,124
3390  021302  301  124  .BYTE 301,124
3391  021304  340  124  .BYTE 340,124
3392  021306  301  124  .BYTE 301,124
3393  021310  340  124  .BYTE 340,124
3394  021312  301  124  .BYTE 301,124
3395  021314  340  124  .BYTE 340,124
3396  021316  301  124  .BYTE 301,124
3397  021320  340  124  .BYTE 340,124
3398  021322  300  124  .BYTE 300,124
3399  021324  340  124  .BYTE 340,124
3400  021326  300  124  .BYTE 300,124
3401
3402
3403  021330  340  125  .BYTE 340,125  ;UPPER CASE 'U'
3404  021332  300  125  .BYTE 300,125
3405  021334  344  125  .BYTE 344,125
3406  021336  310  125  .BYTE 310,125
3407  021340  344  125  .BYTE 344,125
3408  021342  310  125  .BYTE 310,125
3409  021344  344  125  .BYTE 344,125
3410  021346  310  125  .BYTE 310,125
3411  021350  344  125  .BYTE 344,125
3412  021352  310  125  .BYTE 310,125
3413  021354  344  125  .BYTE 344,125
3414  021356  310  125  .BYTE 310,125
3415  021360  344  125  .BYTE 344,125
3416  021362  310  125  .BYTE 310,125
3417  021364  350  125  .BYTE 350,125
3418  021366  305  125  .BYTE 305,125
3419  021370  340  125  .BYTE 340,125
3420  021372  300  125  .BYTE 300,125
3421  021374  340  125  .BYTE 340,125
3422  021376  300  125  .BYTE 300,125
3423
3424
3425  021400  340  126  .BYTE 340,126  ;UPPER CASE 'V'
3426  021402  300  126  .BYTE 300,126
3427  021404  344  126  .BYTE 344,126
3428  021406  310  126  .BYTE 310,126
3429  021410  344  126  .BYTE 344,126
3430  021412  310  126  .BYTE 310,126
3431  021414  350  126  .BYTE 350,126
3432  021416  304  126  .BYTE 304,126
3433  021420  350  126  .BYTE 350,126
3434  021422  304  126  .BYTE 304,126
```

MS

```
3435  021424  360  126  .BYTE 360,126
3436  021426  322  126  .BYTE 322,126
3437  021430  344  126  .BYTE 344,126
3438  021432  301  126  .BYTE 301,126
3439  021434  340  126  .BYTE 340,126
3440  021436  301  126  .BYTE 301,126
3441  021440  340  126  .BYTE 340,126
3442  021442  300  126  .BYTE 300,126
3443  021444  340  126  .BYTE 340,126
3444  021446  300  126  .BYTE 300,126
3445
3446
3447  021450  340  127  .BYTE 340,127          ;UPPER CASE "A"
3448  021452  300  127  .BYTE 300,127
3449  021454  344  127  .BYTE 344,127
3450  021456  310  127  .BYTE 310,127
3451  021460  344  127  .BYTE 344,127
3452  021462  310  127  .BYTE 310,127
3453  021464  344  127  .BYTE 344,127
3454  021466  310  127  .BYTE 310,127
3455  021470  344  127  .BYTE 344,127
3456  021472  311  127  .BYTE 311,127
3457  021474  344  127  .BYTE 344,127
3458  021476  311  127  .BYTE 311,127
3459  021500  364  127  .BYTE 364,127
3460  021502  312  127  .BYTE 312,127
3461  021504  350  127  .BYTE 350,127
3462  021506  304  127  .BYTE 304,127
3463  021510  340  127  .BYTE 340,127
3464  021512  300  127  .BYTE 300,127
3465  021514  340  127  .BYTE 340,127
3466  021516  300  127  .BYTE 300,127
3467
3468
3469  021520  340  130  .BYTE 340,130          ;UPPER CASE "X"
3470  021522  300  130  .BYTE 300,130
3471  021524  344  130  .BYTE 344,130
3472  021526  310  130  .BYTE 310,130
3473  021530  350  130  .BYTE 350,130
3474  021532  304  130  .BYTE 304,130
3475  021534  360  130  .BYTE 360,130
3476  021536  302  130  .BYTE 302,130
3477  021540  340  130  .BYTE 340,130
3478  021542  301  130  .BYTE 301,130
3479  021544  360  130  .BYTE 360,130
3480  021546  302  130  .BYTE 302,130
3481  021550  350  130  .BYTE 350,130
3482  021552  304  130  .BYTE 304,130
3483  021554  344  130  .BYTE 344,130
3484  021556  310  130  .BYTE 310,130
3485  021560  340  130  .BYTE 340,130
3486  021562  300  130  .BYTE 300,130
3487  021564  340  130  .BYTE 340,130
3488  021566  300  130  .BYTE 300,130
3489
3490
```

```
3491  021570  340  131          .BYTE 340,131          ;UPPER CASE 'X'
3492  021572  300  131          .BYTE 300,131
3493  021574  344  131          .BYTE 344,131
3494  021576  310  131          .BYTE 310,131
3495  021600  350  131          .BYTE 350,131
3496  021602  304  131          .BYTE 304,131
3497  021604  360  131          .BYTE 360,131
3498  021606  302  131          .BYTE 302,131
3499  021610  340  131          .BYTE 340,131
3500  021612  301  131          .BYTE 301,131
3501  021614  340  131          .BYTE 340,131
3502  021616  301  131          .BYTE 301,131
3503  021620  340  131          .BYTE 340,131
3504  021622  301  131          .BYTE 301,131
3505  021624  340  131          .BYTE 340,131
3506  021626  301  131          .BYTE 301,131
3507  021630  340  131          .BYTE 340,131
3508  021632  300  131          .BYTE 300,131
3509  021634  340  131          .BYTE 340,131
3510  021636  300  131          .BYTE 300,131
3511
3512
3513  021640  340  132          .BYTE 340,132          ;UPPER CASE 'Z'
3514  021642  300  132          .BYTE 300,132
3515  021644  364  132          .BYTE 364,132
3516  021646  312  132          .BYTE 312,132
3517  021650  340  132          .BYTE 340,132
3518  021652  304  132          .BYTE 304,132
3519  021654  340  132          .BYTE 340,132
3520  021656  302  132          .BYTE 302,132
3521  021660  340  132          .BYTE 340,132
3522  021662  301  132          .BYTE 301,132
3523  021664  360  132          .BYTE 360,132
3524  021666  300  132          .BYTE 300,132
3525  021670  350  132          .BYTE 350,132
3526  021672  300  132          .BYTE 300,132
3527  021674  364  132          .BYTE 364,132
3528  021676  312  132          .BYTE 312,132
3529  021700  340  132          .BYTE 340,132
3530  021702  300  132          .BYTE 300,132
3531  021704  340  132          .BYTE 340,132
3532  021706  300  132          .BYTE 300,132
3533
3534
3535  021710  340  061          .BYTE 340,061          ;NUMBER '1'
3536  021712  300  061          .BYTE 300,061
3537  021714  340  061          .BYTE 340,061
3538  021716  301  061          .BYTE 301,061
3539  021720  360  061          .BYTE 360,061
3540  021722  301  061          .BYTE 301,061
3541  021724  350  061          .BYTE 350,061
3542  021726  301  061          .BYTE 301,061
3543  021730  340  061          .BYTE 340,061
3544  021732  301  061          .BYTE 301,061
3545  021734  340  061          .BYTE 340,061
3546  021736  301  061          .BYTE 301,061
```

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3547  021740  340  061          .BYTE 340,061
3548  021742  301  061          .BYTE 301,061
3549  021744  350  061          .BYTE 350,061
3550  021746  305  061          .BYTE 305,061
3551  021750  340  061          .BYTE 340,061
3552  021752  300  061          .BYTE 300,061
3553  021754  340  061          .BYTE 340,061
3554  021756  300  061          .BYTE 300,061
3555
3556
3557  021760  340  062          .BYTE 340,062          ;NUMBER "2"
3558  021762  300  062          .BYTE 300,062
3559  021764  350  062          .BYTE 350,062
3560  021766  305  062          .BYTE 305,062
3561  021770  344  062          .BYTE 344,062
3562  021772  310  062          .BYTE 310,062
3563  021774  340  062          .BYTE 340,062
3564  021776  310  062          .BYTE 310,062
3565  022000  360  062          .BYTE 360,062
3566  022002  312  062          .BYTE 312,062
3567  022004  350  062          .BYTE 350,062
3568  022006  300  062          .BYTE 300,062
3569  022010  344  062          .BYTE 344,062
3570  022012  300  062          .BYTE 300,062
3571  022014  364  062          .BYTE 364,062
3572  022016  312  062          .BYTE 312,062
3573  022020  340  062          .BYTE 340,062
3574  022022  300  062          .BYTE 300,062
3575  022024  340  062          .BYTE 340,062
3576  022026  300  062          .BYTE 300,062
3577
3578
3579  022030  340  042          .BYTE   340,042        ;DIAMOND
3580  022032  300  042          .BYTE   300,042
3581  022034  341  042          .BYTE   341,042
3582  022036  300  042          .BYTE   300,042
3583  022040  342  042          .BYTE   342,042
3584  022042  320  042          .BYTE   320,042
3585  022044  344  042          .BYTE   344,042
3586  022046  310  042          .BYTE   310,042
3587  022050  350  042          .BYTE   350,042
3588  022052  304  042          .BYTE   304,042
3589  022054  360  042          .BYTE   360,042
3590  022056  302  042          .BYTE   302,042
3591  022060  350  042          .BYTE   350,042
3592  022062  304  042          .BYTE   304,042
3593  022064  344  042          .BYTE   344,042
3594  022066  310  042          .BYTE   310,042
3595  022070  342  042          .BYTE   342,042
3596  022072  320  042          .BYTE   320,042
3597  022074  341  042          .BYTE   341,042
3598  022076  300  042          .BYTE   300,042
3599
3600  022100  341  044          .BYTE   341,044        ;BIG TRIANGLE
3601  022102  300  044          .BYTE   300,044
3602  022104  341  044          .BYTE   341,044
```

```
3603  022106  300  044          .BYTE  300,044
3604  022110  343  044          .BYTE  343,044
3605  022112  320  044          .BYTE  320,044
3606  022114  343  044          .BYTE  343,044
3607  022116  320  044          .BYTE  320,044
3608  022120  347  044          .BYTE  347,044
3609  022122  336  044          .BYTE  336,044
3610  022124  347  044          .BYTE  347,044
3611  022126  336  044          .BYTE  336,044
3612  022130  357  044          .BYTE  357,044
3613  022132  337  044          .BYTE  337,044
3614  022134  357  044          .BYTE  357,044
3615  022136  334  044          .BYTE  334,044
3616  022140  377  044          .BYTE  377,044
3617  022142  336  044          .BYTE  336,044
3618  022144  340  044          .BYTE  340,044
3619  022146  300  044          .BYTE  300,044
3620
3621  022150  377  045          .BYTE  377,045          ;SQUARE
3622  022152  337  045          .BYTE  337,045
3623  022154  377  045          .BYTE  377,045
3624  022156  337  045          .BYTE  337,045
3625  022160  377  045          .BYTE  377,045
3626  022162  337  045          .BYTE  337,045
3627  022164  377  045          .BYTE  377,045
3628  022166  337  045          .BYTE  337,045
3629  022170  377  045          .BYTE  377,045
3630  022172  337  045          .BYTE  337,045
3631  022174  377  045          .BYTE  377,045
3632  022176  337  045          .BYTE  337,045
3633  022200  377  045          .BYTE  377,045
3634  022202  337  045          .BYTE  337,045
3635  022204  377  045          .BYTE  377,045
3636  022206  337  045          .BYTE  337,045
3637  022210  377  045          .BYTE  377,045
3638  022212  337  045          .BYTE  337,045
3639  022214  377  045          .BYTE  377,045
3640  022216  337  045          .BYTE  337,045
3641
3642  022220  340  063          .BYTE 340,063           ;NUMBER '3'
3643  022222  300  063          .BYTE 300,063
3644  022224  364  063          .BYTE 364,063
3645  022226  312  063          .BYTE 312,063
3646  022230  340  063          .BYTE 340,063
3647  022232  304  063          .BYTE 304,063
3648  022234  340  063          .BYTE 340,063
3649  022236  302  063          .BYTE 302,063
3650  022240  340  063          .BYTE 340,063
3651  022242  305  063          .BYTE 305,063
3652  022244  340  063          .BYTE 340,063
3653  022246  310  063          .BYTE 310,063
3654  022250  344  063          .BYTE 344,063
3655  022252  310  063          .BYTE 310,063
3656  022254  360  063          .BYTE 360,063
3657  022256  305  063          .BYTE 305,063
3658  022260  340  063          .BYTE 340,063
```

```
3659  022262  300  041          .BYTE 300,041
3660  022264  340  041          .BYTE 340,041
3661  022266  300  041          .BYTE 300,041
3662  022270  340  041  FAKE:   .BYTE  340,041          ;SMALL TRIANGLE
3663  022272  300  041          .BYTE  300,041
3664  022274  340  041          .BYTE  340,041
3665  022276  300  041          .BYTE  300,041
3666  022300  340  041          .BYTE  340,041
3667  022302  320  041          .BYTE  320,041
3668  022304  341  041          .BYTE  341,041
3669  022306  330  041          .BYTE  330,041
3670  022310  343  041          .BYTE  343,041
3671  022312  334  041          .BYTE  334,041
3672  022314  347  041          .BYTE  347,041
3673  022316  336  041          .BYTE  336,041
3674  022320  357  041          .BYTE  357,041
3675  022322  337  041          .BYTE  337,041
3676  022324  340  041          .BYTE  340,041
3677  022326  300  041          .BYTE  300,041
3678  022330  340  041          .BYTE  340,041
3679  022332  300  041          .BYTE  300,041
3680  022334  340  041          .BYTE  340,041
3681  022336  300  041          .BYTE  300,041
3682
3683  022340  000000  ENDCHR:  .WORD 0
3684
3685  022342  000005  PLUSS:
3686  022342  340  041          .BYTE  340,041
3687  022344  301  041          .BYTE  301,041
3688  022346  340  041          .BYTE  340,041
3689  022350  301  041          .BYTE  301,041
3690  022352  340  041          .BYTE  340,041
3691  022354  301  041          .BYTE  301,041
3692  022356  340  041          .BYTE  340,041
3693  022360  301  041          .BYTE  301,041
3694  022362  340  041          .BYTE  340,041
3695  022364  301  041          .BYTE  301,041
3696  022366  377  041          .BYTE  377,041
3697  022370  337  041          .BYTE  337,041
3698  022372  340  041          .BYTE  340,041
3699  022374  301  041          .BYTE  301,041
3700  022376  340  041          .BYTE  340,041
3701  022400  301  041          .BYTE  301,041
3702  022402  340  041          .BYTE  340,041
3703  022404  301  041          .BYTE  301,041
3704  022406  340  041          .BYTE  340,041
3705  022410  301  041          .BYTE  301,041
3706  022412  000000  ENDPLS:  000000
3707
3708
3709  022414  377  001  EOLDIS:  .BYTE  377,001          ;END OF LINE CHAR, DISPLAYABLE AS A SQUARE
3710  022416  337  001          .BYTE  337,001
3711  022420  377  001          .BYTE  377,001
3712  022422  337  001          .BYTE  337,001
3713  022424  377  001          .BYTE  377,001
3714  022426  337  001          .BYTE  337,001
```

```
3715  022434  377  001          .BYTE  377,001
3716  022432  337  001          .BYTE  337,001
3717  022434  377  001          .BYTE  377,001
3718  022436  337  001          .BYTE  337,001
3719  022440  377  001          .BYTE  377,001
3720  022442  337  001          .BYTE  337,001
3721  022444  377  001          .BYTE  377,001
3722  022446  337  001          .BYTE  337,001
3723  022450  377  001          .BYTE  377,001
3724  022452  337  001          .BYTE  337,001
3725  022454  377  001          .BYTE  377,001
3726  022456  337  001          .BYTE  337,001
3727  022460  377  001          .BYTE  377,001
3728  022462  337  001          .BYTE  337,001
3729  022464  377  002          .BYTE  377,002        ;END OF  LINE CHAR, DISPLAYABLE AS A SQUARE
3730  022466  337  002          .BYTE  337,002
3731  022470  377  002          .BYTE  377,002
3732  022472  337  002          .BYTE  337,002
3733  022474  377  002          .BYTE  377,002
3734  022476  337  002          .BYTE  337,002
3735  022500  377  002          .BYTE  377,002
3736  022502  337  002          .BYTE  337,002
3737  022504  377  002          .BYTE  377,002
3738  022506  337  002          .BYTE  337,002
3739  022510  377  002          .BYTE  377,002
3740  022512  337  002          .BYTE  337,002
3741  022514  377  002          .BYTE  377,002
3742  022516  337  002          .BYTE  337,002
3743  022520  377  002          .BYTE  377,002
3744  022522  337  002          .BYTE  337,002
3745  022524  377  002          .BYTE  377,002
3746  022526  337  002          .BYTE  337,002
3747  022530  377  002          .BYTE  377,002
3748  022532  337  002          .BYTE  337,002
3749  022534  377  003          .BYTE  377,003        ;END OF  LINE CHAR, DISPLAYABLE AS A SQUARE
3750  022536  337  003          .BYTE  337,003
3751  022540  377  003          .BYTE  377,003
3752  022542  337  003          .BYTE  337,003
3753  022544  377  003          .BYTE  377,003
3754  022546  337  003          .BYTE  337,003
3755  022550  377  003          .BYTE  377,003
3756  022552  337  003          .BYTE  337,003
3757  022554  377  003          .BYTE  377,003
3758  022556  337  003          .BYTE  337,003
3759  022560  377  003          .BYTE  377,003
3760  022562  337  003          .BYTE  337,003
3761  022564  377  003          .BYTE  377,003
3762  022566  337  003          .BYTE  337,003
3763  022570  377  003          .BYTE  377,003
3764  022572  337  003          .BYTE  337,003
3765  022574  377  003          .BYTE  377,003
3766  022576  337  003          .BYTE  337,003
3767  022600  377  003          .BYTE  377,003
3768  022602  337  003          .BYTE  337,003
3769  022604  377  201          .BYTE  377,201        ;END OF  LINE CHAR, DISPLAYABLE AS A SQUARE
3770  022606  337  201          .BYTE  337,201
```

```
3771  022610  377  201          .BYTE  377,201
3772  022612  337  201          .BYTE  337,201
3773  022614  377  201          .BYTE  377,201
3774  022616  337  201          .BYTE  337,201
3775  022620  377  201          .BYTE  377,201
3776  022622  337  201          .BYTE  337,201
3777  022624  377  201          .BYTE  377,201
3778  022626  337  201          .BYTE  337,201
3779  022630  377  201          .BYTE  377,201
3780  022632  337  201          .BYTE  337,201
3781  022634  377  201          .BYTE  377,201
3782  022636  337  201          .BYTE  337,201
3783  022640  377  201          .BYTE  377,201
3784  022642  337  201          .BYTE  337,201
3785  022644  377  201          .BYTE  377,201
3786  022646  337  201          .BYTE  337,201
3787  022650  377  201          .BYTE  377,201
3788  022652  337  201          .BYTE  337,201
3789  022654  377  202          .BYTE  377,202        ;END OF  LINE CHAR, DISPLAYABLE AS A SQUARE
3790  022656  337  202          .BYTE  337,202
3791  022660  377  202          .BYTE  377,202
3792  022662  337  202          .BYTE  337,202
3793  022664  377  202          .BYTE  377,202
3794  022666  337  202          .BYTE  337,202
3795  022670  377  202          .BYTE  377,202
3796  022672  337  202          .BYTE  337,202
3797  022674  377  202          .BYTE  377,202
3798  022676  337  202          .BYTE  337,202
3799  022700  377  202          .BYTE  377,202
3800  022702  337  202          .BYTE  337,202
3801  022704  377  202          .BYTE  377,202
3802  022706  337  202          .BYTE  337,202
3803  022710  377  202          .BYTE  377,202
3804  022712  337  202          .BYTE  337,202
3805  022714  377  202          .BYTE  377,202
3806  022716  337  202          .BYTE  337,202
3807  022720  377  202          .BYTE  377,202
3808  022722  337  202          .BYTE  337,202
3809  022724  377  203          .BYTE  377,203        ;END OF  LINE CHAR, DISPLAYABLE AS A SQUARE
3810  022726  337  203          .BYTE  337,203
3811  022730  377  203          .BYTE  377,203
3812  022732  337  203          .BYTE  337,203
3813  022734  377  203          .BYTE  377,203
3814  022736  337  203          .BYTE  337,203
3815  022740  377  203          .BYTE  377,203
3816  022742  337  203          .BYTE  337,203
3817  022744  377  203          .BYTE  377,203
3818  022746  337  203          .BYTE  337,203
3819  022750  377  203          .BYTE  377,203
3820  022752  337  203          .BYTE  337,203
3821  022754  377  203          .BYTE  377,203
3822  022756  337  203          .BYTE  337,203
3823  022760  377  203          .BYTE  377,203
3824  022762  337  203          .BYTE  337,203
3825  022764  377  203          .BYTE  377,203
3826  022766  337  203          .BYTE  337,203
```

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3027  022774  000377  000203          .BYTE   377,203
3028  022776  000337  000203          .BYTE   337,203
3029  023000  000000                  ENDLIN: 0
3030  023002  000024                  NUMBER:
3031  023002  000000                          .WORD   0
3032  023004  000000                          .WORD   0
3033  023006  000000                          .WORD   0
3034  023010  000000                          .WORD   0
3035  023012  000000                          .WORD   0
3036  023014  000000                          .WORD   0
3037  023016  000000                          .WORD   0
3038  023020  000000                          .WORD   0
3039  023022  000000                          .WORD   0
3040  023024  000000                          .WORD   0
3041  023026  000000                          .WORD   0
3042  023030  000000                          .WORD   0
3043  023032  000000                          .WORD   0
3044  023034  000000                          .WORD   0
3045  023036  000000                          .WORD   0
3046  023040  000000                          .WORD   0
3047  023042  000000                          .WORD   0
3048  023044  000000                          .WORD   0
3049  023046  000000                  ENDNUM: 0000000
3050
3051
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3059
3060  023050  001772                  TSTLST: TST01
3061  023052  001772                          TST01
3062  023054  002072                          TST02
3063  023056  002152                          TST03
3064  023060  002226                          TST04
3065  023062  003064                          TST05
3066  023064  007352                          TST06
3067  023066  007464                          TST07
3068  023070  007566                          TST10
3069  023072  007654                          TST11
3070  023074  007746                          TST12
3071  023076  010120                          TST13
3072  023100  010226                          TST14
3073  023102  010312                          TST15
3074  023104  010424                          TST16
3075  023106  010514                          TST17
3076  023110  010772                          TST20
3077  023112  011160                          TST21
3078  023114  011266                          TST22
3079  023116  011362                          TST23
3080  023120  011456                          TST24
3081  023122  011552                          TST25
3082  023124  011646                          TST26
```

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023126  012102                          TA027
023130  012350                          TA030
023132  012442                          TA031
023134  012554                          TA032
023136  001770                          TA001
023140  001770                          TA001
023142  001770                          TA001
023144  013016                          TA036
023146  013122                          TA037


023150  044124  051511  044440  MSG0:   .ASCIZ  /THIS IS THE VT71 CONTROL-VIDEO TEST/<1><15><12>
023156  020123  044124  020105
023164  052126  030467  041440
023172  047117  051124  046117
023200  053055  042111  047505
023206  052040  051505  000524
023214  005015     000
023217     105  051122  051117  MSG1:   .ASCII  /ERROR/<1><15><12>
023224  006401     012
023227     120  047101  047440  MSG2:   .ASCII  /PAN OFFSET BITS DID NOT SET CORRECTLY/<1><15><12>
023234  043106  042523  020124
023242  044502  051524  042040
023250  042111  047040  052117
023256  051440  052105  041440
023264  051117  042522  052103
023272  054514  006401     012
023277     127  051105  020105  MSG2A:  .ASCII  /WERE /
023304  030060  030060  030060  MSG2B:  .ASCII  /000000 SHOULD HAVE BEEN /
023312  051440  047510  046125
023320  020104  040510  042526
023326  041040  042505  020116
023334  030060  030060  030060  MSG2C:  .ASCIZ  /000000/<1><15><12>
023342  006401  000012
023346  050123  041505  040511  MSG3:   .ASCIZ  /SPECIAL CHARACTER ENABLE BIT DID NOT CLEAR/<1><15><12>
023354  020114  044103  051101
023362  041501  042524  020122
023370  047105  041101  042514
023376  041040  052111  042040
023404  042111  047040  052117
023412  041440  042514  051101
023420  006401  000012
023424  050123  041505  040511  MSG4:   .ASCIZ  /SPECIAL CHARACTER ENABLE BIT DID NOT SET/<1><15><12>
023432  020114  044103  051101
023440  041501  042524  020122
023446  047105  041101  042514
023454  041040  052111  042040
023462  042111  047040  052117
023470  051440  052105  006401
023476  000012
023500  044504  050123  040514  MSG5:   .ASCIZ  /DISPLAY ENABLE BIT DID NOT SET/<1><15><12>
023506  020131  047105  041101
023514  042514  041040  052111
023522  042040  042111  047040
023530  052117  051440  052105
023536  006401  000012
```

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3939  023542  046504  050123  040514  MSG6:   .ASCIZ  /DISPLAY ENABLE BIT DID NOT CLEAR/<1><15><12>
3940  023550  020131  047105  041101
3941  023556  042514  041040  052111
3942  023564  042040  042111  047040
3943  023572  052117  041440  042514
3944  023600  051101  000401  000012
3945  023606  047514  042101  041440  MSG7:   .ASCIZ  /LOAD CHARACTER GENERATOR BIT WILL NOT SET/<1><15><12>
3946  023614  040510  040522  052103
3947  023622  051105  043440  047105
3948  023630  051105  052101  051117
3949  023636  041040  052111  053440
3950  023644  046111  020114  047516
3951  023652  020124  042523  000524
3952  023660  005015     200
3953  023663     184  051503  020122  MSG10:  .ASCII  /DCSR BIT 15 DOES NOT CLEAR WHEN ROMS ARE FINISHED LOADING/<1><15><12>
3954  023670  046502  020124  032461
3955  023676  042040  042517  020123
3956  023704  047516  020124  046103
3957  023712  046505  020122  044127
3958  023720  047105  051040  040517
3959  023726  020123  051101  020105
3960  023734  046506  040516  044123
3961  023742  042105  046040  040517
3962  023750  046504  043516  000401
3963  023756     212
3964  023757     185  042116  041440  MSG11:  .ASCII  /END OF TEXT CHAR NOT RECOGNIZED/<1><15><12>
3965  023764  020106  042524  052130
3966  023772  041440  040510  020122
3967  024000  047516  020124  042522
3968  024006  047503  047107  055111
3969  024014  042105  000401     212
3970  024021     242  021042  021042  MSG12:  .ASCIZ  /------------------------------------------------------------------------
3971  024026  021042  021042  021042
3972  024034  021042  021042  021042
3973  024042  021042  021042  021042
3974  024050  021042  021042  021042
3975  024056  021042  021042  021042
3976  024064  021042  021042  021042
3977  024072  021042  021042  021042
3978  024100  021042  021042  021042
3979  024106  021042  021042  021042
3980  024114  021042  021042  021042
3981  024122  021042  021042  021042
3982  024130  021042  021042  021042
3983  024136  000442  005015  005012
3984  024144  000012
3985
3986  024146  047514  040503  044524  MSG13:  .ASCIZ  /LOCATION/
3987  024154  047117     200
3988  024157     241  020441  020441  MSG14:  .ASCIZ  /!!!!!!!!!!!!!!!!!!!!!!!! ALTERNATE CROSSES AND TRIANGLES !!!!!!!!!!!!!!
3989  024164  020441  020441  020441
3990  024172  020441  020441  020441
3991  024200  020441  020441  020441
3992  024206  020041  046101  042524
3993  024214  047122  052101  020105
3994  024222  051103  051517  042523
```

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3995  024730  020123  047101  020104
3996  024736  051124  040511  043516
3997  024744  042514  020123  020441
3998  024752  020441  020441  020441
3999  024760  020441  020441  020441
4000  024766  020441  020441  020441
4001  024774  020441  020441  020441
4002  025002  020441  020441  000441
4003  025010  005015  005015      000
4004
4005  025015      105  041501  020110  MSG15:  .ASCII  /EACH 1 /<1>
4006  025022  020061      001
4007  025025      127  051117  020104          .ASCII  /WORD 2 /<2>
4008  025032  020062      002
4009  025035      117  020106  020063          .ASCII  /OF 3 /<3>
4010  025042      003
4011  025043      124  044510  020123          .ASCII  /THIS 201 /<201>
4012  025050  030062  020061      201
4013  025055      115  051505  040523          .ASCII  /MESSAGE 202 /<202>
4014  025062  042507  031040  031060
4015  025070  001040
4016  025072  044123  052517  042114          .ASCII  /SHOULD 203 /<203>
4017  025100  031040  031460  001440
4018  025106  042502  031040  031060          .ASCII  /BE 202 /<202>
4019  025114  001040
4020  025116  047117  031040  030460          .ASCII  /ON 201 /<201>
4021  025124  000440
4022  025126  020101  020063      003          .ASCII  /A 3 /<3>
4023  025133      123  050105  051101          .ASCII  /SEPARATE 2 /<2>
4024  025140  052101  020105  020062
4025  025146      002
4026  025147      114  047111  020105          .ASCII  /LINE 1 /<1>
4027  025154  020061      001
4028  025157      040  020040  000040  MSG16:  .ASCII  /    /<000>
4029  025164  047105  020104  043117  MSG16A: .ASCIZ  /END OF TEXT CHAR(000) NOT RECOGNIZED/<1><15><12>
4030  025172  052040  054105  020124
4031  025200  044103  051101  030050
4032  025206  030060  020051  047516
4033  025214  020124  042522  047503
4034  025222  047107  055111  042105
4035  025230  006401  000012
4036  025234  020040  020040      200  MSG16B: .ASCII  /    /<200>
4037  025241      105  042116  047440  MSG16D: .ASCIZ  /END OF TEXT CHAR(200) NOT RECOGNIZED/<1><15><12>
4038  025246  020106  042524  052130
4039  025254  041440  040510  024122
4040  025262  030062  024460  047040
4041  025270  052117  051040  041505
4042  025276  043517  044516  042532
4043  025304  000504  005015      000
4044  025311      124  051505  020124  MSG17:  .ASCII  /TEST 0 /
4045  025316  020043
4046  025320  030060  030060  030060  MSG17A: .ASCIZ  /000000/<1><15><12>
4047  025326  006401  000012
4048  025332  047125  042504  046122  MSG18:  .ASCIZ  /UNDERLINE MODE/<1>
4049  025340  047111  020105  047515
4050  025346  042504  000001
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 4#51  #24652  #47502  #42114  #46440  MSG19:  .ASCIZ  /BOLD MODE/<1>
 4#52  #24666  #42117  #00505     000
 4#53  #24665     102  #40514  #45516  MSG20:  .ASCIZ  /BLANK MODE ERROR/<1>
 4#54  #24672  #46440  #42117  #20105
 4#55  #24700  #51105  #47522  #00522
 4#56  #24706     #00
 4#57  #24707     122  #53105  #51105  MSG21:  .ASCIZ  /REVERSE VIDEO MODE/<1>
 4#58  #24714  #42523  #53040  #42111
 4#59  #24722  #47505  #46440  #42117
 4#60  #24730  #00505     000
 4#61  #24733     124  #40522  #50120  MSG22:  .ASCIZ  /TRAPPED TO LOC 4 TRYING TO ACCESS DCSR/<1><15><12>
 4#62  #24740  #42105  #52040  #20117
 4#63  #24746  #47514  #20103  #20064
 4#64  #24754  #51124  #44531  #43516
 4#65  #24762  #52040  #20117  #41501
 4#66  #24770  #42503  #51523  #42040
 4#67  #24776  #51503  #00522  #05015
 4#68  #25#04     200
 4#69           #25#06                .EVEN
 4#70  #25#06  #40501  #40501  #40501  MSG23A:  .ASCII  /AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
 4#71  #25#14  #40501  #40501  #40501
 4#72  #25#22  #40501  #40501  #40501
 4#73  #25#30  #40501  #40501  #40501
 4#74  #25#36  #40501  #40501  #40501
 4#75  #25#44  #40501  #40501  #40501
 4#76  #25#52  #40501  #40501  #40501
 4#77  #25#60  #40501  #40501  #40501
 4#78  #25#66  #40501  #40501  #40501
 4#79  #25#74  #40501  #40501  #40501
 4#80  #25102  #40501  #40501  #40501
 4#81  #25110  #40501  #40501  #40501
 4#82  #25116  #40501  #40501  #40501
 4#83  #25124  #40501     101
 4#84           #25130                .EVEN
 4#85  #25130  #41102  #41102  #41102  MSG23B:  .ASCII  /BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
 4#86  #25136  #41102  #41102  #41102
 4#87  #25144  #41102  #41102  #41102
 4#88  #25152  #41102  #41102  #41102
 4#89  #25160  #41102  #41102  #41102
 4#90  #25166  #41102  #41102  #41102
 4#91  #25174  #41102  #41102  #41102
 4#92  #25202  #41102  #41102  #41102
 4#93  #25210  #41102  #41102  #41102
 4#94  #25216  #41102  #41102  #41102
 4#95  #25224  #41102  #41102  #41102
 4#96  #25232  #41102  #41102  #41102
 4#97  #25240  #41102  #41102  #41102
 4#98  #25246  #41102     102
 4#99           #25252                .EVEN
 410#  #25252  #41503  #41503  #41503  MSG23C:  .ASCII  /CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
 4101  #25260  #41503  #41503  #41503
 410#  #25266  #41503  #41503  #41503
 4103  #25274  #41503  #41503  #41503
 4104  #25302  #41503  #41503  #41503
 4105  #25310  #41503  #41503  #41503
 4106  #25316  #41503  #41503  #41503
```

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025324  041503  041503  041503
025332  041503  041503  041503
025340  041503  041503  041503
025346  041503  041503  041503
025354  041503  041503  041503
025362  041503  041503  041503
025370  041503     103
        025374                  .EVEN
025374  042104  042104  042104  MSG23D: .ASCII  /DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
025402  042104  042104  042104
025410  042104  042104  042104
025416  042104  042104  042104
025424  042104  042104  042104
025432  042104  042104  042104
025440  042104  042104  042104
025446  042104  042104  042104
025454  042104  042104  042104
025462  042104  042104  042104
025470  042104  042104  042104
025476  042104  042104  042104
025504  042104  042104  042104
025512  042104
025514  042524  052123  021440  MSG24:  .ASCII  /TEST 000011 ALL 1/<1>
025522  030060  030060  030461
025530  040440  046114  030440
025536     001
025537     127  051117  051504          .ASCII  /WORDS 2/<2>
025544  031040     002
025547     123  047510  046125          .ASCII  /SHOULD 3/<3>
025554  020104  001463
025560  042502  031040  030460          .ASCII  /BE 201/ <201>
025566     201
025567     117  020116  030062          .ASCII  /ON 202/<202>
025574  101062
025576  044124  020105  030062          .ASCII  /THE 203/<203>
025604  101463
025606  040523  042515  046040          .ASCII  /SAME LINE                                                       /
025614  047111  020105  020040
025622  020040  020040  020040
025630  020040  020040  020040
025636  020040  020040  020040
025644  020040  020040  020040
025652  020040  020040  020040
025660  020040  020040  020040
025666  020040  020040  020040
025674  020040  020040  020040
025702  020040  020040
025706  030060  030060  030060  MSG25:  .ASCII  /000000 ERRORS ON PASS /
025714  042440  051122  051117
025722  020123  047117  050040
025730  051501  020123
025734  030060  030060  030060  MSX25:  .ASCII  /000000/<1><15><12>
025742  006401     012
025745     060  030060  030060  MSG25Y: .ASCIZ  /000000 ERRORS ON ALL PASSES/<1><15><12>
025752  020060  051105  047522
025760  051522  047440  020116
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025766  046101  020114  040520
025774  051523  051505  006401
026002  000012
026004  051105  047522  020122   MSG26:  .ASCII  /ERROR - ZERO BLOCK COUNT NOT RECOGNIZED AS SUCH/<1><15><12><200>
026012  020055  042532  047522
026020  041040  047514  045503
026026  041440  052517  052116
026034  047040  052117  051040
026042  041505  043517  044516
026050  042532  020104  051501
026056  051440  041525  000510
026064  000215     200
026067     102  052111  030440   MSG27:  .ASCIZ  /BIT 15 OF A DISPLAY PARAMETER WORD DID NOT CAUSE A JUMP/<1><200>
026074  020065  043117  040440
026102  042040  051511  040120
026110  054501  050040  051101
026116  046501  052105  051105
026124  053440  051117  020104
026132  044504  020104  047516
026140  020124  040503  051525
026146  020105  020101  052512
026154  050115  100001     000
026161     104  051511  046120   MSG28:  .ASCIZ  /DISPLAY DID NOT INTERRUPT FOR A FULL SECOND/<1><15><12>
026166  054501  042040  042111
026174  047040  052117  044440
026202  052116  051105  052522
026210  052120  043040  051117
026216  040440  043040  046125
026224  020114  042523  047503
026232  042116  006401  000012
026240  042524  052123  021440   MSG29:  .ASCII  /TEST # /
026246     040
026247     060  030060  030060   MSG29A: .ASCIZ  /000000/<1><15><12>
026254  000460  005015     000
026261     044  022044  022044   MSG30:  .ASCIZ  /$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
026266  022044  022044  022044
026274  022044  022044  022044
026302  022044  022044  022044
026310  022044  022044  022044
026316  022044  022044  022044
026324  022044  022044  022044
026332  022044  022044  022044
026340  022044  022044  022044
026346  022044  022044  022044
026354  022044  022044  022044
026362  022044  022044  022044
026370  022044  022044  022044
026376  000444  006412     000
026403     122  043505  046125   MSG31:  .ASCIZ  /REGULAR MODE/<1>
026410  051101  046440  042117
026416  000505     000
026421     124  040522  050120   MSG32:  .ASCII  /TRAPPED TO LOC 4 FROM LOC /
026426  042105  052040  020117
026434  047514  020103  020064
026442  051106  046517  046040
026450  041517     040
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026453     060  030060  030060  MSX32:  .ASCIZ  /000000/<1><15><12>
026460  000460  005015     000
        026466                  .EVEN
026466  003703                  MSTB0:  3703
026470  026472                  MSTB1:  MSG33
026472  044504  050123  040514  MSG33:  .ASCII  /DISPLAY TABLE NOW AT LOC /
026500  020131  040524  046102
026506  020105  047516  020127
026514  052101  046040  041517
026522     040
026523     060  030060  030060  MSG33T: .ASCII  /000000/<1><15><12>
026530  000460  005015
026534  051501  044503  020111          .ASCII  /ASCII NOW AT LOC /
026542  047516  020127  052101
026550  046040  041517     040
026555     060  030060  030060  MSG33A: .ASCIZ  /000000/<1><200><12><15>
026562  000460  005200  000015
026570  020441  020441  020441  MSG34:  .ASCIZ  /!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
026576  020441  020441  020441
026604  020441  020441  020441
026612  020441  020441  020441
026620  020441  020441  020441
026626  020441  020441  020441
026634  020441  020441  020441
026642  020441  020441  020441
026650  020441  020441  020441
026656  020441  020441  020441
026664  020441  020441  020441
026672  020441  020441  020441
026700  020441  020441  020441
026706  020441  006412  005012
026714     000
026715     000  001001  002003  MSG35A: .ASCII  <0><1><2><3><4><5><6><7><10><11><12>
026722  003005  004007  005011
026730  006013  007015  010017  MSG35B: .ASCII  <13><14><15><16><17><20><21><22><23><24><25>
026736  011021  012023     025
026743     026  014027  015031  MSG35C: .ASCII  <26><27><30><31><32><33><34><35><36><37><40>
026750  016033  017035  020037
026756  021041  022043  023045  MSG35D: .ASCII  <41><42><43><44><45><46><47><50><51><52><53>
026764  024047  025051     053
026771     054  027055  030057  MSG35E: .ASCII  <54><55><56><57><60><61><62><63><64><65><66>
026776  031061  032063  033065
027004  034067  035071  036073  MSG35F: .ASCII  <67><70><71><72><73><74><75><76><77><100><101>
027012  037075  040077     101
027017     102  042103  043105  MSG35G: .ASCII  <102><103><104><105><106><107><110><111><112><113><114>
027024  044107  045111  046113
027032  047115  050117  051121  MSG35H: .ASCII  <115><116><117><120><121><122><123><124><125><126><127>
027040  052123  053125     127
027045     130  055131  056133  MSG35I: .ASCII  <130><131><132><133><134><135><136><137><140><141><142>
027052  057135  060137  061141
027060  062143  063145  064147  MSG35J: .ASCII  <143><144><145><146><147><150><151><152><153><154><155>
027066  065151  066153     155
027073     156  070157  071161  MSG35K: .ASCII  <156><157><160><161><162><163><164><165><166><167><170>
027100  072163  073165  074167
027106  075171  076173  077175  MSG35L: .ASCII  <171><172><173><174><175><176><177><200><201><202><203>
027114  100177  101201     203
```

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4275  027121      204  103205  104207  MSG35M: .ASCII  <204><205><206><207><210><211><212><213><214><215><216>
4276  027126  105211   106213  107215
4277  027134  110217   111221  112223  MSG35N: .ASCII  <217><220><221><222><223><224><225><226><227><230><231>
4278  027142  113225   114227      231
4279  027147      232  116233  117235  MSG35O: .ASCII  <232><233><234><235><236><237><240><241><242><243><244>
4280  027154  120237   121241  122243
4281  027162  123245   124247  125251  MSG35P: .ASCII  <245><246><247><250><251><252><253><254><255><256><257>
4282  027170  126253   127255      257
4283  027175      260  131261  132263  MSG35Q: .ASCII  <260><261><262><263><264><265><266><267><270><271><272>
4284  027202  133265   134267  135271
4285  027210  136273   137275  140277  MSG35R: .ASCII  <273><274><275><276><277><300><301><302><303><304><305>
4286  027216  141301   142303      305
4287  027223      306  144307  145311  MSG35S: .ASCII  <306><307><310><311><312><313><314><315><316><317><320>
4288  027230  146313   147315  150317
4289  027236  151321   152323  153325  MSG35T: .ASCII  <321><322><323><324><125><326><327><330><331><332><333>
4290  027244  154127   155331      333
4291  027251      334  157335  160337  MSG35U: .ASCII  <334><335><336><337><340><341><342><343><344><345><346>
4292  027256  161341   162343  163345
4293  027264  164347   165351  166353  MSG35V: .ASCII  <347><350><351><352><353><354><355><356><357><360><361>
4294  027272  167355   170357      361
4295  027277      362  172363  173365  MSG35W: .ASCII  <362><363><364><365><166><367><370><371><372><373><374>
4296  027304  174367   175371  176373
4297  027312  177375   172764  173766  MSG35X: .ASCII  <375><376><364><365><166><367><370><371><372><373><374>
4298  027320  174770   175772      374
4299
4300  027325      012  005012  005012  MSG35Y: .ASCII  <12><12><12><12><12><12><12><12><12><12><12>
4301  027332  005012   005012  005012
4302  027340  005012   005012  005012          .ASCII  <12><12><12><12><12><12><12><12><12><12><12><12><12>
4303  027346  005012   005012  005012
4304  027354      012
4305  027355      012  005012  005012          .ASCII  <12><12><12><12><12><12><12><12><12><12><12><12><12>
4306  027362  005012   005012  005012
4307  027370  005012
4308  027372  005012   005012  005012          .ASCII  <12><12><12><12><12><12><12><12><12><12><12><12><12><12>
4309  027406  005012   005012  005012
4310  027406  005012
4311  027410  005012   005012  005012          .ASCII  <12><12><12><12><12><12><12><12><12><12><12><12><12><12>
4312  027416  005012   005012  005012
4313  027424      012
4314  027425      012  005012  005012          .ASCIZ  <12><12><12><12><12><12>
4315  027432      000
4316  027433      132  051105  020117  MSG36:  .ASCII  /ZERO CHARACTER COUNT TEST/<1><15><12>
4317  027440  044103   051101  041501
4318  027446  042524   020122  047503
4319  027454  047125   020124  042524
4320  027462  052123   006401      012
4321  027467      123  051103  042505          .ASCIZ  /SCREEN SHOULD GO TOTALY BLANK FOR A FEW SECONDS/<1><15><12>
4322  027474  020116   044123  052517
4323  027502  042114   043440  020117
4324  027510  047524   040524  054514
4325  027516  041040   040514  045516
4326  027524  043040   051117  040440
4327  027532  043040   053505  051440
4328  027540  041505   047117  051504
4329  027546  006401   000012
4330  027552  020040   020040  020040  MSG37:  .ASCIZ  /                                                  /<1><15><12>
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4331  027562  020040  020040  020040
4332  027566  020040  020040  020040
4333  027574  020040  020040  020040
4334  027602  020040  020040  020040
4335  027610  020040  020040  020040
4336  027616  020040  020040  020040
4337  027624  020040  020040  020040
4338  027632  000401  000012
4339  027636  044504  050123  040514  MSG38:  .ASCIZ  /DISPLAY INTERRUPT HAPPENED WITH PRIORITY SET TOO HIGH/<1><12><15>
4340  027644  020131  047111  042524
4341  027652  051122  050125  020124
4342  027660  040510  050120  047105
4343  027666  042105  053440  052111
4344  027674  020110  051120  047511
4345  027702  044522  054524  051440
4346  027710  052105  052040  047517
4347  027716  044040  043511  000510
4348  027724  000412      000
4349  027727      123  051103  042505  MSG39:  .ASCIZ  /SCREEN WILL GO BLANK FOR A FEW SECONDS/<1><15><12>
4350  027734  020116  044527  046114
4351  027742  043440  020117  046102
4352  027750  047101  020113  047506
4353  027756  020122  020101  042506
4354  027764  020127  042523  047503
4355  027772  042116  000523  000515
4356  030000  047504  052116  050040          .ASCIZ  /DONT PANIC/<1><15><12>
4357  030006  047101  041511  000401
4358  030014  000012
4359  030016  044124  051511  052040  MSG40:  .ASCII  /THIS TEXT SHOULD ALL BE/<1>
4360  030024  054105  020124  044123
4361  030032  052517  042114  040440
4362  030040  046114  041040  000505
4363  030046  047117  047440  042516          .ASCIZ  /ON ONE LINE/<1><200>
4364  030054  046040  047111  000505
4365  030062  000200
4366  030064  000200                  MSG41:  .ASCIZ  <200>
4367  030066  044124  051511  046440  MSG42:  .ASCIZ  /THIS MESSAGE SHOULD APPEAR IN 24 PLACES ON THE SCREEN/
4368  030074  051505  040523  042507
4369  030102  051440  047510  046125
4370  030110  020104  050101  042520
4371  030116  051101  044440  020116
4372  030124  032062  050040  040514
4373  030132  042503  020123  047117
4374  030140  052440  042510  051440
4375  030146  051103  042505  000116
4376  030154  020040  020040  020040          .ASCII  /                          /<200>
4377  030162  020040  020040  020040
4378  030170  020040  020040  020040
4379  030176  020040  020040  020040
4380  031004  100040
4381  031006  020041  020040  020040  MSG43:  .ASCIZ/!       !       !       !       !       !       !       !       !       !
4382  031014  020040  020041  020040
4383  031022  020040  020040  020041
4384  031030  020040  020040  020040
4385  031036  020041  020040  020040
4386  031044  020040  020041  020040
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4387  030252  020040  020040  020041
4388  030260  020040  020040  020040
4389  030266  020041  020040  020040
4390  030274  020040  020041  020040
4391  030302  020040  020040  020041
4392  030310  020040  020040  020040
4393  030316  020041  020040  020040
4394  030324  020040  000441  000015
4395  030332      000
4396  030333      132  051105  020117  MSG44:  .ASCII  /ZERO BLOCK COUNT TEST    THE BAR TO THE RIGHT SHOULD BE STRAIGHT AND SO
4397  030360  046102  041517  020113
4398  030366  047503  047125  020124
4399  030354  042524  052123  020040
4400  030362  020040  044124  020105
4401  030370  040502  020122  047524
4402  030376  052040  042510  051040
4403  030404  043511  052110  051440
4404  030412  047510  046125  020104
4405  030420  042502  051440  051124
4406  030426  044501  044107  020124
4407  030434  047101  020104  047523
4408  030442  044514  020104  020040
4409  030450  020040      045
4410
4411  030453      103  040510  040522  MSG45:  .ASCII  /CHARACTER SET DID NOT LOAD PROPERLY/<1><15><12>
4412  030460  052103  051105  051440
4413  030466  052105  042040  042111
4414  030474  047040  052117  046040
4415  030502  040517  020104  051120
4416  030510  050117  051105  044514
4417  030516  000401      012
4418  030521      104  050103  053440          .ASCII  /DCP WAS /
4419  030526  051501      040
4420  030531      060  030060  030060  MSG45A: .ASCII  /000000/<1><15><12>
4421  030536  000460  000015
4422  030542  041504  020120  044123          .ASCII  /DCP SHOULD HAVE BEEN /
4423  030550  052517  042114  044040
4424  030556  053101  020105  042502
4425  030564  047105      040
4426  030567      060  030060  030060  MSG45B: .ASCIZ  /000000 /<1><15><12>
4427  030574  020060  000401  000012
4428  030602  050040  020103  052101  MSG54:  .ASCII  / PC AT /
4429  030610      040
4430  030611      060  030060  030060  MSG54A: .ASCIZ  /000000 /<1><15><12>
4431  030616  020060  000401  000012
4432  030624  020040  020040  020040  MSG57:  .ASCIZ  /                                                    /<1><15><12>
4433  030632  020040  020040  020040
4434  030640  020040  020040  020040
4435  030646  020040  020040  020040
4436  030654  020040  020040  020040
4437  030662  020040  020040  020040
4438  030670  020040  020040  000401
4439  030676  000012
4440  030700  046502  020124  032461  MSG70:  .ASCIZ  /BIT 15 IS SET = HALT ON ERROR/<1><15><12>
4441  030706  044440  020123  042523
4442  030714  020124  020055  040510
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4443  031722  052114  047440  020116
4444  031730  051105  047522  000522
4445  031736  005015      000
4446
4447  031741      102  052111  030440  MSG71:  .ASCIZ  /BIT 14 IS SET - LOOP ON CURRENT TEST/<1><15><12>
4448  031746  020064  051511  051440
4449  031754  052105  026440  046040
4450  031762  047517  020120  047111
4451  031770  041440  051125  042522
4452  031776  052116  052040  051505
4453  032004  000524  005015      000
4454  032011      102  052111  030440  MSG72:  .ASCIZ  /BIT 13 IS SET - INHIBIT ERROR MESSAGES/<1><15><12>
4455  032016  020061  051511  051440
4456  032024  052105  026440  044440
4457  032032  044116  041111  052111
4458  032040  042440  051122  051117
4459  032046  046440  051505  040523
445A  032054  042507  000523  005015
4461  032062      000
4462
4463  032063      102  052111  030440  MSG73:  .ASCIZ  /BIT 12 IS SET -/<1><15><12>
4464  032070  020062  051511  051440
4465  032076  052105  026440  006401
4466  033104  000012
4467  033106  044502  020124  030461  MSG74:  .ASCIZ  /BIT 11 IS SET -/<1><15><12>
4468  033114  044440  020123  042523
4469  033122  020124  000455  005015
446A  033130      000
4471  033131      102  052111  034440  MSG76:  .ASCIZ  /BIT 9 IS SET - LOOP ON ERROR TEST/<1><15><12>
4472  033136  044440  020123  042523
4473  033144  020124  020055  047514
4474  033152  050117  047440  020116
4475  033160  051105  047522  020122
4476  033166  042524  052123  000401
4477  033174  000012
4478  033176  044502  051524  033440  MSG77:  .ASCII  /BITS 7-A  -  GO DIRECTLY TO TEST /
4479  033204  030055  020040  020055
4480  033212  043440  020117  044504
4481  033220  042522  052103  054514
4482  033226  052040  020117  042524
4483  033234  052123      040
4484  033237      060  030060  030060  MSG77A: .ASCIZ  /000000/<1><15><12>
4485  033244  000460  005015      000
4486  033251      102  052111  034040  MSG78:  .ASCII  /BIT 8 IS SET - LOOP ON TEST /
4487  033256  044440  020123  042523
4488  033264  020124  020055  047514
4489  033272  050117  047440  020116
448A  033300  042524  052123      040
4491  033305      060  030060  030060  MSG78A: .ASCIZ  /000000/<1><15><12>
4492  033312  000460  005015      000
4493  033317      101  046114  041040  MSG79:  .ASCIZ  /ALL BITS IN THE SOFTWARE SWITCH REGISTER ARE CLEAR/<1><15><12>
4494  033324  052111  020123  047111
4495  033332  052040  042510  051440
4496  033340  043117  053524  051101
4497  033346  020105  053523  052111
4498  033354  044103  051040  043505
```

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 4499  031362  051511  042524  020122
 4500  031370  051101  020105  046103
 4501  031376  040505  000522  005015
 4502  031404      000
 4503  031405      124  042510  043040  MSG00:  .ASCIZ  /THE FOLLOWING SOFTWARE SWITCH REGISTER BITS ARE SET.../<11><15><12>
 4504  031412  046117  047514  044527
 4505  031420  043516  051440  043117
 4506  031426  053524  051101  020105
 4507  031434  053523  052111  044103
 4508  031442  051040  043505  051511
 4509  031450  042524  020122  044502
 4510  031456  051524  040440  042522
 4511  031464  051440  052105  027056
 4512  031472  000456  005015      000
 4513
 4514  031477      130  054130  054130  BIOTMP: .ASCIZ  /XXXXXXXX/
 4515  031504  054130  000130
 4516          000200                  .END 200
```

```
BIOCT   001581     DSVAD2  001022     MSG16A  024534     MSG35U  027251     PR7     = 000340
BIOTMP  031477     DSWR    = 177570   MSG16D  024541     MSG35V  027264     PS      = 177776
BIT0    = 000001   EMTVEC= 000030     MSG17   024611     MSG35W  027277     PSW     = 177776
BIT00   = 000001   ENDCMP  022140     MSG17A  024620     MSG35X  027312     PWRVEC= 000024
BIT01   = 000002   ENDLIN  022774     MSG18   024632     MSG35Y  027325     RESVEC= 000010
BIT02   = 000004   ENDNUM  023046     MSG19   024652     MSG36   027433     RTNTT   014750
BIT03   = 000010   ENDPLS  022412     MSG2    023227     MSG37   027552     R6      =000006
BIT04   = 000020   ENDSIN  013652     MSG2A   023277     MSG38   027636     R7      =000007
BIT05   = 000040   EOLDIS  022414     MSG2B   023304     MSG39   027727     SINCMP  013602
BIT06   = 000100   EOPTBL  013012     MSG2C   023334     MSG4    023424     SPCHAR  016730
BIT07   = 000200   ERMES   014532     MSG2P   024665     MSG40   030016     SPCHR   015022
BIT08   = 000400   ERRPAS  001056     MSG21   024707     MSG41   030064     SPNODE  000754
BIT09   = 001000   ERRVEC= 000004     MSG22   024733     MSG42   030066     SSTALL  015226
BIT1    = 000002   FAKE    022270     MSG23A  025006     MSG43   030206     STACK = 001100
BIT10   = 002000   FAKEY   001052     MSG23B  025130     MSG44   030333     START   001062
BIT11   = 004000   FINDTT  001306     MSG23C  025252     MSG45   030453     STKLMT= 177774
BIT12   = 010000   FXTST   015102     MSG23D  025374     MSG45A  030531     STLCNT  000772
BIT13   = 020000   GITCOD  013654     MSG24   025514     MSG45B  030567     SWR     000440
BIT14   = 040000   HALTER  014656     MSG25   025706     MSG5    023500     SWREG   000176
BIT15   = 100000   HT      = 000011   MSG25Y  025745     MSG54   030602     SW0     = 000001
BIT2    = 000004   IDTP    001030     MSG26   026004     MSG54A  030611     SW00    = 000001
BIT3    = 000010   INSERT  014056     MSG27   026067     MSG57   030624     SW01    = 000002
BIT4    = 000020   INTCNT  001050     MSG2R   026161     MSG6    023542     SW02    = 000004
BIT5    = 000040   IOTVEC= 000020     MSG29   026240     MSG7    023606     SW03    = 000010
BIT6    = 000100   KBID0   001054     MSG29A  026247     MSG70   030700     SW04    = 000020
BIT7    = 000200   KBSR    001000     MSG3    023346     MSG71   030741     SW05    = 000040
BIT8    = 000400   KBSRV   015244     MSG30   026261     MSG72   031011     SW06    = 000100
BIT9    = 001000   KBUF    001002     MSG31   026403     MSG73   031063     SW07    = 000200
BMR     000746     KBVAD1  001010     MSG32   026421     MSG74   031106     SW08    = 000400
BM1     000750     KBVAD2  001012     MSG33   026472     MSG76   031131     SW09    = 001000
BM2     000752     LBUF    001006     MSG33A  026555     MSG77   031176     SW1     = 000002
BPTVEC= 000014     LCSR    001004     MSG33T  026523     MSG77A  031237     SW10    = 002000
BUZZ    014662     LDSRV   015244     MSG34   026570     MSG78   031251     SW11    = 004000
CDTP    001032     LDVAD1  001014     MSG35A  026715     MSG78A  031305     SW12    = 010000
CHARS   016110     LDVAD2  001016     MSG35B  026730     MSG79   031317     SW13    = 020000
CHPCNT  001036     LEAVEC  000760     MSG35C  026743     MSG80   031405     SW14    = 040000
CLPTUR  014136     LF      = 000012   MSG35D  026756     MSTALL  015172     SW15    = 100000
CNCHAR  000740     LINCNT  000770     MSG35F  026771     MSTB0   026466     SW2     = 000004
CNERRC  000744     LSTALL  015002     MSG35F  027004     MSTB1   026470     SW3     = 000010
CNRECV  000742     MAXBLK  001060     MSG35G  027017     MSX25   025734     SW4     = 000020
CNXFER  000736     MSGOUT  014752     MSG35H  027032     MSX32   026453     SW5     = 000040
CONFR   014660     MSGY    013312     MSG35I  027045     NUMBER  022776     SW6     = 000100
CR      = 000015   MSGYA   013434     MSG35J  027060     PASCNT  001040     SW7     = 000200
CRLF    = 000200   MSG0    023150     MSG35K  027073     PIRQ    = 177772   SW8     = 000400
DCP     001034     MSG1    023217     MSG35L  027106     PIROVE= 000240     SW9     = 001000
DCSR    001026     MSG10   023663     MSG35M  027121     PLUS8   022342     TBITVE= 000014
DDISP   = 177570   MSG11   023757     MSG35N  027134     PR0     = 000000   TBL22   016074
DIHAN   015246     MSG12   024021     MSG350  027147     PR1     = 000040   TBL23   016100
DISPLA  000642     MSG13   024146     MSG35P  027162     PR2     = 000100   TEMP    000766
DISPRE  000174     MSG14   024157     MSG35Q  027175     PR3     = 000140   TKVEC   = 000060
DISTBL  015760     MSG15   024315     MSG35R  027210     PR4     = 000200   TPB     000776
DOWNFA  000764     MSG16   024457     MSG35S  027221     PR5     = 000240   TPS     000774
DSVAD1  001020     MSG16A  024464     MSG35T  027236     PR6     = 000300   TPVEC   = 000064
```

```
TRAPER  015420   T0016   010424   YDSPTB  013436   $GDADR  000620   $SETUP= 000021
TRAPVE= 000034   T0017   010514   YLINES  013120   $GDDAT  000624   $STUP = 177777
TRTVEC= 000014   T0017A  010630   YSTART  013122   $GET42  012766   $SVLAD  014406
TSTLOD  015254   T0017C  010762   $AUTOB  000634   $HD   = 000001   $SWR  = 147400
TSTLST  023050   T0020   010772   $BDADR  000622   $ICNT   000604   $SWRMK= 000000
TTOUT   014732   T0021   011100   $BDDAT  000626   $INTAG  000635   $TIMES  000722
TTYAVA  031042   T0022   011266   $BELL   000725   $ITEMB  000614   $TKB    000646
TTYOUT  014722   T0023   011362   $CMTAG  000600   $LF     000734   $TKS    000644
TUBOUT  013750   T0024   011456   $CM1  = 000010   $LPADR  000606   $TMP0   000702
TUBSWT  000756   T0025   011552   $CM2  = 000020   $LPERR  000610   $TMP1   000704
TUBTMA  001044   T0026   011646   $CM3  = 000010   $MXCNT  014530   $TMP2   000706
TUBTM1  001046   T0027   012102   $CM4  = 000010   $NULL   000654   $TMP3   000710
T0000   001514   T0030   012350   $CRLF   000733   $OVER   014514   $TMP4   000712
T0001   001770   T0031   012442   $DOAGN  013006   $PASS   000600   $TMP5   000714
T0002   002072   T0032   012554   $ENDAD  012776   $QUES   000732   $TMP6   000716
T0003   002152   T0036   013016   $ENDCT  012762   $REGAD  000660   $TMP7   000720
T0004   002226   T0037   013122   $EOP    012726   $REG0   000662   $TN   = 000001
T0005   003064   UPFAST  000762   $EOPCT  012754   $REG1   000664   $TPB    000652
T0006   007352   WCHAR   001024   $ERFLG  000603   $REG2   000666   $TPFLG  000657
T0007   007464   XCODE   013110   $ERMAX  000615   $REG3   000670   $TPS    000650
T0010   007566   XDISP   013112   $ERRPC  000616   $REG4   000672   $TSTNM  000602
T0011   007654   XDSPTB  013104   $ERRTB  001062   $REG5   000674   $XTSTR  014272
T0012   007746   XSTALL  015210   $ERTTL  000612   $REG6   000676   $$GET4= 000000
T0013   010120   XSTART  013016   $ESCAP  000724   $REG7   000700   .     = 031510
T0014   010226   YBLOCK  013116   $FILLC  000656   $RTNAD  013010
T0015   010312   YCODE   013114   $FILLS  000655   $SCOPE  014210

. ABS.  031510    000

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 DZKVBB,DZKVBB/SOL/NL:TOC=DZKVBB.P11
 RUN-TIME: 44 37 1 SECONDS
 RUN-TIME RATIO: 454/83=5.4
 CORE USED:  18K  (36 PAGES)
```