```
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Product Name:   CZLAFA0 LA36 TERM TST

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Maintainer:     DIAGNOSTIC ENGINEERING

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1.0 ABSTRACT

This diagnostic will functionally test the hardware options on the LA36 terminal.

Up to 48 terminals, including the console device, can be tested at a time. All terminals under test must be interfaced thru a DL11 type interface.

Control of this diagnostic may be thru a switch register, or via interactive console terminal commands.

1.1 Functional Description

The program will first determine if the system has a hardware switch register. If none available a software switch register at loc 176 will be assigned.

The program will then determine what device interfaces are on the system, at the standard DL11-A,B,C,D,E address and the interrupt vector of each interface present. This information will then be stored in a table.

The program will then ask the operator if he/she wants to use console control. If the response is "no" the program will halt and wait for the operator to enter control information thru the switch register.

Note : If no hardware switch register is present control is forced to console control.

If console control is selected a menu of available commands will be printed on the console terminal, and the program will wait for commands via the console.

2.0 REQUIREMENTS

2.1 EQUIPMENT

This diagnostic was written to run on all models of the PDP-11 computer, including the LSI-11. One to fourty eight LA36 terminals, connected thru a single line asyncronous interface (DL11-A thru E, DL11-W, DLV11), may be tested. 8K of memory is required.

A hardware switch register is supported, but not required.

2.2 OPTIONS

The following options are tested by this diagnostic:

ASCII/APL character set.
Selective Addressing Option.
Auto-Answerback Option.
Top-of-form Option.
Horizontal & Vertical Tab Option.

2.3 RELATED PROGRAMS

Although some error checking is done, this diagnostic does not functionally test the basic LA36 terminal, nor the terminals interface.

Therefore the basic LA36 terminal diagnostic, MDEC-11-DZLAC-*, and the DL11-*/DLV-11 interface test should be sucessfully run prior to this diagnostic. Also any other applicable processor/memory tests.

3.0 LOADING & INITIALIZATION

This diagnostic may be loaded using the standard procedures for paper tape, or via XXDP media. This diagnostic will not run in chained mode because manual intervention is required. The absolute loader area is preserved.

This diagnostic self sizes the system as far as the interfaces, and their interrupt vectors. The only operator modifications to be made are:

1. the location 'TIMER' which is a CPU dependent TIME contetant. See listing of DELAYM Routine.

```
        TIMER:  .WORD   554     ;SET FOR 11/35 - 11/40
                                ;SET TO 202 IF 11/03
                                ;       251    11/05 - 11/10
                                ;       314    11/15 - 11/20
                                ;       2127   11/45 BIPOLAR - 11/55
                                ;       1237   11/45 - MOS - 11/70
                                ;       755    11/45
        DELAYT: .WORD   0       ;DELAY TIME BUFFER
```

2. any of the preset device address to accomodate a non-standard interface address. (See Sect 7.0 for details)

3. location 'WIDTH' if other than 132 COL PAPER is being used. (See section 4.3). (Common for all terminals)

The initial starting address is 200(8), and all restarts at 1372.

4.0 CONTROL & TEST SELECTION

The diagnostic will ask (via the console) if console control is desired. Answer 'Y' if you want to use interactive commands, otherwise type 'N' for switch register control.

If 'Y' is typed a menu of available commands is printed on the console, and the program will wait for command input. If 'N' is typed the program will print a listing of the line (interface) table, then halt for the operator to set the switches to the desired parameters.

4.1 SWITCH REGISTER CONTROL

When SWITCH REGISTER CONTROL s selected the program will halt. Set the switches to the desired mode, then press continue. The program will check the entry and if a specific test is to be run, or a specific line is to be tested the program will halt again. Enter the desired line/test data in the switches, the press continue.
To change parameters the test must be restarted at loc 1372.

ALL of the switch functions are also available under console control mode. (See sect. 4.2,4.3).

SWITCH REGISTER BIT DEFINITIONS
FIRST WORD MODE SELECTION

BIT15	=1 (UP)	HALT ON ERROR
	=0 (DOWN)	CONTINUE AFTER REPORT
BIT14	=1 (UP)	LOOP AFTER ERROR IS DETECTED
	=0 (DOWN)	DON'T LOOP
BIT13	=1 (UP)	INHIBIT ERROR REPORTS
	=0 (DOWN)	PRINT ERROR REPORTS
BIT12	=1 (UP)	PRINT INTERFACE TABLE
	=0 (DOWN)	DON'T PRINT TABLE
BIT11	=1 (UP)	INHIBIT ITERATIONS
	=0 (DOWN)	NORMAL RUN
BIT6	=1 (UP)	RUN ALL TESTS IN SEQUENCE
	=0 (DOWN)	RUN SELECTED TEST ONLY
BIT5	=1 (UP)	RUN ALL AVAILABLE LINES
	=0 (DOWN)	RUN SINGLE LINE ONLY

SECOND WORD LINE AND TEST NO.

BIT15 - BIT8	SELECTED LINE NUMBER	(00-57)
BIT7 - BIT0	SELECTED TEST NUMBER	(0-5)

4.2 CONSOLE CONTROL

When console control is selected a menu of available commands is typed on the console terminal. The program will wait for commands to be entered thru the keyboard.

Enter one command per line, followed by a carriage return. To terminate command input and start execution type an ALTmode or ESCape.

To regain control once execution has begun type a CTL-C. The program will respond with 'READY'. You can now enter the desired commands just as in startup.

4.3 COMMANDS

There are two types of commands available, interactive commands; and static commands.

ALL static commands can only be entered while in "Command Mode", that is during startup after 'READY' is printed on the console, or after the operator has invoked command mode by typing a CTL-C and the program has printed 'READY'.

Interactive commands can be entered at any time, and are essentially the same as the switch register bits 15,14,13.

The available Commands are:

```
        S          (STATIC) Single Line Mode. Test a single
                   device. Line 00 is default. Use add command
                   to select the desired line.

        M          (STATIC) Multi Line Mode. Test all lines
                   present and not deselected.

        S          (STATIC) Sequence thru all tests, starting
                   with test 0.

        Rn         (STATIC) Run test N.

        Dn         (STATIC) Deselect or Drop from testing
                   interface line N. (see T command)

        An         (STATIC) Add line N. Clear out the
                   error count for line N, and reselect the
                   line for testing. In single line mode
                   sets N as current line to test.

        T          (STATIC) Type out a listing of the interface lines
                   present on the system, the vector address at
                   which the device interrupts, and weather or
                   not the line is selected.

        Wn         (STATIC) Changes location 'Width' to N. Used
                   to control output of terminal tests. Enter N
                   as an Octal number 32 to 204. (132 decimal)

        CTL-L      (interactive) Loop on error. If an error
                   is detected the program will start looping
                   or the test section which caused the error,
                   ard continue to loop until a Klear
                   command is issued.
                         In command mode type an L.
```

```
CTL-H    (interacive) Halt on error. Will cause the
         program to halt after the error message is
         printed. (assumeing error printouts are enabled .
                 In command mode type or H.

CTL-K    (interactive) Klear - resets both the H and L
         commands (Don't halt, Don't loop).
                 In command mode type a C.

CTL-N    (interactive) NO Error reports. Inhibits
         the printing of normal error messages.
                 In command mode type an N.

CTL-P    (interactive) Print error reports. ALL report
         messages will be printed on the console.
                 In command mode type a P.

CTL-S    (interactive) Will cause the program PCFLAGS
         to be displayed on the console for
         trouble shooting purposes. See listing for
         bit definitions.

ESC      Exit command mode & start execution of
         the diagnostic test(s).

CTL-C    Returns test to command mode.
         All operations in progress stop.
```

4.4 EXAMPLES & HINTS

Test numbers 0 thru 5 may be selected to run individually on all, or any terminal.

ALL tests ca be run sequentially on all or any terminal.

Tests can be run sequentially on a teminal, but there is little chance that any terminal will have more than one or two of these options installed. Sequencing all tests will probably result in numerous errors from trying to test non-existant options.

If a line gets more than 16 errors it will be deselected by the program and a message will be printed on the console. If the line is the only one being tested it will automatically be re-selected.

Example 1. the commands to select test #4 to be run on all lines.

```
READY
R04(CR)   - Run test 4
M(CR)     - Multi line mode
W120(CR)  - Set paper width to 120
$         - ESC - echoed as $
```

Example 2. the commands to run all tests on line no. 06, with Halt on error set.

```
READY
Q(CR)     - Sequence tests
S(CR)     - Single line mode.
A06(CR)   - Add line #06
H(CR)     - Halt on error
$         - ESC - echoed as $.
```

EXAMPLE 3. How do I run tests on 10 out of 12 terminals.

First you must be in command mode. If a test is running type CTL-C. The program will respond with "Ready". Now type D nn (cr) to deselect line number nn. Repeat for each additional line to be dropped from the tests. Now select your test other parameters as in Example 1.

EXAMPLE 4. How do I restart a device which has been deselected?

In command mode type Ann (cr) where nn is the line number of the line to be added.

EXAMPLE 5. How do I loop on error.

If the test is running type a CTL-L. When an error is detected the program will start to loop on the test or subtest and continue to loop until a CTL-K or CTL-C command is issued.

If in command mode type L (CR).

EXAMPLE 6. Can I set the 'width' constant different for each terminal?

The constant 'width' is the same for all terminals, although it may be changed any time you are in command mode.

5.0 SCOPE OF TESTS.

This diagnostic will functionally test the following hardware options of the LA36.

1. Secondary character set option APL/ASCII character set selection
2. Selective addressing option
3. Auto-answer back option
4. Top of forms option

5. Horizontal and Vertical tabluation option.

The diagnostic will do cursory testing of the basic interface, and basic LA36 logic. It is assumed that the basic interface, CPU/memory, and LA36 tests have been run successfully.

Due to the nature of the hardware under test most error checking will be by visual inspection of the terminal output by the operator.

Description Of Tests

5.1 Test 0 Secondary Character Set.

This test is an output only test, No terminal feed back is received.

The test prints on each terminal alternating lines of ASCII character set, and APL character set.

Output of characters per line will consist of char codes 40 thru 176 unless the paper width limit is reached first.

Output format:

```
        PRIMARY----(ASCII CHARACTER SET)
        SECONDARY--(APL CHARACTER SET)
```

This output is controlled by the "width" of the paper. See W command description.

5.2 Test 1 Selective Addressing Option

This test will alternately send out a select code, followed by it's ASCII Equivelent, for all possible select codes (20 thru 177).

This test will also deslect all terminals and try to output a "this should not print" message. "All terminals should be off"

This test will also try to print "this should not print" messages after transmitting 'NUL' select character sequences, and no select codes sequences.

Valid terminal output should be: Select Recognized = /NN(Group Select Code) /NN(Individual Select Code)/

Where NN represents the select codes recognized by this terminal. If the group select code and individual select codes are set to the same thing them only one /NN/ should appear.

More than two /nn/ codes printed indicates a logic failure in the decoder section of the option, or possibly interface to terminal line problems.

Any of the "this should not print" message that appear on the terminal indicate a failure of the selection logic.

5.3 Test 2 Auto Answer Back Option

This test is divided into six subtests:

Subtest -1

The first subtest is actually a sizing routine. The terminal should respond to its unique selection code with an answerback when polled. This test has no way of knowing what the answer back is, nor any way of 'pre-selecting' its unique selection code. Therefore subtest -1 will try all legal selection codes to see if it can cause an answer back to be transmitted. If one is received the program will store the select code associated with the response in the line table for furture testing.

Subtest -2

Will see if any answer back has been received, and check its length, the message should not exceed 20 (10) characters. Subtest 2 will print the ASCII message on the terminal, and an octal representation of the characters (to verify non printables are being transmitted correctly, and as a trouble shooting aid if bad data is being sent out from the switches).

Subtest -3

Will read the answer back ten times to verify reliability of the data, and lines.

Subtest -4

Will try to cause transmission of the answer back in response to a broadcast code.

Single Line Mode - Subtests 5, and 6.

Subtest -5

The test will request the operator to press the 'Here-is' key, then check for answerback.

Subtest -6

The test will request the operator to type 'CTL-E', then check for answer back.

The operator must verify that the message echoed back to the terminal is correct, by comparing it to the data switch configuration.

5.4 Test 3 Top Of Forms Option

This test is divided into two subtests, one for multi line mode, the other for single line mode. Operator intervention will be required for the single line test.

1. Multi line mode.

   This subtest will assume a standard form of 11 inches being used.

   The test will issue a form feed, then print a line of dashes. This FF/dashes is repeated 3 times.

   The operator should verify correct operation by checking for a line of dashes at the same place on each page.

2. In single line mode, This test will require the operator to set the forms length switch to the value requested. The test will then do three form feeds at each length setting.

5.5 Test 4 Horizontal Tab Option

This test will adjust it's output to conform to the paper width. Change location "width" to the appropriate value before starting test. (Preset to 132 col.) Note: see W command description.

The test will print a reference line for visual verification. The line will look like this: .....V.....V.....V.....V.....

Tabs will then be set corrosponding to the location of each V. The test will then issue a tab and print an X, tab then X etc until the line is complete. Three lines of X's will be printed. All X's printed should be aligned with the reference line V's.

This will be repeated for various (7) values of tab spacing.

Example of output

```
.....V.....V.....V.....V.....V.....
     X     X     X     X     X
     X     X     X     X     X
     X     X     X     X     X


........V..........V........V......
        X          X        X
        X          X        X
        X          X        X
```

5.6 Test 5 Vertical Tab Option

This test is divided into two subtests, one for multi line mode, the other for single line mode. The single line mode test requires operator intervention.

Multi line mode subtest

Will set tabs at intervals of 1 line, 2 lines, 3 lines etc. up to 11 lines. The test will then issue a vert. tab then print a line of dashes, then repeat until 1 full page has been done. Three pages of output are run for 1 pass of test.

Single line mode testing involves the operator to set up the forms control to 11 inch forms, and then proceeds with the same subtest as for multi line mode.

5.0 ERROR REPORTING

There will be four basic sources of error messages. First the system sizer, second the command decoder, and third the diagnostic tests, and the I/O drivers.

5.1 Diagnostic Tests

All test error messages will be 2 lines of output. A standard format line, shown below, and a descriptive message telling what went wrong.

```
Std. Fmt.:  *ERROR XXY TEST YY LINE ZZ

           where XXX = the error number local to the current test.

                 YY  = the current test number.

                 ZZ  = the line under test.

           an example of a descriptive message :

           .NO ANSWERBACK MEASSAGE RECEIVED
```

As each error is handled a routine will update an error count for the failing line. If 16 errors are accumulated on a line, that line will be "deselected" and the following message will be displayed.

```
           EXCESSIVE ERRORS .. LINE XX DROPPED.
```

If the ine under test is the only line being tested the program will automatically re-select the line, zero the count, and continue testing after typing the following:

```
           LINE RE-SELECTED FOR TEST.
```

6.2 I O Driver

If the IO Driver finds no available line to test a message will be displayed and then control will return to the "ready" state.

NO LINES AVAILABLE FOR TEST.

#377 Multi line driver error.
Error messages tagges as #377 indicate a failure during an I/O driver operation, such as a failure to interrupt on transmit to a terminal with the interrupt enable set.

#376
Same as #377 except a single line Driver.

6.3 Command Decoder

Console terminal command errors will be handled by a CMDERR module & will output a line of ???? if the input was invalid.

If a line selection command tires to add (re-select) an invalid or non existant line a --LINE INVALID message will be typed.

6.4 System Sizer

If during the sizing operation the sizing routine detects a failure of the interface to interrupt it will be reported.

ex: 'NO INTERRUPT ON TXMIT LINE 27'

7.0 PROCEDURES FOR NON-STANDARD DEVICES.

This diagnostic can be modified for use on devices that have non-standard interface addresses by replacing an unused address in the line table with the address of the interface line to be tested.

The table is preset to the standard DL11-A,B,C,D,E addresses. (775610 - 776170 & 776500 - 776670), and the console address 777560.

No modification need be made because of non-standard interrupt vector addresses. The diagnostic sizes each address for presence on the system, and inserts the interrupt vector data into the table at run time.

NOTE: The table addresses are not in ascending order, rather it has been optomized for relative system size by having the most commonly used addresses at the head of the table. DL11-A,B and DL11-C,D,E address are merged together.

```
  101                       BASIC DEFINITIONS
  212                       ACTII HOOKS
  216  04200                TEST CONTROL & INITIALIZATION
  507  08500                LINE CONTROL & INITIALIZATION
  713  12540                SWITCH REGISTER ROUTINES
  791  14840                CONSOLE TERMINAL ROUTINES
 1189  22020                ERROR & REPORT ROUTINES
 1378  00700                INTERFACE SIZER ROUTINES
 1452  05450                EMT HANDLER
 1472  06650                I/O DRIVERS
 1659  11595                TRAP ROUTINES
 1793  16900                CONVERSION ROUTINES
 1898  0025C                LA36 OPTION TESTS
 2778  43150                STORAGE & CONSTANTS
```

```
                                      00200
                                                 .TITLE  CZLAFAO LA36 TERM TST
  (1)                                            ;*COPYRIGHT (C) 1977
  (1)                                            ;*DIGITAL EQUIPMENT CORP.
  (1)                                            ;*MAYNARD, MASS. 01754
  (1)                                            ;*
  (1)                                            ;*PROGRAM BY R.SCHAUBER
  (1)                                            ;*
  (1)                                            ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
  (1)                                            ;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
  (1)                                            ;*
  (1)            000001                          $TN=1
  (1)            160000                          $SWR=160000     ;;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYPOUT
```

```
00260
00280   ;****** OPERATING INSTRUCTIONS *********************************
00300   ;
00320   ;*1.     THIS TEST ASSUMES THAT THE BASIC INTERFACE
00340   ;        LOGIC TESTS & BASIC LA36 FUNCTIONS TEST
00360   ;        MDEC-11-DZLAC-X HAVE BEEN RUN SUCESSFULLY.
00380   ;
00400   ;        TIMING FOR ALL TESTS IS DEPENDENT ON CPU TYPE.
00420   ;        THE TIMER IS SET FOR AN 11/40...IF THIS IS
00440   ;        NOT THE CASE  CHANGE LOCATION "TIMER"
00460   ;        ACCORDING TO THE TABLE SUPPLIED IN THIS LISTING.
00480   ;
00500   ;*2.     THE DIAGNOSTIC WILL START BY ASKING IF THE OPERATOR
00520   ;        WANTS TO USE CONSOLE TERMINAL CONTROL, ANSWER Y OR N.
00540   ;
00560   ;        IF Y  IS ENTERED, A "MENUE" OF AVAILABLE COMMANDS IS
00580   ;        PRINTED ON THE TERMINAL, AND THEN THE PROGRAM WAITS
00600   ;        FOR INSTRUCTIONS THRU THE KEYBOARD.
00620   ;
00640   ;        IF N  IS ENTERED, THE PROGRAM WILL PRINT A LISTING OF
00660   ;        INTERFACES BY LINE NUMBER, THEN HALTS.  SET THE SWITCHES
00680   ;        TO THE DESIRED MODE  AND PRESS CONTINUE. THE PROGRAM WILL
00700   ;        DECODE THE SWITCH REGISTER, AND IF RUNNING A SELECTED
00720   ;        TEST  OR  A SELECTED LINE, WILL HALT AGAIN.
00740   ;        ENTER THE DESIRED TEST NO. IN THE LOW ORDER BYTE, AND-OR
00760   ;        THE DESIRED LINE NO. IN THE HIGH ORDER BYTE. PRESS CONTINUE.
00780   ;
00800   ;        IF NO HARDWARE SWITCH REGISTER IS PRESENT ON THE SYSTEM
00820   ;        THE PROGRAM WILL USE LOCATION 176 AS A SOFTWARE SWITCH
00840   ;        REGISTER. CONTROL WILL DEFAULT TO THE CONSOLE !
00860   ;
00880   ;
00900   ;*3.     TO CHANGE MODES TYPE CTL-C.
00920   ;        THE CONSOLE WILL RESPOND WITH READY .
00940   ;        ENTER YOUR COMMANDS FOLLOWED BY AN ESC.
00950   ;        INTERACTIVE COMMANDS SUCH AS CTL-G MAY BE ENTERED
00955   ;        DURING COMMAND, OR RUN MODES.
00960   ;
00980   ;*4.     IF MULTI-LINE MODE IS SELECTED, A TABLE
01000   ;        OF INTERFACE LINES WILL BE PRINTED.
01020   ;        ALL LINES PRESENT WILL BE INITIALLY SELECTED.
01040   ;        IF YOU ADD OR DROP LINES USE THE LINE NO.
01060   ;        SPECIFIED IN THE LINE TABLE LIST.
01080   ;
```

```
01160   ;****** SWITCH REGISTER BIT DEFINITIONS ************************
01180
01200   :       BIT15   =1 (UP)   HALT ON ERROR
01220   :               =0 (DOWN) CONTINUE AFTER REPORT
01240
01260   :       BIT14   =1 (UP)   LOOP AFTER ERROR IS DETECTED
01280   :               =0 (DOWN) DON'T LOOP
01300
01320   :       BIT13   =1 (UP)   INHIBIT ERROR REPORTS
01340   :               =0 (DOWN) PRINT   ERROR REPORTS
01360
01380   :       BIT12   =1 (UP)   PRINT INTERFACE TABLE
01400   :               =C (DOWN) DON'T PRINT TABLE
01420
01440   :       BIT11   =1 (UP)   INHIBIT ITERATIONS
01460   :               =0 (DOWN) NORMAL RUN
01480
01500   :       BIT6    =1 (UP)   RUN ALL TESTS IN SEQUENCE
01520   :               =0 (DOWN) RUN SELECTED TEST ONLY
01540
01560   :       BIT5    =1 (UP)   RUN ALL AVAILABLE LINES
01580   :               =0 (DOWN) RUN SINGLE LINE ONLY
01600
01620
01640   :       SECOND WORD ENTRY VIA SWITCHES
01660
01680   :       BIT15 - BIT8   SELECTED LINE NUMBER
01700
01720   :       BIT7  - BIT0   SELECTED TEST NUMBER
01740
01760
01780   ;********  TEST  ASSIGNMENTS  **********************************
01800
01820   :        TEST 0     SECONDARY CHARACTER SET
01840   :        TEST 1     SELECTIVE ADDRESSING OPTION
01860   :        TEST 2     AUTO ANSWERBACK OPTION
01880   :        TEST 3     TOP OF FORMS OPTION
01900   :        TEST 4     HORIZONTAL TAB OPTION
01920   :        TEST 5     VERTICAL TAB OPTION
```

```
                  01960
                  02080
                  02100    ;*************
                  02120    ; LOCAL PROGRAM EQUATES
                  02140
000020            02160            ABO = BIT4                     ;LINE ABORT FLAG
000006            02180            ACK = 6
000004            02200            ADDC    = BIT2
000200            02220            ATTN    = BIT7
000015            02240            CR = 15
000003            02260            CTLC = 3
000000            02280            CTLCNT = 0
000007            02300            CTLG = 7
000010            02301            CTLH = 10
000013            02302            CTLK = 13
000014            02303            CTLL = 14
000016            02304            CTLN = 16
000020            02305            CTLP = 20
004000            02320            DATAIN = BIT11
100000            02340            DLP = BIT15                    ;LINE PRESENT FLAG
000010            02360            DROPC   = BIT3
000005            02380            ENQ = 5
004000            02400            EOL     = BIT11
020000            02420            EOP     = BIT13
040000            02440            EOT     = BIT14
000033            02460            ESC = 33
000003            02480            ETX = 3
000001            02500            FLAG1   = BIT0
000002            02520            FLAG2 = BIT1
100000            02540            HALTOE = BIT15
000200            02560            HALTC   = BIT7
177776            02580            ICNT    = -2
000040            02600            INHR    = BIT5
020000            02620            INHRPT = BIT13
005726            02640            ISP = 5726                     ;INC SP 2
022626            02660            ISP2 = 22626                   ;INC SP 4
000400            02680            LDONE   = BIT8
000100            02700            LOOPC   = BIT6
040000            02720            LOOPOE = BIT14
000200            02740            PRI4 = 200                     ;PRIORITY 4
000340            02760            PRI7 = 340                     ;  "      7
000000            02780            PRI0 = 0                       ;  "      0
000200            02800            SEL = BIT7                     ;LINE SELECT FLAG
000240            02820            NOP = 240
000240            02840            NOOP = 240
003000            02860            MAJOR = 3000
000006            02880            POINT   = 6
000002            02900            PASCNT = 2
000010            02920            RPC     = 10
000340            02940            NREG    = 340
000017            02960            SI = 17
000016            02980            SO = 16
000001            03000            SOH = 1
000002            03020            STX = 2
010000            03040            PRINTT = BIT12
020000            03060            TDONE   = BIT13
```

```
   159        100000                03080            MERR    = BIT15
   160        002000                03120            NEWTST  = BIT10
   161        001000                03140            NEWMOD  : BIT9
   162        000200                03160            READY   = BIT7
   163        000100                03180            SEQ     = BIT6
   164        000040                03200            MULTI   = BIT5
   165        000020                03220            SWC L   = BIT4
   166        000020                03240            PRINT   = BIT4
   167        100377                03260            MERRN   = 100377
   168        000004                03280            MFLAGS = 4
   169        177564                03281            TPS = 177564
   170        177566                03282            TPB = 177566
   171        177560                03283            TKS = 177560
   172        177562                03264            TKB = 177562
   173        000060                03285            TKV = 60
   174                              03300    ;****** EMT CALL EQUATES
   175        104000                03320            TYPE = EMT
   176        104002                03340            PRTTBL = EMT+2
   177        104004                03360            ITRAP = EMT+4
   178        104006                03380            DELAYR = EMT+6
   179                              03460
```

```
 181          000000                 03500              .=0                         ;TRAP CATCHER
 182  000000  000002                 03520              .+2
 183  000002  000000                 03540              HALT
 184  000004  000006                 03560   MACHER:    .+2
 185  000006  000000                 03580              HALT
 186  000010  000012                 03600              .+2
 187  000012  000000                 03620              HAL
 188  000014  007162                 03640              INTRAP              ;BREAKPOINT TRAP
 189  000016  000200                 03660              PRI4                ;USED DURING SYSTEM SIZER
 190  000020  007416                 03680              TXTRAP              ;IOT TRAP
 191  000022  000200                 03700              PRI4                ;USED BY TXMIT I/O DRIVER
 192  000024  001372                 03720              RESTRT              ;POWER FAIL TRAPS TO RESTART
 193  000026  000000                 03740              PRI0
 194  000030  006162                 03760              EMTBOS
 195  000032  000000                 03780              PRI0
 206          000172                 04000              .=172
 207  000172  000000                 04020   SWTEST:    .WORD    0
 208  000174  000000                 04040   SWLINE:    .WORD    0
 209  000176  000000                 04060   SSWR:      .WORD    0
 210  000200  000137  001102         04080              JMP      START
 211                                 04100
 212                                         .SBTTL     ACT11 HOOKS
 (1)
 (2)                                         ;;*************************************************************
 (1)                                         ;HOOKS REQUIRED BY ACT11
 (1)          000204                                    $SVPC=.                     ;SAVE PC
 (1)          000046                                    .=46
 (1)  000046  001102                                    START                       ;;1)SET LOC.46 TO ADDRESS OF START
 (1)          000052                                    .=52
 (1)  000052  020000                                    .WORD    20000              ;;2)SET LOC.52 TO 20000
 (1)          000204                                    .=$SVPC                     ;; RESTORE PC
 213          001100                 04140              .=1100
 214  001100  000240                 04160              NOP
```

```
                                   04200           .SBTTL  TEST CONTROL & INITIALIZATION
                                   04300                                   ;***********************************
                                   04320                                                                        ;
001102                             04340   START:                          ;************ TEST MONITOR ************
001102  000005                     04380           RESET                   ;***********************************
                                   04400   ;
                                   04420   ; PROGRAM INITIALIZATION SECTION
                                   04440   ;
001104  012706  001100                             MOV     #STACK,SP
001110  005037  016152                             CLR     NEXT
001114  005037  016154                             CLR     INTEST
001120  005037  016162                             CLR     NXTLIN
001124  005037  016160                             CLR     ONLIN
001130  012737  016114  016164                     MOV     #INBUF,PTR
001136  012705  010352                             MOV     #TOOBLK,R5
                                   04580   ;
                                   04600   ; SEE IF SYSTEM HAS A SWITCH REGISTER
                                   04620   ;
001142  004737  003006                             JSR     PC,SWRTST
                                   04660   ;
                                   04680   ; PRINT TEST IDENTIFICATION MESSAGE
                                   04700   ;
001146  012700  016772                             MOV     #PROGID,R0
001152  104000                     04740           TYPE
                                   04760   ;
                                   04780   ; DETERMIN SYSTEM CONFIGURATION ++
                                   04800   ; BUILD A TABLE OF INTERFACE LINES.
                                   04820   ;
001154  004737  005640                             JSR     PC,BUILD
                                   04860   ;
                                   04880   ; RESTORE TRAP CATCHER FROM 100 TO 1000
                                   04900   ;
001160  004737  006126                             JSR     PC,CATCH
001164  104002                     04930           PRTTBL
                                   04940   ;
                                   04960   ; FIND OUT IF OPERATOR WANTS TO USE
                                   04980   ; CONSOLE OR SWITCHS FOR CONTROL
                                   05000   ;
001166  004737  003350                             JSR     PC,GETSRC
001172  004737  003332             05030   START2: JSR     PC,CONSON
001176  032737  000020  001364                     BIT     #SWCTL,PCFLAG
001204  001011                                     BNE     50001$
                                   05060   ;
                                   05080   ; PRINT A MENUE OF AVAILABLE COMMANDS
                                   05100   ;
001206  012700  017051                             MOV     #L3,R0
001212  104000                     05115                TYPE
001214  012700  017056                             MOV     #HEADR1,R0
001220  104000                     05140                TYPE
001222  012700  017103                             MOV     #COMSUM,R0
001226  104000                     05180                TYPE
001230                                     50001$:
001230  004737  003332             05220   START3: JSR     PC,CONSON
001234                                     50002$:
                                   05260   ;
001234  032737  000020  001364                     BIT     #SWCTL,PCFLAG
```

```
 (9)  001242  001403                                         BEQ     50004$
 276                                      05340   ; IF IN SWITCH CONTROL GET CONTENTS OF SW REG.
 277  001244  004737  003130                                 JSR     PC,GETSWS
 278  001250  000421                                         BR      50005$
 (3)  001252                                      50004$:
 279                                      05420   ;
 290                                      05440   ; IN CONSOLE CONTROL SIGNIFY    READY
 281                                      05460   ; AND READ COMMANDS FROM THE CONSOLE.
 282                                      05480   ;
 283  001252  012700  020123                                 MOV     #RDY,R0
 284  001256  104000                      05520                      TYPE
 285  001260                                      50006$:
 286  001260  000001                      05560                          WAIT
 287  001262  032737  000200  001364                         BIT     #ATTN,PCFLAG
 (5)  001270  001001                                         BNE     50007$
 288  001272  000772                                         BR      50006$
 (3)  001274                                      50007$:
 289                                      05620   ;
 290                                      05640   ; PRINT THE LINE TABLE IF REQUESTED.
 291                                      05660   ;
 292  001274  032737  010000  001364                         BIT     #PRINTT,PCFLAG
 (9)  001302  001404                                         BEQ     50010$
 293  001304  104002                      05700                          PRTTBL
 294  001306  042737  010000  001364                         BIC     #PRINTT,PCFLAG
 295  001314                                      50010$:
 296  001314                                      50005$:
 297                                      05780   ;
 298                                      05800   ; SET UP THE I/O DRIVER AREAS
 299                                      05820   ; SET UP & EXECUTE REQUESTED TESTS.
 300                                      05840   ;
 301  001314  004737  002110                                 JSR     PC,LINMON
 302  001320  012700  020411              05870              MOV     #ALLON,R0        ;ISSUE A SELECT ALL COMMAND
 303  001324  004737  007010              05872              JSR     PC,MTYPE         ;IN CASE THERE ARE SELECTIVE
 304                                      05874                                       ;TERMINALS ON LINE.
 305  001330  004737  001446                                 JSR     PC,TSTCTL
 306  001334  032737  004000  002032                         BIT     #EOL,CFLAGS
 (5)  001342  001406                                         BEQ     50003$
 307  001344  042737  004000  002032                         BIC     #EOL,CFLAGS
 308  001352  004737  001372                                 JSR     PC,RESTRT
 309  001356  000726                                         BR      50002$
 (3)  001360                                      50003$:
 310  001360  000137  001172              05990              JMP START2
 311  001364                                      50000$:
 312                                      06020
 313                                      06040   ;                  ****************************************
 314                                      06060   ;                  *                                      *
 315                                      06080   ;                  * NOTE...TYPING CTL-G WHILE IN CONSOLE *
 316                                      06100   ;                  *      CONTROL MODE WILL CAUSE THE     *
 317                                      06120   ;                  *      PCFLAG WORD TO BE PRINTED.      *
 318                                      06140   ;                  *                                      *
 319                                      06160   ;                  ****************************************
 320  001364                              06180   CTLBLK:                    ;PROGRAM CONTROL BLOCK
 321  001364  000001                      06200   PCFLAG: .WORD   1                              ;PROGRAM CONTROL FLAGS
 322  001366  000000                      06220   TESTNO: .WORD   0                              ;TESTNO
 323  001370  000000                      06240   LINENO: .WORD   0                              ;LINENO
 324                                      06260
 325                                            06280  ;***************************
 326                                            06281  ; PCFLAG BIT DEFINITIONS   *
 327                                            06282  ;***************************
 328                                            06283  ;
 329                                            06284  ; BIT 15        HALTOE          HALT ON ERROR  (SW-15)
 330                                            06285  ; BIT 14        LOOPOE          LOOP ON ERROR  (SW-14)
 331                                            06286  ; BIT 13        INHRPT          INHIBIT REPORTS  (SW-13)
 332                                            06287  ; BIT 12        PRINTT          PRINT TABLE  (SW-12)
 333                                            06288  ; BIT 11        DATAIN          DATA IN FROM KBD.
 334                                            06289  ; BIT 10        NEWTST          CHANGE IN TEST NO.
 335                                            06290  ; BIT  9        NEWMOD          CHANGE IN MODE.
 336                                            06291  ; BIT  8        LDONE           END OF LINE TABLE REACHED
 337                                            06292  ; BIT  7        ATTN            ATTENTION !!!!!!!!!
 338                                            06293  ; BIT  6        SEQ             SEQUENCE TESTS MODE
 339                                            06294  ; BIT  5        MULTI           MULTI LINE MODE.
 340                                            06295  ; BIT  4        SWCTL           CONTROL VIA SWITC.IES.
 341                                            06296  ; BIT  3        DROPC           DROP LINE COMMAND
 342                                            06297  ; BIT  2        ADDC            ADD LINE COMMAND
 343                                            06298  ; BIT  1        FLAG2           MODE  0 = NO CURRENT I/O TO CONSOLE
 344                                            06299  ; BIT  0        FLAG1                 1 = IN COMMAND INPUT MODE
 345                                            06300  ;                                     2 = I/O TESTING OF CONSOLE
 346                                            06301  ;                                     3 = ?
 347                                            06305
 348                                            06306
 349                                            05307
 350                                            06319  ;***************
 351                                            06320  ; RESTART
 352                                            06340  ;***************
 353                                            06360
 354  001372  012706  001100                    06380  RESTRT: MOV      #STACK,SP       ;REINITIALIZE EVERYTING
 355  001376  005037  016152                    06400          CLR      NEXT
 356  001402  005037  016154                    06420          CLR      INTEST
 357  001406  012737  000001  001364            06440          MOV      #1,PCFLAG
 358  001414  005037  016162                    06460          CLR      NXTLIN
 359  001420  005037  016160                    06480          CLR      ONLIN
 360  001424  012737  016114  016164            06500          MOV      #INBUF,PTR
 361  001432  004737  006126                    06520          JSR      PC,CATCH
 362  001436  000240                            06540          NOP
 363  001440  000005                            06560          RESET
 364  00:442  000137  001230                    36580          JMP      START3
```

```
369                                         06680    ;************
370                                         06700    ; TSTCTL   THIS SECTION CONTROLS TEST SELECTION, TEST
371                                         06720    ;          SEQUENCING, AND INTERFACES TO ERROR AND REPORT
372                                         06740    ;          MODULES AS REQUIRED BY THE TEST MODULES.
373                                         06760    ;************
374                                         06780
375   001446  013737  001366  016152        06800    TSTCTL: MOV       TESTNO,NEXT              ;GET TEST NO.
376   001454  013737  016152  016154        06820    LOOP1:  MOV       NEXT,INTEST              ;GET CURRENT TEST NO.
377   001462  004737  002056                06840            JSR       PC,SUTEST
378   001466  004777  014464                06920    LOOP2:  JSR       PC,@TESTAD               ;;START TEST
379                                         06940    ;       .         .         .         .         .         .
380                                         06942    ;
381                                         06944    ; CHECK FOR ERROR FLAG FROM TEST
382                                         06946    ;
383   001472  032737  000020  001364                         BIT       #SWCTL,PCFLAG
(9)   001500  001414                                         BEQ       50011$
384   001502  017737  014416  016100                         MOV       @SWR,TEMP
385   001510  042737  003777  016100                         BIC       #3777,TEMP
386   001516  042737  174000  001364                         BIC       #174000,PCFLAG
387   001524  053737  016100  001364                         BIS       TEMP,PCFLAG
388   001532                                         50011$:
389                                         06953
390   001532  032765  100000  000004                         BIT       #MERR,MFLAGS(R5)
(9)   001540  001414                                         BEQ       50012$
391   001542  016537  000004  002032                         MOV       MFLAGS(R5),CFLAGS
392   001550  016537  000006  002034                         MOV       POINT(R5),TSCPTR
393                                         07002    ;
394                                         07004    ; CALL ERROR HANDLER ROUTINE
395                                         07006    ;
396   001556  004737  005124                                 JSR       PC,ERROR
397   001562  042765  100377  000004                         BIC       #MERRN,MFLAGS(R5)
398   001570  000421                                         BR        50013$
(3)   001572                                         50012$:
399                                         07062    ;
400                                         07064    ; SEE IF TEST IS REPORTING DONE CONDITION
401                                         07066    ;
402   001572  032765  020000  000004                         BIT       #TDONE,MFLAGS(R5)
(9)   001600  001415                                         BEQ       50014$
403                                         07082    ;
404                                         07084    ;UPDATE THE PASS COUNT  THEN REPORT END OF PASS
405                                         07086    ;
406   001602  005265  000002                                 INC       PASCNT(R5)
407   001606  042765  020000  000004                         BIC       #TDONE,MFLAGS(R5)
408   001614  052737  020000  002032                         BIS       #EOP,CFLAGS
409   001622  016537  000002  002036                         MOV       PASCNT(R5),TSCCNT
410   001630  004737  005436                                 JSR       PC,REPORT
411   001634                                         50014$:
412   001634                                         50013$:
413                                         07222    ;
414                                         07224    ; IF LOOP ON ERROR IS SET AND AN ERROR IS
415                                         07226    ;DETECTED THE ERROR HANDLER WILL MAKE THE
416                                         07228    ;RETURN ADDRESS OF THE TEST   ODD      .
417                                         07230    ;
418                                         07232    ;CHECK FOR ODD ADDRESS....IN LOOP MODE...
419                                         07234    ;
420   001634  032765  000001  000010                         BIT       #BIT0,RPC(R5)
```

```
 (9)   001642  001413                                          BEQ     50015$
 421                                          07242    ;
 422                                          07244    ; IF THE LOOP ON ERROR IS TURNED OFF THEN
 423                                          07246    ; CONTINUE TEST AT THE NEXT SUBTEST.
 424                                          07248    ;
 425   001644  032737  040000  001364                          BIT     #LOOPOE,PCFLAG
 (9)   001652  001006                                          BNE     50016$
 426   001654  042765  000001  000010                          BIC     #BIT0,RPC(R5)
 427   001662  016537  000010  016156                          MOV     RPC(R5),TESTAD
 428   001670                                          50016$:
 429   001670  000456                                          BR      50017$
 (3)   001672                                          50015$:
 430                                          07342    ;
 431                                          07344    ; CHECK TO SEE IF THE ITERATION COUNT IS COMPLETED
 432                                          07346    ;
 433   001672  026565  000002  000000                          CMP     PASCNT(R5),CTLCNT(R5)
 (9)   001700  003447                                          BLE     50020$
 434   001702  052737  040000  002032                          BIS     #EOT,CFLAGS
 435   001710  005037  002036                                  CLR     TSCCNT
 436                                          07402    ;
 437                                          07404    ; REPORT END OF TEST CONDITION
 438                                          07406    ;
 439   001714  004737  005436                                  JSR     PC,REPORT
 440   001720  016565  000002  000000                          MOV     PASCNT(R5),CTLCNT(R5)
 (6)   001726  066565  177776  000000                          ADD     ICNT(R5),CTLCNT(R5)
 441                                          07442    ;
 442                                          07444    ; IF IN SEQUENCE TESTS MODE SET UP NEXT TEST
 443                                          07446    ;
 444   001734  032737  000100  001364                          BIT     #SEQ,PCFLAG
 (9)   001742  001423                                          BEQ     50021$
 445   001744  013737  016152  016154                          MOV     NEXT,INTEST
 446   001752  005237  016152                                  INC     NEXT
 447                                          07520
 448                                          07522    ;
 449                                          07524    ; IF NEXT IS A NON EXISTANT TEST SET EOL
 450                                          07526    ; AND RETURN TO MONITOR FOR NEW COMMANDS
 451                                          07528    ;
 452   001756  023727  016154  000005                          CMP     INTEST,#5
 (9)   001764  003407                                          BLE     50022$
 453   001766  005037  016152                                  CLR     NEXT
 454   001772  052737  004000  002032                          BIS     #EOL,CFLAGS
 455   002000  000207                         07600                    RTS     PC
 456   002002  000402                                          BR      50023$
  3)   002004                                          50022$:
 457   002004  004737  002056                                  JSR     PC,SUTEST
 458   002010                                          50023$:
 459   002010  000402                                          BR      50024$
 (3)   002012                                          50021$:
 460                                          07682    ;
 461                                          07684    ;  SET UP TEST ADDRESS FOR THE SAME TEST AGAIN.
 462                                          07686    ;
 463   002012  004737  002056                                  JSR     PC,SUTEST
 464   002016                                          50024$:
 465   002016  000403                                          BR      50025$
 (3)   002020                                          50020$:
 466                                          07742    ;
```

```
  467                                           07744   ; RETURN TO TEST VIA ADDRESS SUPPLIED BY TEST
  468                                           07746   ;
  469  002020  016537  000010  016156                           MOV     RPC(R5),TESTAD
  470  002026                                           50025$:
  471  002026                                           50017$:
  472  002026  000137  001466                   07820           JMP     LOOP2
  473                                           08160
  474                                           08180   ;************
  475  002032  000000                           08200   CFLAGS: .WORD   0               ;FLAGS
  476  002034  000000                           08220   TSCPTR: .WORD   0               ;POINTER
  477  002036  000000                           08240   TSCCNT: .WORD   0               ;PASCNT
  478                                           08260
  479                                           08300
  480  002040  010164                           08320   TSTBL:  TEST0                   ; TABLE OF TEST ADDRESSES ********************
  481  002042  010444                           08340           TEST1
  482  002044  011526                           08360           TEST2
  483  002046  013700                           08380           TEST3
  484  002050  014652                           08400           TEST4
  485  002052  015354                           08420           TEST5
  486  002054  177777                           08440           -1
  487                                           08441
  488                                           08442
  489                                           08443
  490                                           08444
  491                                           08445   ;************
  492                                           08446   ;SUTEST  INITIALIZES THE TEST ADDRESS POINTER
  493                                           08447   ;        FOR TEST # IN 'INTEST'
  494                                           08448   ;************
  495                                           08449
  496  002056                                           SUTEST:
  497  002056  006337  016154                                   ASL     INTEST
  498  002062  012700  002040                                   MOV     #TSTBL,R0
  (6)  002066  063700  016154                                   ADD     INTEST,R0
  499  002072  011037  016156                                   MOV     (R0),TESTAD
  500  002076  006237  016154                                   ASR     INTEST
  501  002102  005065  000004                                   CLR     MFLAGS(R5)
  502  002106                                           50000$:
  (3)  002106                                           50001$:
  (2)  002106  000207                                           RTS     PC
  503                                           08480
  504                                           08485
  505                                           08490
```

```
 507                                             08500          .SBTTL  LINE CONTROL & INITIALIZATION
 508                                             08520   ;************
 509                                             08540   ;THIS SECTION CONTROLS THE SELECTION AND SEQUENCING
 510                                             08560   ;OF SINGLE OR MULTIPLE LINES FOR TESTING.
 511                                             08580   ;************
 512                                             08600
 513                                             08620
 514    002110                                           LINMON:
 515    002110  032737  001000  001364                           BIT     #NEWMOD,PCFLAG
  (9)   002116  001427                                           BEQ     50002$
 516                                             08680   ;
 517                                             08700   ;  INITIALIZE THE DEVICE HANDLER :
 518                                             08720   ;  SET UP A POINTER AREA WITH THE
 519                                             08740   ;  DEVICE ADDRESSES & VECTORS ETC.
 520                                             08760   ;
 521    002120  032737  000040  001364                           BIT     #MULTI,PCFLAG
  (9)   002126  001407                                           BEQ     50003$
 522    002130  004737  002332                                   JSR     PC,GVL
 523    002134  004737  002432                                   JSR     PC,MTW
 524    002140  004737  002556                                   JSR     PC,GNL
 525    002144  000410                                           BR      50004$
  (3)   002146                                           50003$:
 526                                             08880   ;
 527                                             08900   ;  GET SELECTED LINE NUMBER AND
 528                                             08920   ;  PULL THE DATA FROM THE TABLE.
 529                                             08940   ;
 530    002146  013737  001370  016160                           MOV     LINENO,ONLIN
 531    002154  004737  002432                                   JSR     PC,MTW
 532    002160  013737  016160  016162                           MOV     ONLIN,NXTLIN
 533    002166                                           50004$:
 534    002166  042737  001000  001364                           BIC     #NEWMOD,PCFLAG
 535    002174  000402                                           BR      50005$
  (3)   002176                                           50002$:
 536                                             09080   ;
 537                                             09100   ;  DO LINESEL SECTION FOR EACH DEVICE
 538                                             09120   ;  TO BE TESTED.
 539                                             09140   ;
 540    002176  004737  002204                                   JSR     PC,LINESEL
 541    002202                                           50005$:
 542    002202                                           50000$:
  (3)   002202                                           50001$:
  (2)   002202  000207                                           RTS     PC
 543                                             09220
 544                                             09240
 545                                             09260   ;************
 546                                             09280   ;LINESEL  ROUTINE TO FURNISH THE IODRIVER WITH DVC POINTERS
 547                                             09300   ;************
 548                                             09320
 549    002204                                           LINESEL:
 550                                             09360   ;
 551                                             09380   ;  MULTIPLE LINES UNDER TEST ?
 552                                             09400   ;
 553    002204  032737  000040  001364                           BIT     #MULTI,PCFLAG
  (9)   002212  001426                                           BEQ     50002$
 554                                             09440   ;
 555                                             09460   ;  SET UP POINTER AREA WITH DATA FOR
```

```
  556                                        09480   ; THE NEXT DEVICE TO BE TESTED
  557                                        09500   ;
  558  002214  013737  016162  016160                        MOV     NXTLIN,ONLIN
  559                                        09540   ;
  560                                        09560   ; RESET EVERYTHING IF AT THE END OF OUR DEVICE LIST.
  561                                        09580   ;
  562  002222  023727  016160  177777                        CMP     ONLIN,#-1
  (9)  002230  001012                                        BNE     50003$
  563  002232  052737  000400  001364                        BIS     #LDONE,PCFLAG
  564  002240  004737  002332                                JSR     PC,GVL
  565  002244  004737  002432                                JSR     PC,MTW
  566  002250  004737  002556                                JSR     PC,GNL
  567  002254  000404                                        BR      50004$
  (3)  002256                                        50003$:
  568                                        09720   ;
  569                                        09750   ; SET UP POINTER AREA FOR LINE = 'ONLIN'.
  570                                        09780   ;
  571  002256  004737  002432                                JSR     PC,MTW
  572  002262  004737  002556                                JSR     PC,GNL
  573  002266                                        50004$:
  574  002266  000420                                        BR      50005$
  (3)  002270                                        50002$:
  575  002270  004737  002432                                JSR     PC,MTW
  576  002274  032737  000200  016126                        BIT     #SEL,DLFLAG
  (9)  002302  001404                                        BEQ     50006$
  577                                        09920   ;
  578                                        09940   ; CHECK TO SEE IF ALL DEVICES
  579                                        09960   ; HAVE BEEN TESTED YET. SET LDONE FLAG.
  580                                        09980   ;
  581  002304  052737  000400  001364                        BIS     #LDONE,PCFLAG
  582  002312  000406                                        BR      50007$
  (3)  002314                                        50006$:
  583                                        10040   ;
  584                                        10060   ; MAKE SHURE THAT WHEN TESTING A SINGLE
  585                                        10080   ; DEVICE , IT DOESN'T GET DROPPED
  586                                        10100   ; BECAUSE OF EXCESSIVE ERRORS.
  587                                        10120   ;
  588  002314  052737  000200  016126                        BIS     #SEL,DLFLAG
  589  002322  012700  020345                                MOV     #E20,R0
  590  002326  104000                        10180           TYPE
  591  002330                                        50007$:
  592  002330                                        50005$:
  593  002330                                        50000$:
  (3)  002330                                        50001$:
  (2)  002330  000207                                        RTS     PC
  594                                        10260
  595                                        10280   ;************
  596                                        10300   ; GVL   THIS ROUTINE FINDS A VALID LINE FOR TESTING
  597                                        10320   ;************
  598                                        10340
  599  002332                                10360   GVL:
  (4)  002332  010346                                        MOV     R3,-(SP)
  600  002334  012703  016170                10380           MOV     #LIN00,R3       ;GET ADDR OF LINE TABLE
  601  002340  005713                        10400   G1A:    TST     (R3)            ;LIN PRESENT?
  602  002342  100412                        10420           BMI     G1D             ;YES BRANCH
  603  002344  062703  000010                10440   G1B:    ADD     #10,R3          ;POINT TO OTHER WORD
```

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 604  002350  020027  016770          10460           CMP     R0,#TABEND                    ;END OF TABLE ?
 605  002354  001371                  10480           BNE     G1A                           ;NO BRANCH
 606  002356  012700  020306          10500   G1C:    MOV     #E19,R0                       ;NOTIFY OPERATOR - NO LINES
 607  002362  104000                  10520           TYPE
 608  002364  000137  001372          10540           JMP     RESTRT
 609  002370  105713                  10560   G1D:    TSTB    (R3)                          ;LINE SELECTED?
 610  002372  100364                  10580           BPL     G1B                           ;NO TRY ANOTHER LINE
 611  002374  062703  000006          10600           ADD     #6,R3                         ;POINT TO OTHER WORD
 612  002400  011337  016160          10620           MOV     (R3),ONLIN          ;GET DATA FROM TABLE
 613  002404  000337  016160          10640           SWAB    ONLIN               ;
 614  002410  105037  016161          10660           CLRB    ONLIN+1
 615  002414  005037  000174          10680           CLR     SWLINE
 616  002420  113737  016160  000174  10700           MOVB    ONLIN,SWLINE
 617  002426  012603                                  MOV     (SP)+,R3
 618  002430  000207                  10740           RTS     PC                  ;EXIT
 619                                  10760   ;************
 620                                  10780   ; MTW   THIS ROUTINE TRANSFERS TABLE DATA TO THE WORK AREA
 621                                  10800   ;************
 622                                  10820
 623  002432                          10840   MTW:
 (4)  002432  010346                                  MOV     R3,-(SP)
 624  002434  013703  016160          10860           MOV     ONLIN,R3            ;GET LINE NO.
 625  002440  006303                  10880           ASL     R3
 626  002442  006303                  10900           ASL     R3
 627  002444  006303                  10920           ASL     R3                  ;X8 FOR OFFSET
 628  002446  062703  016170          10940           ADD     #LIN00,R3           ;ADD IN BASE ADDR
 629  002452  012337  016126          10960   MTW1:   MOV     (R3)+,DLFLAG        ;GET FLAG WORD
 630  002456  012337  016130          10980           MOV     (R3)+,DLADR         ;GET ADDRESS
 631  002462  012337  016132          11000           MOV     (R3)+,DLVEC         ;GET VECTOR
 632  002466  011337  016134          11020           MOV     (R3),DLOTH          ;GET "OTHER WORD"
 633  002472  013737  016130  016136  11040           MOV     DLADR,DVCRXB
 634  002500  062737  000002  016136  11060           ADD     #2,DVCRXB
 635  002506  013737  016136  016140  11080           MOV     DVCRXB,DVCTXS
 636  002514  062737  000002  016140  11100           ADD     #2,DVCTXS
 637  002522  013737  016140  016142  11120           MOV     DVCTXS,DVCTXB
 638  002530  013737  016132  016144  11140           MOV     DLVEC,TXVEC
 639  002536  062737  000004  016144  11160           ADD     #4,TXVEC
 640  002544  062737  000002  016142  11180           ADD     #2,DVCTXB
 641  002552  012603                                  MOV     (SP)+,R3
 642  002554  000207                  11220           RTS     PC
 643                                  11240   ;************
 644                                  11260   ; GNL   THIS ROUTINE FINDS THE NEXT VALID LINE TO TEST
 645                                  11280   ;************
 646                                  11300
 647  002556                          11320   GNL:
  4)  002556  010346                                  MOV     R3,-(SP)
 648  002560  013703  016160          11340           MOV     ONLIN,R3            ;GET CURRENT LINE
 649  002564  005203                  11360           INC     R3                  ;CURRENT +1
 650  002566  006303                  11380           ASL     R3
 651  002570  006303                  11400           ASL     R3
 652  002572  006303                  11420           ASL     R3                  ;X8 FOR OFFSET
 653  002574  062703  016170          11440           ADD     #LIN00,R3           ;ADD IN BASE ADDR OF TABLE
 654  002600  005713                  11460   GN1:    TST     (R3)                ;LINE PRESENT?
 655  002602  100403                  11480           BMI     GN3                 ;YES - BRANCH
 656  002604  062703  000010          11500   GN2:    ADD     #10,R3              ;POINT TO NEXT LINE ENTRY
 657  002610  000773                  11520           BR      GN1                 ;CHECK NEXT
 658  002612  105713                     11540  GN3:     TSTB     (R3)             ;LINE SELECTED?
 659  002614  100373                     11560           BPL      GN2              ;NO TRY ANOTHER
 660  002616  021327  177777             11580           CMP      (R3),#-1         ;END OF TABLE?
 661  002622  001412                     11600           BEQ      GN5              ;YES - BRANCH
 662  002624  062703  000006             11620           ADD      #6,R3            ;GET "OTHER WORD
 663  002630  011337  016162             11640           MOV      (R3),NXTLIN
 664  002634  000337  016162             11660           SWAB     NXTLIN           ; = NEXT AVAILABLE LINE
 665  002640  105037  016163             11680           CLRB     NXTLIN+1
 666  002644                             11700  GN4:
 (4)  002644  012603                                     MOV      (SP)+,R3
 667  002646  000207                     11720           RTS      PC               ;EXIT
 668  002650  012737  177777  016162     11740  GN5:     MOV      #-1,NXTLIN       ;SET NXTLIN TO -1 - NO SELECT
 669  002656  000772                     11760           BR       GN4
 670                                     11780
 671                                     11800
 672                                     11820  ;************
 673                                     11840  ;UPDATE  ROUTINE TO UPDATE INTERFACE TABLE FROM COMMANDS
 674                                     11860  ;************
 675                                     11880
 676  002660                                    UPDATE:
 677                                     11902  ; SHIFT THE CONVERTED LINE NO. FOR AN
 678                                     11904  ; OFFSET TO THE LINE TABLE.
 679                                     11906  ;
 680  002660  006337  004776                             ASL      DATA
 (7)  002664  006337  004776                             ASL      DATA
 (7)  002670  006337  004776                             ASL      DATA
 681                                     11930  ; ADD IN THE BASE ADDRESS OF THE TABLE.
 682  002674  062737  016170  004776                     ADD      #LIN00,DATA
 683                                     11960  ;
 684                                     11980  ; IF THE LINE SELECTED DOESN'T EXIST -
 685                                     12000  ; SEND AN ERROR MESSAGE.
 686                                     12020  ;
 687  002702  032777  100000  002066                     BIT      #DLP,@DATA
 (9)  002710  001003                                     BNE      50002$
 688  002712  004737  005100                             JSR      PC,SELERR
 689  002716  000430                                     BR       50003$
 (3)  002720                                    50002$:
 690                                     12100  ;
 691                                     12120  ; ADDING A LINE  SETS IT'S "SELECTED" FLAG
 692                                     12140  ; AND CLEARS OUT THE ERROR COUNT FOR THAT LINE
 693                                     12160  ;
 694  002720  032737  000004  005002                     BIT      #ADDC,TEMPF
 (9)  002726  001415                                     BEQ      50004$
 695  002730  052777  000200  002040                     BIS      #SEL,@DATA
 696  002736  042777  000037  002032                     BIC      #AB0!#17,@DATA
 697  002744  062737  000007  004776                     ADD      #7,DATA
 698  002752  117737  002020  001370                     MOVB     @DATA,LINENO
 699  002760  000407                                     BR       50005$
 (3)  002762                                    50004$:
 700                                     12300  ;
 701                                     12320  ; DROPPING A LINE JUST RESETS IT'S "SELECTED" FLAG
 702                                     12340  ;
 703  002762  032737  000010  005002                     BIT      #DROPC,TEMPF
 (9)  002770  001403                                     BEQ      50006$
 704  002772  042777  000200  001776                     BIC      #SEL,@DATA
 705  003000                                    50006$:
   706  003000                                        50005$:
   707  003000                                        50003$:
   708  003000  005037  004776                                CLR     DATA
   709  003004                                        50000$:
    3)  003004                                        50001$:
   (2)  003004  000207                                        RTS     PC
   710                                  12480
   711                                  12500
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713                                        12540              .SBTTL  SWITCH REGISTER ROUTINES
714                                        12560         ;************
715                                        12580         ;SWRTST TESTS FOR HARDWARE SWITCH REGISTER
716                                        12600         ;************
717   003006  012737  003040  000004       12620         SWRTST: MOV     #4$,MACHER          ;SU NXM TRAP TO 4$
718   003014  012737  000340  000006       12640                 MOV     #PRI7,MACHER+2
719   003022  005777  013076               12660                 TST     @SWR                ;ACCESS SWITCH REG.
720   003026  000240                       12680                 NOP
721   003030  012737  177570  016124       12700                 MOV     #177570,SWR         ;RETAIN HARDWARE POINTER
722   003036  000404                       12720                 BR      6$                  ;
723   003040  012737  000176  016124       12740         4$:     MOV     #SSWR,SWR           ;SU FOR SOFTWARE SWITCH REG.
724   003046  022626                       12760                 ISP2                        ;CLEAN THE STACK
725   003050  012737  000006  000004       12780         6$:     MOV     #6,MACHER           ;RESET TRAP CATCHER
726   003056  005037  000005               12800                 CLR     MACHER+2
727   003062  000207                       12820                 RTS     PC                  ;EXIT
728                                        12840
729                                        12860         ;************
730                                        12880         ; CTLGX    THIS ROUTINE PRINTS THE PROGRAM CONTROL FLAGS ON THE CONSOLE.
731                                        12900         ;************
732                                        12920
733   003064                                             CTLGX:
734   003064  013746  001364                                     MOV     PCFLAG,-(SP)
735   003070  012746  000006                                     MOV     #6,-(SP)
736   003074  012746  020230                                     MOV     #SW+11,-(SP)
737   003100  004737  007566                                     JSR     PC,O2ASC
738   003104  142737  000006  020226                             BICB    #6,SW+11
739   003112  012700  020215                                     MOV     #SW,R0
740   003116  104000                       13080            TYPE
741   003120  012700  017730                                     MOV     #L1,R0
742   003124  104000                       13120            TYPE
743   003126                                             50000$:
 (3)  003126                                             50001$:
 (2)  003126  000207                                             RTS     PC
744                                        13160
745                                        13180         ;************
746                                        13200         ;GETSWS    THIS ROUTINE READS THE SWITCH REGISTER AND
747                                        13220         ;          CONVERTS THE DATA TO THE APPROPRIATE CONTROL
748                                        13240         ;          FLAGS OR POINTERS.
749                                        13260         ;************
750                                        13280
751   003130                                             GETSWS:
752                                        13320         ;
753                                        13340         ; STOP HERE FOR OPERATOR TO ENTER CONTROL SWITCHES
754                                        13360         ;
755   003130  000000                       13380            HALT
756   003132  017737  012766  016100                             MOV     @SWR,TEMP
757                                        13420         ;
758                                        13440         ; IF SWITCHES INDICATE A SINGLE LINE OR A SINGLE TEST
759                                        13460         ; TO BE DONE STOP SO OPERATOR CAN ENTER LINE TEST DATA
760                                        13480         ;
761   003140  032737  000100  016100                             BIT     #STP,TEMP
 (9)  003146  001404                                             BEQ     50002$
 (6)  003150  032737  000040  016100                             BIT     #MULTI,TEMP
 (9)  003156  001016                                             BNE     50003$
 (6)  003160                                             50002$:
762   003160  000000                       13520                 HALT
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 763  003162  017737  012736  016102                          MOV     @SWR,TEMP+2
 764  003170  005037  001366                                  CLR     TESTNO
 765  003174  113737  016102  001366                          MOVB    TEMP+2,TESTNO
 766  003202  005037  001370                                  CLR     LINENO
 767  003206  113737  016103  001370                          MOVB    TEMP+3,LINENO
 768  003214                                        50003$:
 769  003214  032737  000100  016100                          BIT     #SEQ,TEMP
 (9)  003222  001406                                          BEQ     50004$
 770  003224  052737  000100  001364                          BIS     #SEQ,PCFLAG
 771  003232  005037  001366                                  CLR     TESTNO
 772  003236  000403                                          BR      50005$
 (3)  003240                                        50004$:
 773  003240  042737  000100  001364                          BIC     #SEQ,PCFLAG
 774  003246                                        50005$:
 775                                        13780
 776  003246  032737  000040  016100                          BIT     #MULTI,TEMP
 (9)  003254  001406                                          BEQ     50006$
 777  003256  052737  000040  001364                          BIS     #MULTI,PCFLAG
 778  003264  005037  001370                                  CLR     LINENO
 779  003270  000403                                          BR      50007$
 (3)  003272                                        50006$:
 780  003272  042737  000040  001364                          BIC     #MULTI,PCFLAG
 781  003300                                        50007$:
 782                                        13940
 783  003300  052737  003200  001364                          BIS     #ATTN!#NEWMOD!#NEWTST,PCFLAG
 784                                        13980
 785  003306  042737  174037  001364                          BIC     #174037,PCFLAG
 786  003314  042737  003777  016100                          BIC     #3777,TEMP
 787  003322  053737  016100  001364                          BIS     TEMP,PCFLAG
 788  003330                                        50000$:
   3  003330                                        50001$:
   2  003330  000207                                          RTS     PC
 789                                        14100
 791                                         14840                   .SBTTL  CONSOLE TERMINAL ROUTINES
 792                                         14860         ;************
 793                                         14880         ;CONSON-- ROUTINE TO INITIALIZE CONSOLE VECTOR AREA
 794                                         14900         ;************
 795                                         14920
 796    003332  012737  003466  000060       14940         CONSON: MOV       #READKB,@#TKV    ;INTERRUPT TO "READKB"
 797    003340  012737  000101  177560       14960                 MOV       #101,@#TKS
 798    003346  000207                       14980                 RTS       PC
 799                                         15000
 800                                         15020         ;************
 801                                         15040         ;  GETSRC            THIS ROUTINE ASKS THE OPERATOR IF HE/SHE
 802                                         15060         ;                    WANTS TO USE CONSOLE CONTROL. THEN SETS
 803                                         15080         ;                    A CONTROL FLAG ACCORDINGLY.
 804                                         15100         ;
 805                                         15120         ;************
 806                                         15140
 807    003350                                             GETSRC:
 808    003350  005077  012610                                     CLR       @PTR
 809    003354  012700  020370                                     MOV       #CTLM,R0
 810    003360  104000                       15220              TYPE
 811    003362  012737  000001  177560                             MOV       #1,@#TKS
 812    003370                                             50002$:
 813    003370  032737  000200  177560                             BIT       #READY,@#TKS
 (9)    003376  001410                                             BEQ       50004$
 814    003400  113777  177562  012556                             MOVB      @#TKB,@PTR
 815    003406  004737  005044                                     JSR       PC,ECHO
 816    003412  012700  017730                                     MOV       #L1,R0
 817    003416  104000                       15360                        TYPE
 818    003420                                             50004$:
 819    003420  005777  012540                                     TST       @PTR
 (5)    003424  001001                                             BNE       50003$
 820    003426  000760                                             BR        50002$
 (3)    003430                                             50003$:
 821    003430  142777  000200  012526                             BICB      #200,@PTR
 822    003436  027727  012522  000116                             CMP       @PTR,#'N
 (9)    003444  001007                                             BNE       50005$
 (6)    003446  023727  016124  000176                             CMP       SWR,#SSWR
 (9)    003454  001403                                             BEQ       50005$
 823    003456  052737  000020  001364                             BIS       #SWCTL,PCFLAG
 824    003464                                             50005$:
 825    003464                                             50000$:
 (3)    003464                                             50001$:
 (2)    003464  000207                                             RTS       PC
 827                                            15540   ;************
 828                                            15560   ; READKB   THIS MODULE IS AN INTERRUPT HANDLER
 829                                            15580   ;          FOR THE CONSOLE TERMINAL.
 830                                            15600   ;************
 831                                            15620
 832   003466                                           READKB:
 833   003466   010046                                          MOV     R0,-(SP)
 834                                            15650   ;
 835                                            15655   ; GET CHAR FROM KEYBOARD BUFFER REG.
 836                                            15660   ; CLEAR PARITY BIT IF SET.
 837                                            15665   ;
 838   003470   013737   177562   003776                        MOV     @#TKB,RDSAV
 839   003476   142737   000200   003776                        BICB    #200,RDSAV
 840                                            15680   ;
 841                                            15685   ; CHECK FOR DEVICE ERROR
 842                                            15690   ;
 843   003504   032737   100000   003776                        BIT     #MERR,RDSAV
 (9)   003512   001405                                          BEQ     50002$
 844   003514   004737   005062                                 JSR     PC,CMDERR
 845   003520   005037   177560                                 CLR     @#TKS
 846   003524   000516                                          BR      50003$
 (3)   003526                                           50002$:
 847                                            15715   ;
 848                                            15720   ; IF CMD CHAR WAS A CTL-G  DO THE CTLGX ROUTINE.
 849                                            15725   ; PRINT OUT PCFLAGS ON CONSOLE.
 850                                            15730   ;
 851   003526   123727   003776   000007                        CMPB    RDSAV,#CTLG
 (9)   C03534   001006                                          BNE     50004$
 852   003536   004737   003064                                 JSR     PC,CTLGX
 853   003542   012700   017730                                 MOV     #L1,R0
 854   003546   104000                          15750       TYPE
 855   003550   000504                                          BR      50005$
 (3)   003552                                           50004$:
 856                                            15756   ;
 857                                            15757   ; IF IN I/O MODE PUT DATA IN I/O BUFFER
 858                                            15758   ;
 859   003552   032737   000002   001364                        BIT     #FLAG2,PCFLAG
 (9)   003560   001410                                          BEQ     50006$
 860   003562   113711   003776                                 MOVB    RDSAV,(R1)
 861   003566   052737   004000   001364                        BIS     #DATAIN,PCFLAG
 862   003574   005037   007564                                 CLR     DELAYT
 863   003600   000470                                          BR      50007$
 (3)   003602                                           50006$:
 864                                            15776   ;
 865                                            15777   ;IF IN COMMAND MODE PUT DATA IN INBUF
 866                                            15778   ;AND CALL INTERPRITER
 867                                            15779   ;
 868   003602   032737   000001   001364                        BIT     #FLAG1,PCFLAG
 (9)   003610   001406                                          BEQ     50010$
 869   003612   113777   003776   012344                        MOVB    RDSAV,@PTR
 870   003620   004737   004000                                 JSR     PC,CSI
 871   003624   000456                                          BR      50011$
 (3)   003626                                           50010$:
 872                                            15796   ;
 873                                            15797   ; CLEAR AND GO TO READY STATE.
 874                                            15798   ;
 875  003626  123727  003776  000003                          CMPB    RDSAV,#CTLC
 (9)  003634  001003                                          BNE     50012$
 876  003636  004737  001372                                  JSR     PC,RESTRT
 877  003642  000447                                          BR      50013$
 (3)  003644                                        50012$:
 878                                         15811  ;
 879                                         15812  ; CHECK FOR PRINT REPORTS COMMAND
 880                                         15813  ;
 881  003644  123727  003776  000020                          CMPB    RDSAV,#CTLP
 (9)  003652  001004                                          BNE     50014$
 882  003654  042737  020000  001364                          BIC     #INHRPT,PCFLAG
 883  003662  000437                                          BR      50015$
 (3)  003664                                        50014$:
 884                                         15826  ;
 885                                         15827  ; CHECK FOR NO REPORTS COMMAND
 886                                         15828  ;
 887  003664  123727  003776  000016                          CMPB    RDSAV,#CTLN
 (9)  003672  001004                                          BNE     50016$
 888  003674  052737  020000  001364                          BIS     #INHRPT,PCFLAG
 889  003702  000427                                          BR      50017$
 (3)  003704                                        50016$:
 890                                         15841  ;
 891                                         15842  ; CHECK FOR HALT ON ERROR COMMAND
 892                                         15843  ;
 893  003704  123727  003776  000010                          CMPB    RDSAV,#CTLH
 (9)  003712  001004                                          BNE     50020$
 894  003714  052737  100000  001364                          BIS     #HALTOE,PCFLAG
 895  003722  000417                                          BR      50021$
 (3)  003724                                        50020$:
 896                                         15856  ;
 897                                         15857  ; CHECK FOR LOOP ON ERROR COMMAND
 898                                         15858  ;
 899  003724  123727  003776  000014                          CMPB    RDSAV,#CTLL
 (9)  003732  001004                                          BNE     50022$
 900  003734  052737  040000  001364                          BIS     #LOOPOE,PCFLAG
 901  003742  000407                                          BR      50023$
 (3)  003744                                        50022$:
 902                                         15871  ;
 903                                         15872  ; CHECK FOR CLEAR COMMAND
 904                                         15873  ;
 905  003744  123727  003776  000013                          CMPB    RDSAV,#CTLK
 (9)  003752  001003                                          BNE     50024$
 906  003754  042737  140000  001364                          BIC     #HALTOE!#LOOPOE,PCFLAG
 907  003762                                        50024$:
 908  003762                                        50023$:
 909  003762                                        50021$:
 910  003762                                        50017$:
 911  003762                                        50015$:
 912  003762                                        50013$:
 913  003762                                        50011$:
 914  003762                                        50007$:
 915  003762                                        50005$:
 916  003762                                        50003$:
 917                                         15935  ;
 918                                         15940  ; TURN CONSOLE BACK ON & EXIT.
 919                                         15945  ;
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   920  003762  012737  000101  177560                      MOV     #101,@#TKS
   921  003770  012600                                      MOV     (SP)+,R0
   922  003772  000002                  15960               RTI
   923  003774                                   50000$:
   (3)  003774                                   50001$:
   (2)  003774  000207                                      RTS     PC
   924                                  16580
   925  003776  000000                  16600    RDSAV:     .WORD   0
```

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 927                                             16640   ;***************
 928                                             16660   ; CSI    COMMAND STRING INTERPRETER
 929                                             16680   ;***************
 930                                             16700
 931   004000                                            CSI:
 932                                             16740   ;
 933                                             16760   ; IF CMD CHAR IS AN ESCAPE  ECHO A '$'
 934                                             16780   ; AND SET MODE BACK TO 0.
 935                                             16800   ;
 936   004000  123727  003776  000033                              CMPB    RDSAV,#ESC
 (9)   004006  001030                                              BNE     S0002$
 937   004010  112777  000044  012146                              MOVB    #'$,@PTR
 938   004016  004737  005044                                      JSR     PC,ECHO
 939   004022  012700  017051                                      MOV     #L3,R0
 940   004026  104000                            16900             TYPE
 941   004030  042737  000001  005002                              BIC     #FLAG1,TEMPF
 942                                             17100   ;
 943                                             17120   ; MOVE NEW CONTROL FLAGS TO THE PCFLAG WORD.
 944                                             17140   ; RESET THE BUFFER POINTER.
 945                                             17160   ;
 946   004036  013737  005002  001364                              MOV     TEMPF,PCFLAG
 947   004044  013737  005004  001366                              MOV     TEMPT,TESTNO
 948   004052  012737  016114  016164                              MOV     #INBUF,PTR
 949                                             17235             ; CLEAR ATTENTION FLAGS FROM TEMPF
 950   004060  042737  017603  005002                              BIC     #17603,TEMPF
 951                                             17260
 952   004066  000457                                              BR      S0003$
 (3)   004070                                            S0002$:
 953                                             17300   ;
 954                                             17320   ; IF CMD CHAR WAS A DELETE   RESET THE BUFFER
 955                                             17340   ; POINTER AND ECHO A CR/LF.
 956                                             17360   ;
 957   004070  123737  003776  016166                              CMPB    RDSAV,DEL
 (9)   004076  001007                                              BNE     S0004$
 958   004100  012737  016114  016164                              MOV     #INBUF,PTR
 959   004106  012700  017730                                      MOV     #L1,R0
 960   004112  104000                            17440                 TYPE
 961   004114  000444                                              BR      S0005$
  3)   004116                                            S0004$:
 962                                             17480   ;
 963                                             17500   ; IF CMD CHAR WAS A RETURN ECHO A CR/LF
 964                                             17520   ; AND CALL THE DECODER.
 965                                             17540   ;
 966   004116  123727  003776  000015                              CMPB    RDSAV,#CR
 (9)   004124  001021                                              BNE     S0006$
 967   004126  012700  017730                                      MOV     #L1,R0
 968   004132  104000                            17600                     TYPE
 969   004134  004737  004230                                      JSR     PC,DECODE
 970   004140  123727  016114  000121                              CMPB    INBUF,#'Q
 (9)   004146  001007                                              BNE     S0007$
 971   004150  005037  001366                                      CLR     TESTNO
 972   004154  005037  005004                                      CLR     TEMPT
 973   004160  012737  000001  016152                              MOV     #1,NEXT
 974   004166                                            S0007$:
 975   004166  000417                                              BR      S0010$
 (3)   004170                                            S0006$:
    976                                             17800     ;
    977                                             17820     ; IF CMD CHAR WAS A '?'  RETYPE THE COMMAND
    978                                             17840     ; SUMMARY & GO TO READY CONDITION.
    979                                             17860     ;
    980  004170  123727  003776  000077                               CMPB     RDSAV,#'?
    (9)  004176  001007                                               BNE      50011$
    981  004200  012700  017103                                       MOV      #COMSUM,R0
    982  004204  104000                             17920             TYPE
    983  004206  012700  020123                                       MOV      #RDY,R0
    984  004212  104000                             17960             TYPE
    985  004214  000404                                               BR       50012$
    (3)  004216                                              50011$:
    986                                             18000     ;
    987                                             18020     ; ECHO THE INPUT CHARACTER.
    988                                             18040     ;
    989  004216  004737  005044                                       JSR      PC,ECHO
    990  004222  005237  016164                                       INC      PTR
    991  004226                                              50012$:
    992  004226                                              50010$:
    993  004226                                              50005$:
    994  004226                                              50003$:
    995  004226                                              50000$:
    (3)  004226                                              50001$:
    (2)  004226  000207                                               RTS      PC
    996                                             18220
    997                                             18240
```

```
 999                                     18280  ;*** ********
1000                                     18300  ;DECODE THIS SECTION DECODES THE COMMAND STRING FROM THE
1001                                     18320  ;        CONSOLE, AND SETS THE APPROPPIATE CONTROL FALGS.
1002                                     18340  ;************
1003                                     18360
1004    004230                                  DECODE:
1005                                     18400
1006    004230  010046                                  MOV     R0,-(SP)
1007    004232  010146                                  MOV     R1,-(SP)
1008    004234  010246                                  MOV     R2,-(SP)
1009    004236  012702  001364                          MOV     #CTLBLK,R2
1010    004242  012700  004656                          MOV     #DECTBL,R0
1011    004246  012701  016114                          MOV     #INBUF,R1
1012    004252                                  50002$:
1013                                     18560  ;
1014                                     18580  ; COMPARE CHAR IN TO FIRST BYTE OF TABLE
1015                                     18600  ;
1016    004252  121110                                  CMPB    (R1),(R0)
 (9)    004254  001145                                  BNE     50004$
1017                                     18640  ;
1018                                     18660  ; IF SAME GET FLAGS FROM THE TABLE TO TEMPF
1019                                     18680  ;
1020    004256  116037  000001  004774                  MOVB    1(R0),DECSAV
1021    004264  056037  000002  005002                  BIS     2(R0),TEMPF
1022    004272  046037  000004  005002                  BIC     4(R0),TEMPF
1023    004300  005037  004776                          CLR DATA
1024    004304  005037  005000                          CLR DATA2
1025                                     18800  ;
1026                                     18820  ; SEE IF THIS COMMAND REQUIRES ADDITIONAL DATA
1027                                     18840  ;
1028    004310  032737  000340  004774                  BIT     #NREQ,DECSAV
 (9)    004316  001520                                  BEQ     50005$
1029    004320  126127  000001  000015                  CMPB    1(R1),#CR
 (9)    004326  001006                                  BNE     50006$
1030                                     18900  ;
1031                                     18920  ; DATA REQUIRED BUT NOT PRESENT...ERROR
1032                                     18940  ;
1033    004330  004737  005062                          JSR     PC,CMDERR
1034                                     18980  ;
1035                                     19000  ; IF A OR D COMMAND USE DATA FOR LINE NO.
1036                                     19020  ;
1037    004334  012737  016114  016164                  MOV     #INBUF,PTR
1038    004342  000505                                  BR      50007$
 (3)    004344                                  50006$:
1039                                     19080  ;
1040                                     19100  ; CONVERT THE CHARS TO OCTAL...DATA
1041                                     19120  ;
1042    004344  012746  004776                          MOV     #DATA,-(SP)
1043    004350  116137  000001  004776                  MOVB    1(R1),DATA
1044    004356  126127  000002  000015                  CMPB    2(R1),#CR
 (9)    004364  001003                                  BNE     50010$
1045    004366  012746  000001                          MOV     #1,-(SP)
1046    004372  000417                                  BR      50011$
 (3)    004374                                  50010$:
1047    004374  116137  000002  004777                  MOVB    2(R1),DATA+1
1048    004402  126127  000003  000015                  CMPB    3(R1),#CR
```

E04

```
  (9)  004410  001003                                   BNE     50012$
 1049  004412  012746  000002                           MOV     #2,-(SP)
 1050  004416  000405                                   BR      50013$
  (3)  004420                                   50012$:
 1051  004420  116137  000003  005000                   MOVB    3(R1),DATA2
 1052  004426  012746  000003                           MOV     #3,-(SP)
 1053  004432                                   50013$:
 1054  004432                                   50011$:
 1055  004432  012746  004776                           MOV     #DATA,-(SP)
 1056  004436  004737  007676                           JSR     PC,A2BIN
 1057                                  19440    ;
 1058                                  19460    ; IF R COMMAND USE DATA AS A TEST NO.
 1059                                  19480    ;
 1060  004442  121027  000122                           CMPB    (R0),#'R
  (9)  004446  001020                                   BNE     50014$
 1061                                  19520    ;
 1062                                  19540    ; CHECK THE LIMITS FOR VALID TEST NO.
 1063                                  19560    ;
 1064                                  19580    ;********** #5 BELOW IS HIGHEST TEST NO THIS DIAGNOSTIC **********
 1065  004450  005737  004776                           TST     DATA
  (8)  004454  002404                                   BLT     50015$
  (6)  004456  023727  004776  000005                   CMP     DATA,#5
  (9)  004464  003403                                   BLE     50016$
  (6)  004466                                   50015$:
 1066  004466  004737  005100                           JSR     PC,SELERR
 1067                                  19640    ;
 1068                                  19660    ; OUT OF RANGE    ERROR.
 1069                                  19680    ;
 1070  004472  000403                                   BR      50017$
  (3)  004474                                   50016$:
 1071  004474  013737  004776  005004                   MOV     DATA,TEMPT
 1072  004502                                   50017$:
 1073  004502  052737  100000  005000                   BIS     #MERR,DATA2
 1074  004510                                   50014$.
 1075                                  19800    ;
 1076                                  19820    ; IF W COMMAND USE DATA AS   WIDTH
 1077                                  19840    ;
 1078  004510  121027  000127                           CMPB    (R0),#'W
  (9)  004514  001005                                   BNE     50020$
 1079                                  19880    ;
 1080                                  19900    ; GO CHECK FOR VALID LIMITS ON WIDTH ENTRY.
 1081                                  19920    ;
 1082  004516  004737  005006                           JSR     PC,CHKW
 1083  004522  052737  100000  005000                   BIS     #MERR,DATA2
 1084  004530                                   50020$:
 1085                                  20000    ;
 1086                                  20020    ; IF ADDING OR DROPING A LINE  CALL UPDATE ROUTINE
 1087                                  20040    ;
 1088  004530  121027  000101                           CMPB    (R0),#'A
  (8)  004534  001403                                   BEQ     50021$
  (6)  004536  121027  000104                           CMPB    (R0),#'D
  (9)  004542  001005                                   BNE     50022$
  (6)  004544                                   50021$:
 1089                                  20080    ;
 1090                                  20100    ; TAKE LINE NO. AND UPDATE  INTERFACE TABLE
 1091                                  20120    ;
 1092  004544  004737  002660                                       JSR     PC,UPDATE
 1093  004550  052737  100000  005000                               BIS     #MERR,DATA2
 1094  004556                                             50022$:
 1095  004556                                             50007$:
 1096  004556  000403                                               BR      50023$
  (3)  004560                                             50005$:
 1097  004560  052737  100000  005000                               BIS     #MERR,DATA2
 1098  004566                                             50023$:
 1099  004566  000415                                               BR      50024$
  (3)  004570                                             50004$:
 1100  004570  062700  000006                                       ADD     #6,R0
 1101                                             20320   ;
 1102                                             20340   ; IF THE CHAR IN  DOESN'T COMPARE TO ANY
 1103                                             20360   ; TABLE ENTRY THE COMMAND IS INVALID
 1104                                             20380   ;
 1105  004574  020027  004774                                       CMP     R0,#DTEND
  (9)  004600  001010                                               BNE     50025$
 1106  004602  004737  005062                                       JSR     PC,CMDERR
 1107  004606  012737  016114  016164                               MOV     #INBUF,PTR
 1108  004614  052737  100000  005000                               BIS     #MERR,DATA2
 1109  004622                                             50025$:
 1110  004622                                             50024$:
 1111                                             20520   ;
 1112                                             20540   ; KEEP LOOKING AT CHAR UNTIL IT'S
 1113                                             20560   ; DECODED, OR END OF TABLE (ERROR).
 1114                                             20580   ;
 1115  004622  032737  100000  005000                               BIT     #MERR,DATA2
  (5)  004630  001001                                               BNE     50003$
 1116  004632  000607                                               BR      50002$
  (3)  004634                                             50003$:
 1117  004634  005037  005000                                       CLR     DATA2
 1118                                             20660   ;
 1119                                             20680   ; RESET THE INPUT BUFFER POINTER
 1120                                             20700   ;
 1121  004640  012737  016114  016164                               MOV     #INBUF,PTR
 1122  004646  012602                                               MOV     (SP)+,R2
 1123  004650  012601                                               MOV     (SP)+,R1
 1124  004652  012600                                               MOV     (SP)+,R0
 1125  004654                                             50000$:
  (3)  004654                                             50001$:
  (2)  004654  000207                                               RTS     PC
 1126                                             20820
 1127                                             20840   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1128  004656     123     000                     20860   DECTBL: .BYTE   'S,0                    ;DECODE TABLE
 1129  004660  001200  000040                     20880           .WORD   ATTN!NEWMOD,MULTI
 1130  004664     115     000                     20900           .BYTE   'M,0                    ;FIRST - CHAR TO BE DECODED
 1131  004666  001240  000000                     20920           .WORD   ATTN!MULTI!NEWMOD,0
 1132  004672     121     000                     20940           .BYTE   'Q,0                    ;SECOND - CONTROL BITS
 1133  004674  000300  000000                     20960           .WORD   ATTN!SEQ,0
 1134  004700     122     200                     20980           .BYTE   'R,200                  ;THIRD - SET MASK
 1135  004702  000200  000100                     21000           .WORD   ATTN,SEQ
 1136  004706     104     100                     21020           .BYTE   'D,100                  ;FOURTH - CLEAR MASK
 1137  004710  002010  000004                     21040           .WORD   DROPC!NEWTST,ADDC
 1138  004714     101     100                     21060           .BYTE   'A,100
 1139  004716  002004  000010                     21080           .WORD   ADDC!NEWTST,DROPC
 1140  004722     124     000                     21100           .BYTE   'T,0                    ;CONTROL BITS:
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 1141  004724  010000  000000          21120                .WORD   PRINTT,0
 1142  004730     114     000          21140                .BYTE   'L,0
 1143  004732  040000  000000          21160                .WORD   LOOPOE,0
 1144  004736     110     000          21180                .BYTE   'H,0                      ;5 = GET WIDTH
 1145  004740  100000  000000          21200                .WORD   HALTOE,0
 1146  004744     116     000          21220                .BYTE   'N,0                      ;6 = GET LINE N
 1147  004746  020000  000000          21240                .WORD   INHRPT,0
 1148  004752     120     000          21260                .BYTE   'P,0                      ;7 = GEN TEST NO.
 1149  004754  000000  020000          21280                .WORD   0,INHRPT
 1150  004760     103     000          21300                .BYTE   'C,0
 1151  004762  000000  140000          21320                .WORD   0,HALTOE!LOOPOE
 1152  004766     127     040     000  21340                .BYTE   'W,40,0,0,0,0
       004771     000     000     000
 1153  004774                          21360      DTEND:
 1154  004774  000000                  21380      DECSAV:   .WORD   0
 1155  004776  000000                  21400      DATA:     .WORD   0
 1156  005000  000000                  21420      DATA2:    .WORD   0
 1157  005002  000000                  21440      TEMPF:    .WORD   0                 ;TEMPORARY PCFLAG WORD
 1158  005004  000000                  21460      TEMPT:    .WORD   0                 ;TEMPORARY TEST NO.
 1159                                  21480
 1160                                  21500
 1161                                  21520
 1162                                  21540      ;************
 1163                                  21560      ; CHKW    THIS ROUTINE VALIDATES A "W" COMMAND
 1164                                  21580      ;************
 1165                                  21600
 1166  005006                                     CHKW:
 1167                                  21621      ;
 1168                                  21622      ; RANGE OF 26 THRU 132 CHARACTERS IS VALID
 1169                                  21623      ;
 1170  005006  023727  004776  000032                        CMP     DATA,#32
  (8)  005014  002404                                        BLT     50002$
  (6)  005016  023727  004776  000204                        CMP     DATA,#132.
  (9)  005024  003403                                        BLE     50003$
  (6)  005026                                     50002$:
 1171  005026  004737  005100                                JSR     PC,SELERR
 1172  005032  000403                                        BR      50004$
  (3)  005034                                     50003$:
 1173  005034  013737  004776  016146                        MOV     DATA,WIDTH
 1174  005042                                     50004$:
 1175  005042                                     50000$:
  (3)  005042                                     50001$:
  (2)  005042  000207                                        RTS     PC
 1176                                  21760
 1177                                  21780
```

```
                                        21820   ;************
                                        21840   ;ECHO    CONSOLE KEYBOARD ECHO ROUTINE; PTR HAS ADDR OF CHAR
                                        21860   ;************
                                        21880
 005044  105737  177564                 21900   ECHO:   TSTB    @#TPS
 005050  100375                         21920           BPL     ECHO
 005052  117737  011106  177566         21940           MOVB    @PTR,@#TPB
 005060  000207                         21960           RTS     PC
                                        21980
 1189                                     22020           .SBTTL  ERROR & REPORT ROUTINES
 1190                                     22040   ;************
 1191                                     22060   ;CMDERR   ROUTINE TO HANDLE INVALID COMMANDS
 1192                                     22080   ;************
 1193                                     22100
 1194   005062                                    CMDERR:
 1195   005062  012700  020017                            MOV     #ER1,R0
 1196   005066  104000                    22160       TYPE
 1197   005070  012700  020123                            MOV     #RDY,R0
 1198   005074  104000                    22200       TYPE
 1199   005076                                    50000$:
  (3)   005076                                    50001$:
  (2)   005076  000207                                    RTS     PC
 1200                                     22240   ;************
 1201                                     22260   ;SELERR  ROUTINE TO HANDLE SELECTION ERRORS
 1202                                     22280   ;************
 1203                                     22300
 1204   005100                                    SELERR:
 1205   005100  012700  020032                            MOV     #ER2,R0
 1206   005104  104000                    22360       TYPE
 1207   005106  012700  020123                            MOV     #RDY,R0
 1208   005112  104000                    22400       TYPE
 1209   005114  012737  016114  016164                    MOV     #INBUF,PTR
 1210   005122                                    50000$:
  (3)   005122                                    50001$:
  (2)   005122  000207                                    RTS     PC
 1211                                     22460
 1213                                        22500    ;************
 1214                                        22520    ;ERRORS ERROR LOGGER AND TYPEOUT ROUTINE
 1215                                        22540    ;
 1216                                        22560    ;************
 1217                                        22580
 1218   005124                                        ERROR:
 1219   005124  005037  005434                                 CLR     ERRSAV
 1220   005130  032737  020000  001364                         BIT     #INHRPT,PCFLAG
  (9)   005136  001044                                         BNE     50002$
 1221                                        22642    ;
 1222                                        22644    ;CONVERT TEST NO. FOR OUTPUT
 1223                                        22646    ;
 1224   005140  013746  016154                                 MOV     INTEST,-(SP)
 1225   005144  012746  000002                                 MOV     #2,-(SP)
 1226   005150  012746  020001                                 MOV     #ERO+16.,-(SP)
 1227   005154  004737  007566                                 JSR     PC,O2ASC
 1228                                        22722    ;
 1229                                        22724    ;CONVERT ERROR NO. FOR OUTPUT
 1230                                        22726    ;
 1231   005160  113737  002032  005434                         MOVB    CFLAGS,ERRSAV
 1232   005166  013746  005434                                 MOV     ERRSAV,-(SP)
 1233   005172  012746  000003                                 MOV     #3,-(SP)
 1234   005176  012746  017770                                 MOV     #ERO+7,-(SP)
 1235   005202  004737  007566                                 JSR     PC,O2ASC
 1236                                        22822    ;
 1237                                        22824    ;CONVERT LINE NO. FOR OUTPUT
 1238                                        22826    ;
 1239   005206  013746  016160                                 MOV     ONLIN,-(SP)
 1240   005212  012746  000002                                 MOV     #2,-(SP)
 1241   005216  012746  020011                                 MOV     #ERO+24.,-(SP)
 1242   005222  004737  007566                                 JSR     PC,O2ASC
 1243   005226  012700  017761                                 MOV     #ERO,R0
 1244   005232  104000                       22940             TYPE
 1245                                        22960    ;
 1246                                        22980    ; CLEAR THE ERROR FLAG
 1247                                        23000    ;
 1248   005234  042737  100377  002032                         BIC     #MERRN,CFLAGS
 1249                                        23040    ;
 1250                                        23060    ; GET THE POINTER SUPPLIED BY THE PROGRAM
 1251                                        23080    ; AND PRINT THE ERROR DESCRIPTION MSG.
 1252                                        23100    ;
 1253   005242  013700  002034                                 MOV     TSCPTR,R0
 1254   005246  104000                       23140             TYPE
 1255   005250                                        50002$:
 1256   005250  005037  005434                                 CLR     ERRSAV
 1257                                        23200    ;
 1258                                        23220    ; UPDATE THE ERROR COUNT FOR THE FAILING LINE
 1259                                        23240    ;
 1260   005254  013737  016160  005434                         MOV     ONLIN,ERRSAV
 1261   005262  006337  005434                                 ASL     ERRSAV
  (7)   005266  006337  005434                                 ASL     ERRSAV
  (7)   005272  006337  005434                                 ASL     ERRSAV
 1262   005276  062737  016170  005434                         ADD     #LINOO,ERRSAV
 1263   005304  005277  000124                                 INC     @ERRSAV
 1264                                        23340    ;
 1265                                        23360    ;IF LOOP ON ERROR IS SET , MAKE THE
 1266                                          23380    ; RETURN ADDRESS OF THE TEST  ODD.
 1267                                          23400    ; THE TEST CONTROLLER WILL USE THE OLD
 1268                                          23420    ; RPC TO RE-DO THE SUBTEST.
 1269                                          23440    ;
 1270   005310  032737  040000  001364                          BIT     #LOOPOE,PCFLAG
  (9)   005316  001403                                          BEQ     50003$
 1271   005320  052765  000001  000010                          BIS     #BIT0,RPC(R5)
 1272   005326                                          50003$:
 1273                                          23520    ;
 1274                                          23540    ; SEE IF LINE ABORT FLAG IS SET
 1275                                          23560    ;
 1276   005326  032777  000020  000100                          BIT     #ABO,@ERRSAV
  (9)   005334  001431                                          BEQ     50004$
 1277                                          23600    ;
 1278                                          23620    ; IF ABORT IS SET DESELECT THE LINE
 1279                                          23640    ; UNLESS IT'S THE ONLY ONE BEING TESTED
 1280                                          23660    ;
 1281   005336  032737  000040  001364                          BIT     #MULTI,PCFLAG
  (9)   005344  001417                                          BEQ     50005$
 1282   005346  042777  000377  000060                          BIC     #SEL!#177,@ERRSAV
 1283   005354  013746  016160                                  MOV     ONLIN,-(SP)
 1284   005360  012746  000002                                  MOV     #2,-(SP)
 1285   005364  012746  020270                                  MOV     #DR1,-(SP)
 1286   005370  004737  007566                                  JSR     PC,02ASC
 1287                                          23800    ;
 1288                                          23820    ; NOTIFY OPERATOR THAT LINE WAS DROPPED
 1289                                          23840    ;
 1290   005374  012700  020242                                  MOV     #DR0,R0
 1291   005400  104000                         23880                TYPE
 1292                                          23900    ;
 1293                                          23920    ; IF TESTING ONLY ONE LINE DONOT ALLOW IT TO BE DESELECTED
 1294   005402  000406                                          BR      50006$
  (3)   005404                                          50005$:
 1295   005404  052777  000200  000022                          BIS     #SEL,@ERRSAV
 1296   005412  042777  000020  000014                          BIC     #ABO,@ERRSAV
 1297   005420                                          50006$:
 1298   005420                                          50004$:
 1299                                          24040    ;
 1300                                          24060    ; HALT HERE IF HALT ON ERROR IS SET
 1301                                          24080    ;
 1302   005420  032737  100000  001364                          BIT     #HALTOE,PCFLAG
  (9)   005426  001401                                          BEQ     50007$
 1303   005430  000000                         24120            HALT
 1304   005432                                          50007$:
 1305   005432                                          50000$:
  (3)   005432                                          50001$:
  (2)   005432  000207                                          RTS     PC
 1306                                          24180
 1307   005434  000000                         24200    ERRSAV: .WORD   0
 1308                                          24220
 1309                                          24240    ;*************************************************************
 1310                                          24260    ; REPORT            THIS ROUTINE HANDLES END OF TEST AND
 1311                                          24280    ;                   END OF PASS  REPORTS.
 1312                                          24300    ;*************************************************************
 1313                                          24320
 1314   005436                                          REPORT.
 1315                                          24345    ; CHECK FOR END OF TEST CONDITION
 1316                                          24350    ;
 1317  005436  032737  040000  002032                          BIT     #EOT,CFLAGS
  (9)  005444  001423                                          BEQ     50002$
 1318                                          24365    ;
 1319                                          24370    ; CONVERT TEST NO. FOR OUTPUT
 1320                                          24375    ;
 1321  005446  013746  016154                                  MOV     INTEST,-(SP)
 1322  005452  012746  000002                                  MOV     #2,-(SP)
 1323  005456  012746  020210                                  MOV     #EOTM+18.,-(SP)
 1324  005462  004737  007566                                  JSR     PC,02ASC
 1325                                          24445    ;
 1326                                          24450    ; SEND END OF TEST MESSAGE
 1327  005466  042737  040000  002032                          BIC     #EOT,CFLAGS
 1328                                          24455    ;
 1329  005474  012700  020166                                  MOV     #EOTM,R0
 1330  005500  004737  007010                                  JSR     PC,MTYPE
 1331  005504  012700  017051                                  MOV     #L3,R0
 1332  005510  004737  007010                                  JSR     PC,MTYPE
 1333  005514                                           50002$:
 1334                                          24505    ;
 1335                                          24510    ; CHECK FOR END OF PASS CONDITION
 1336                                          24515    ;
 1337  005514  032737  020000  002032                          BIT     #EOP,CFLAGS
  (9)  005522  001425                                          BEQ     50003$
 1338  005524  013746  016154                                  MOV     INTEST,-(SP)
 1339                                          24545    ;
 1340                                          24550    ;CONVERT TEST NO. FOR OUTPUT
 1341                                          24555    ;
 1342  005530  012746  000002                                  MOV     #2,-(SP)
 1343  005534  012746  020161                                  MOV     #EOPM+19.,-(SP)
 1344  005540  004737  007566                                  JSR     PC,02ASC
 1345                                          24605    ;
 1346                                          24610    ; CONVERT PASS NUMBER FOR OUTPUT
 1347                                          24615    ;
 1348  005544  013746  002036                                  MOV     TSCCNT,-(SP)
 1349  005550  012746  020145                                  MOV     #EOPM+7,-(SP)
 1350  005554  004737  010006                                  JSR     PC,BIN2DA
 1351                                          24685    ;
 1352                                          24690    ; SEND END OF PASS MESSAGE.
 1353                                          24695    ;
 1354  005560  012700  020136                                  MOV     #EOPM,R0
 1355  005564  004737  007010                                  JSR     PC,MTYPE
 1356  005570  042737  020000  002032                          BIC     #EOP,CFLAGS
 1357  005576                                           50003$:
 1358  005576                                           50000$:
  (3)  005576                                           50001$:
  (2)  005576  000207                                          RTS     PC
 1359                                          24800
 1360                                          24820
 1361                                          24840
 1362
 1363                                          00050    ;***************
 1364                                          00070    ; SETIO  ROUTINE TO SET I/O MODE
 1365                                          00090    ;***************
 1366                                          00110
 1367                                          00130
 1368  005600                                           SETIO:
 1369  005600                                           50002$:
 1370  005600  032737  000001  001364                           BIT     #FLAG1,PCFLAG
  (9)  005606  001003                                           BNE     50003$
 1371  005610  052737  000003  001364                           BIS     #FLAG1!#FLAG2,PCFLAG
 1372  005616                                           50003$:
 1373  005616  032737  000001  001364                           BIT     #FLAG1,PCFLAG
  (7)  005624  001765                                           BEQ     50002$
  (4)  005626  032737  000002  001364                           BIT     #FLAG2,PCFLAG
  (7)  005634  001761                                           BEQ     50002$
 1374  005636                                           50000$:
  (3)  005636                                           50001$:
  (2)  005636  000207                                           RTS     PC
 1375                                          00320
 1376                                          00340
```

```
                                00700          .SBTTL  INTERFACE SIZER ROUTINES
                                00900   ;*************
                                00950   ;BUILD  SUBROUTINE TO BUILD THE DEVICE TABLE USED
                                01000   ;       IN MULTI LINE MODE.
                                01050   ;*************
005640  012737  000003  000066  01100   BUILD:  MOV     #BPT,66          ;SET UP CONSOLE TRAP
005646  012737  006120  000004  01150           MOV     #4$,MACHER       ;SET UP NXM TRAP
005654  012701  016170          01200           MOV     #LIN00,R1
005660  012137  016126          01220   1$:     MOV     (R1)+,DLFLAG
005664  012137  016130          01240           MOV     (R1)+,DLADR
005670  012137  016132          01260           MOV     (R1)+,DLVEC
005674  012137  016134          01280           MOV     (R1)+,DLOTH
005700  013737  016130  016140  01400           MOV     DLADR,DVCTXS
005706  062737  000004  016140  01430           ADD     #4,DVCTXS
005714  013737  016140  016142  01440           MOV     DVCTXS,DVCTXB
005722  062737  000002  016142  01450           ADD     #2,DVCTXB
005730  113737  016135  016160  01500           MOVB    DLOTH+1,ONLIN
005736  005777  010166          01750           TST     @DLADR                  ;TRY TO ACCESS DVC.
005742  052737  100000  016126  01850           BIS     #DLP,DLFLAG             ;SET DVC PRESENT FLAG
005750  012737  000300  007564  01900           MOV     #300,DELAYT             ; SET UP FOR DELAY
005756  112777  000076  010156  01925           MOVB    #'>,@DVCTXB             ;TXMIT A ">" CHARACTER
005764  052777  000100  010146  01950           BIS     #100,@DVCTXS            ;SET DVC TX INTR ENABLE
005772  104006                  02050           DELAYR                          ;WAIT FOR INTERRUPT
005774  005737  016132          02100           TST     DLVEC                   ;IF ZERO NO INTERRUPT OCCURED
006000  001433                  02125           BEQ     2$                      ;NO INTERRUPT - BRANCH
                                02150                                           ;OTHERWISE DLVEC=ADDR THAT
                                02200                                           ;DVC INTERRUPTED TO VIA INTRAP
006002  052737  000200  016126  02300           BIS     #SEL,DLFLAG             ;SET SELECTED FLAG
006010  013741  016134          02350   3$:     MOV     DLOTH,-(R1)
006014  013741  016132          02400           MOV     DLVEC,-(R1)             ;PUT NEW INFORMATION
006020  013741  016130          02450           MOV     DLADR,-(R1)             ;INTO LINE TABLE
006024  013741  016126          02500           MOV     DLFLAG,-(R1)
                                02550
006030  062701  000010          02600           ADD     #10,R1                  ;JUMP POINTER TO NEXT LINE
006034  020127  016770          02650   5$:     CMP     R1,#TABEND              ;ALL DONE ?
006040  001307                  02700           BNE     1$                      ;NO - DO NEXT LINE
006042  162701  000010          02750   6$:     SUB     #10,R1                  ;CKECH LAST ENTRY
006046  005711                  02800           TST     (R1)                    ;FOR LINE PRESENT
006050  100403                  02850           BMI     7$
006052  012711  177777          02900           MOV     #-1,(R1)                ;IF NOT SET IT TO END
006056  000771                  02950           BR      6$                      ;OF TABLE
006060  012737  000006  000004  03100   7$:     MOV     #6,MACHER               ;RESET TRAP CATCHER
006066  000207                  03150           RTS     PC
006070  052737  000020  016126  03200   2$:     BIS     #ABO,DLFLAG             ;SET ABORT FLAG
006076  042737  000200  016126  03250           BIC     #SEL,DLFLAG             ;MAKE SURE LINE IS DESELECTED
006104  004737  005124                          JSR     PC,ERROR
006110  012700  020055          03350           MOV     #ER7,R0                 ;SU ERROR MSG
006114  104000                  03400           TYPE                            ;TYPE MSG ON CONSOLE
006116  000734                  03450           BR      3$                      ;FIX TABLE ENTRIES
                                03500
006120  062706  000004          03550   4$:     ADD     #4,SP            ;ERASE INTR FROM STACK
006124  000743                  03600           BR      5$                      ;GET NEXT LINE ENTRY
                                03650
                                03700   ;*************
                                03750   ; CATCH         REPLACES TRAP CATCHER FROM 100 TO 1000 .
                                03800   ;*************
```

```
 1434   006126  012700  001000          03850   CATCH:  MOV     #1000,R0                        ;;START AT 1000
 1435   006132  005040                  03900   1$:     CLR     -(R0)           ;PUT HALT IN PC+2
 1436   006134  010037  016100          03950           MOV     R0,TEMP
 1437   006140  013740  016100          04000           MOV     TEMP,-(R0)      ;PUT PC+2 IN PC
 1438   006144  020027  000100          04050           CMP     R0,#100         ;FIN?
 1439   006150  002370                  04100           BGE     1$              ;NO - DO MORE
 1440   006152  012737  003466  000060  04200           MOV     #READKB,@#TKV   ;SU CONSOLE
 1441   006160  000207                  04250           RTS     PC
 1442                                   04300
 1446                                   04500
 1451                                              05400
 1452                                              05450                 .SBTTL  EMT HANDLER
 1453                                              05500        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1454                                              05550        ;THIS SECTION CONTAINS THE HANDLER AND MOST ROUTINES ACCESSED
 1455                                              05600        ;BY TRAPS THROUGH LOCATION 30.
 1456                                              05650        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1457                                              05700
 1458  006162                                      05750        EMTBOS:
  (4)  006162  011637  016112                                            MOV     (SP),TEMP+12
 1459  006166  162737  000002  016112              05800                 SUB     #2,TEMP+12        ;GET REAL PC
 1460  006174  017737  007712  016110              05850                 MOV     @TEMP+12,TEMP+10          ;GET EMT INSTRUCTION
 1461  006202  042737  104400  016110              05950                 BIC     #104400,TEMP+10 ;MASK INSTR BITS
 1462  006210  062737  006230  016110              06000                 ADD     #EMTABL,TEMP+10 ;ADD TABLE ADDR
 1463  006216  017737  007666  016112              06050                 MOV     @TEMP+10,TEMP+12
 1464  006224  000177  007662                      06100                 JMP     @TEMP+12
 1465                                              06150
 1466                                              06200        .EVEN
 1467  006230  006240                              06250        EMTABL:  ETYPE                   ;NSOLE TYPE ROUTINE
 1468  006232  007212                              06300                 PRTLTB                  ;LINE TABLE PRINTER
 1469  006234  007162                              06350                 INTRAP                  ;DL INTERRUPT CATCHER
 1470  006236  007530                              06400                 DELAYM                  ;DELAY ROUTINE
```

```
1472                                          06650          .SBTTL  I/O DRIVERS
1473                                          06700   ;*************
1474                                          06750   ;ETYPE CONSOLE OUTPUT ROUTINE. ENTER WITH ADDRESS OF
1475                                          06800   ;        DATA IN R0. NULL TERMINATES OUTPUT.
1476                                          06850   ;*************
1477                                          06900
1478  006240  105710                          06950   ETYPE:  TSTB    (R0)            ;CHECK FOR NULL
1479  006242  001406                          07000           BEQ     3$              ;EXIT ROUTINE
1480  006244  105737  177564                  07050   1$:     TSTB    @#TPS           ;CHECK FOR TRANSMIT READY
1481  006250  100375                          07100           BPL     1$              ;WAIT
1482  006252  112037  177566                  07150           MOVB    (R0)+,@#TPB     ;TRANSMIT CHARACTER
1483  006256  000770                          07200           BR      ETYPE           ;GET NEXT CHAR
1484  006260  105737  177564                  07250   3$:     TSTB    @#TPS           ;WAIT TILL ALL DONE
1485  006264  100375                          07275           BPL     3$
1486  006266  000002                          07287           RTI                     ;  EXIT...
1487                                          07300
1488                                          07350
1489                                          07400   ;*************
1490                                          07450   ;MECHO  TERMINAL OUTPUT ROUTINE - SINGLE CHAR
1491                                          07500   ;       CHAR IN R2
.492                                          07550   ;       INTERRUPT DRIVEN ALL LINES
1493                                          07600   ;*************
1494  006270  010237  006646                  07650   MECHO:  MOV     R2,MSAVE
1495  006274  010446                                          MOV     R4,-(SP)
1496  006276  012702  020434                  07750           MOV     #STACK2,R2      ;INITIALIZE STACK2
1497  006302  005037  020670                  07800           CLR     ENDS            ;ZERO COUNT
1498  006306  012704  020574                  07850           MOV     #STACK3,R4              ;INITIALIZE STACK3
1499  006312  013722  016132                  07900   1$:     MOV     DLVEC,(R2)+     ;GET THE BASE VECTOR ADDR
1500  006316  013737  016144  016150          07950           MOV     TXVEC,SAVE              ;SAVE THE VECTOR
1501  006324  062737  000002  016150          08000           ADD     #2,SAVE         ;
1502  006332  013777  016150  007604          08050           MOV     SAVE,@TXVEC     ;PUT ADDR+2 INTO ADDR
1503  006340  012777  000004  007602          08100           MOV     #IOT,@SAVE      ;PUT TRAP INTO ADDR+2
1504  006346  012737  000310  007564          08150           MOV     #200.,DELAYT            ;WAIT FOR 200 MS.
1505  006354  113777  006646  007560          08200           MOVB    MSAVE,@DVCTXB           ;PUT CHAR IN BUF REG
1506  006362  012777  000100  007550          08250           MOV     #100,@DVCTXS    ;ENABLE TX INTERRUPT
1507  006370  005237  020670                  08300           INC     ENDS            ;ADD 1 TO INTR PENDING COUNT
1508  006374  004737  002110                                  JSR     PC,LINMON
1509  006400  032737  000400  001364          08400           BIT     #LDONE,PCFLAG           ;END OF DVC LIST ?
1510  006406  001741                          08450           BEQ     1$              ;NO DO THIS LINE
1511  006410  042737  000400  001364          08500           BIC     #LDONE,PCFLAG
1512  006416  010237  006650                  08550           MOV     R2,MSAVE+2              ;SAVE STACK2 POINTER
1513  006422  104006                          08600           DELAYR
1514  006424  005737  020670                  08650           TST     ENDS            ;ALL PENDING INTERRUPTS SHOULD
1515  006430  001004                          08700           BNE     3$              ;BE COUNTED DOWN BY TXTRAP.
1516  006432                                  08750   12$:
 (4)  006432  012604                                          MOV     (SP)+,R4
1517  006434  013702  006646                  08800           MOV     MSAVE,R2
.518  006440  000207                          08850   2$:     RTS     PC                      ;EXIT...
1519  006442  010437  006652                  08900   3$:     MOV     R4,MSAVE+4              ;SAVE STACK 3 LIMIT
1520  006446  012704  020574                  08950           MOV     #STACK3,R4              ;RESET STACK3 POINTER
1521  006452  012702  020434                  09000           MOV     #STACK2,R2              ;RESET STACK2 POINTER
1522  006456  021224                          09050   4$:     CMP     (R2),(R4)+              ;VECTOR MATCH ?
1523  006460  001404                          09100           BEQ     5$                      ;YES - BRANCH
1524  006462  020437  006652                  09150           CMP     R4,MSAVE+4                  ;STACK END ?
1525  006466  001403                          09200           BEQ     6$                      ;YES - BRANCH
1526  006470  000772                          09250           BR      4$                      ;COMPARE NEXT VECT.
```

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1527  006472  005012                   09300  5$:     CLR     (R2)                                  ;ERASE VECT OUT
1528  006474  005044                   09350          CLR     -(R4)                                 ;ERASE VECT IN
1529  006476  062702  000002           09400  6$:     ADD     #2,R2                                 ;MOVE STACK POINTER
1530  006502  020237  006650           09450          CMP     R2,MSAVE+2                            ;END OF OUT STACK ?
1531  006506  001403                   09500          BEQ     7$                                    ;YES - GO GET ODD VECTOR
1532  006510  012704  020574           09550          MOV     #STACK3,R4                            ;RESET STACK3 POINTER
1533  006514  000760                   09600          BR      4$                      ;KEEP SORTING
1534  006516  012702  020434           09650  7$:     MOV     #STACK2,R2              ;RESET STACK2 POINTER
1535  006522  005712                   09700  8$:     TST     (R2)                    ;CHECK FOR NON ZERO
1536  006524  001003                   09750          BNE     9$
1537  006526  062702  000002           09800          ADD     #2,R2
1538  006532  000773                   09850          BR      8$
1539  006534  012737  016174  006652   09900  9$:     MOV     #LIN00+4,MSAVE+4          ,  GET VECT FROM TABLE
1540  006542  027712  000104           09950  10$:    CMP     @MSAVE+4,(R2)           ;MAT '  ,
1541  006546  001404                   10000          BEQ     11$                     ;YES       .NE IS N.G.
1542  006550  062737  000010  006652   10050          ADD     #10,MSAVE+4                        /E PO. TER TO NEXT
1543  006556  000771                   10100          BR      10$
1544  006560  062737  000002  006652   10150  11$:    ADD     #2,MSAVE+4              ;GET LINE NUMBER
1545  006566  017737  000060  016160   10200          MOV     @MSAVE+4,ONLIN
1546  006574  105037  016160           10250          CLRB    ONLIN
1547  006600  000337  016160           10300          SWAB    ONLIN                   ;ERASE JUNK BITS
1548  006604  004737  002432           10350          JSR     PC,MTW                    ;MOVE TABLE TO WORK AREAS
1549  006610  012737  020055  002034   10400          MOV     #ER7,TSCPTR               ;POINT TO ERROR MESSAGE
1550  006616  112737  000377  002032   10450          MOVB    #377,CFLAGS               ;ERROR NO.
1551  006624  052737  100000  002032   10500          BIS     #MERR,CFLAGS              ;SET ERROR FLAG
1552                                   10551  ;*******************
1553                                   10600  ;     ERROR 377    *
1554                                   10650  ;*******************
1555  006632  004737  005124                          JSR     PC,ERROR
1556  006636  042737  100377  002032   10750          BIC     #MERRN,CFLAGS           ;ERASE ERROR DATA
1557  006644  000672                   10800          BR      12$                     ;CLEAN HOUSE & EXIT
1558  006646  000000  000000  000000   10850  MSAVE:  .WORD   0,0,0
1559                                   10855
1560                                   10856
1561                                   10857
1562                                   10860  ;***************
1563                                   10861  ; SECHO     SINGLE LINE ECHO ROUTINE
1564                                   10862  ;           ENTER WITH CHAR IN R2
1565                                   10863  ;           TRANSMITTS TO DVC VIA I/O DRIVER WORK AREA
1566                                   10864  ;***************
1567                                   10865
1568                                   10866
1569  006654                                  SECHO:
1570  006654  013737  016144  016150                  MOV     TXVEC,SAVE
1571  006662  062737  000002  016150                  ADD     #2,SAVE
1572  006670  012777  007510  007246                  MOV     #STRAP,@TXVEC
1573  006676  012777  000200  007244                  MOV     #PRI4,@SAVE
1574  006704  012737  000144  007564                  MOV     #100.,DELAYT
1575  006712  110277  007224                          MOVB    R2,@DVCTXB
1576  006716  012777  000100  007214                  MOV     #100,@DVCTXS
1577  006724  005237  020670                          INC     ENDS
1578  006730  104006                          10877       DELAYR
1579  006732  005737  020670                          TST     ENDS
 (9)  006736  001413                                  BEQ     50002$
1580  006740  012737  020055  002034                  MOV     #ER7,TSCPTR
1581  006746  052737  100376  002032                  BIS     #376!#MERR,CFLAGS
```

```
1582 006754  004737  005124                         JSR     PC,ERROR
1583 006760  042737  100377  002032                 BIC     #MERRN,CFLAGS
1584 006766                                 50002$:
1585 006766  013777  016150  007150                 MOV     SAVE,@TXVEC
1586 006774  005077  007150                         CLR     @SAVE
1587 007000  013737  016160  016150                 MOV     ONLIN,SAVE
1588 007006                                 50000$:
 (3) 007006                                 50001$:
 (2) 007006  000207                                 RTS     PC
1589                                 10900
1590                                 10950
1591                                 11000  ;*****\******
1592                                 11050  ;MTYPE  TERMINAL CUTPJT ROUTINE - LINE TABLE VEPSICN
1593                                 11100  ;       ENTER WITH ADDR OF MSG IN R0
1594                                 11150
1595                                 11200  ;************
1596 007010  112002                  11250  MTYPE:  MOVB    (R0)+,R2              ;GET CHAR TO PRINT
1597 007012  001403                  11300          BEQ     1$                    ;EXIT IF NULL CHAR
1598 007014  004737  006270                         JSR     PC,MECHO
1599 007020  000773                  11400          BR      MTYPE                 ;GET NEXT CHAR
1600 007022  000207                  11450  1$:     RTS     PC                              ;EXIT...
1601                                 11460
1602                                 11462
1603                                 11464
1604                                 11466  ;***************
1605                                 11468  ; READIO        THIS ROUTINE MONITORS AN I/O READ OPERATION
1606                                 11470  ;***************
1607                                 11472
1608                                 11474
1609 007024                                 READIO:
1610 007024  042737  004000  001364                 BIC     #DATAIN,PCFLAG
1611 007032  010237  007564                         MOV     R2,DELAYT
1612 007036  012777  000101  007064                 MOV     #101,@DLADR
1613 007044  104006                  11480      DELAYR
1614                                 11481  ; IF NO CHAR RECVD WITHIN (R2) MS SET ERROR FLAG
1615 007046  032737  004000  001364                 BIT     #DATAIN,PCFLAG
 (9) 007054  001003                                 BNE     50002$
1616 007056  052765  100000  000004                 BIS     #MERR,MFLAGS(R5)
1617 007064                                 50002$:
1618                                 11487  ; IF ON LINE-0 CLEAR I/O MODE FLAGS
1619 007064  105737  016160                         TSTB    ONLIN
 (9) 007070  001004                                 BNE     50003$
1620 007072  042737  000003  001364                 BIC     #FLAG1!#FLAG2,PCFLAG
1621 007100  000402                                 BR      50004$
 (3) 007102                                 50003$:
1622 007102  005077  007022                         CLR     @DLADR
1623 007106                                 50004$:
1624 007106                                 50000$:
 (3) 007106                                 50001$:
 (2) 007106  000207                                 RTS     PC
1625                                 11500
1626                                 11502
1627                                 11504
1628                                 11506  ;***************
1629                                 11508  ; TYPES    TERMINAL OUTPUT ROUTINE   SINGLE LINE
1630                                 11510  ;***************
```

```
 1631                                   11512
 1632                                   11514
 1633   007110  112002                  11516   TYPES:   MOVB     (R0)+,R2             ;GET CHAR TO PRINT
 1634   007112  001403                  11518            BEQ      1$                   ;EXIT IF NULL
 1635   007114  004737  006654          11520            JSR      PC,SECHO             ;SEND THE MESSAGE
 1636   007120  000773                  11522            BR       TYPES
 1637   007122  000207                  11524   1$:      RTS      PC                   ;EXIT
 1638                                   11526
 1639                                   11528
 1640                                   11530   ;****************
 1641                                   11532   ; READS          THIS ROUTINE SETS UP DVC REC/P VECTOR AREAS
 1642                                   11533   ;                IF THE CURRENT LINE IS NOT LINE-00
 1643                                   11534   ;****************
 1644                                   11536
 1645                                   11538
 1646   007124                                  READS:
 1647   007124  105737  016160                           TSTB     ONLIN
  (9)   007130  001003                                   BNE      50002$
 1648   007132  004737  005600                           JSR      PC,SETIO
 1649   007136  000410                                   BR       50003$
  (3)   007140                                  50002$:
 1650   007140  010277  006766                           MOV      R2,@DLVEC
 1651   007144  013702  016132                           MOV      DLVEC,R2
 1652   007150  062702  000002                           ADD      #2,R2
 1653   007154  012712  000200                           MOV      #PRI4,(R2)
 1654   007160                                  50003$:
 1655   007160                                  50000$:
  (3)   007160                                  50001$:
  (2)   007160  000207                                   RTS      PC
 1656                                   11554
 1657                                   11556
```

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                                    11595                .SBTTL  TRAP ROUTINES
                                    11600          ;*************
                                    11650          ;INTRAP: USED BY TABLE BUILD TO GET ADDRESS THAT A LINE
                                    11700          ;        INTERRUPTS TO AN STORE IT IN - DLVEC.
                                    11750          ;        TRANSMIT INTERRUPT USED, DLV HAS NO MAINT MODE.
                                    11800          ;*************
007162  005077  006752              11875          INTRAP: CLR     @DVCTXS         ;DISABLE THE INTERRUPTS.
007166  012637  016132                                     MOV     (SP)+,DLVEC
007172  062706  000002              11900                  ADD     #2,SP                   ;SP+2 ADJUST STACK POINTER
007176  162737  000010  016132      11950                  SUB     #10,DLVEC       ;ADJUST TO RCVR INTR ADDR
007204  005037  007564              12000                  CLR     DELAYT          ;RESET TIMER
007210  000002                      12050                  RTI                     ;GO BACK TO BUILD ROUTINE
                                    12100
                                    12150          ;*************
                                    12200          ;PRTLTB THIS ROUTINE TYPES THE LINE TABLE ON THE CONSOLE
                                    12250          ;       DEVICE. DROPPED FLAGS ARE DECODED AND THE
                                    12300          ;       APPROPRIATE INFORMATION IS PRINTED FOR EACH LINE.
                                    12350          ;*************
                                    12400
007212                              12450          PRTLTB:
007212  013746  016100                                     MOV     TEMP,-(SP)
007216  013746  016102                                     MOV     TEMP+2,-(SP)
007222  012702  016170              12650                  MOV     #LIN00,R2       ;POINTER TO ;START OF TABLE
007226  012700  017676              12700                  MOV     #HEADR2,R0
007232  104000                      12750                  TYPE                    ;PRINT HEADER
007234  005712                      12800          1$:     TST     (R2)            ;LINE PRESENT?
007236  100406                      12850                  BMI     2$              ;YES - BRANCH
007240  062702  000010              12900                  ADD     #10,R2          ;MOVE POINTER TO NEXT ENTRY
007244  021227  177777              12950          6$:     CMP     (R2),#-1        ;END OF TABLE?
007250  001452                      13000                  BEQ     10$
007252  000770                      13050                  BR      1$              ;YES - BRANCH
007254  012237  016100              13100          2$:     MOV     (R2)+,TEMP      ;SAVE FLAG WORD
007260  012246                                             MOV     (R2)+,-(SP)
007262  012746  000004                                     MOV     #4,-(SP)
007266  012746  017743                                     MOV     #DLAD,-(SP)
007272  004737  007566              13300                  JSR     PC,O2ASC        ;CONVERT ADDRESS TO ASCII
007276  012246                                             MOV     (R2)+,-(SP)
007300  012746  000003              13400                  MOV     #3,-(SP)
007304  012746  017752                                     MOV     #DLV,-(SP)
007310  004737  007566              13500                  JSR     PC,O2ASC        ;CONVERT LINE NO.
007314  012237  016102              13550                  MOV     (R2)+,TEMP+2
007320  000337  016102              13600                  SWAB    TEMP+2
007324  013746  016102                                     MOV     TEMP+2,-(SP)
007330  012746  000002                                     MOV     #2,-(SP)
007334  012746  017733                                     MOV     #LIN,-(SP)
007340  004737  007566              13800                  JSR     PC,O2ASC
007344  012700  017733              13850                  MOV     #LIN,R0         ;TYPE FORMATTED LINE
007350  104000                      13900                  TYPE
007352  105737  016100              13950          3$:     TSTB    TEMP            ;SELECTED?
007356  001403                      14000                  BEQ     4$              ;NO - BRANCH
007360  012700  020117              14050                  MOV     #S1,R0          ;SEND STAR
007364  000402                      14100                  BR      5$
007366  012700  020105              14150          4$:     MOV     #DR,R0          ;SEND DROPPED MSG
007372  104000                      14200          5$:     TYPE
007374  000723                      14250                  BR      6$
007376                              14300          10$:
     (2)   007376  012637  016102                       MOV     (SP)+,TEMP+2
    1714   007402  012637  016100                       MOV     (SP)+,TEMP
    1715   007406  012700  017051           14400       MOV     #L3,R0
    1716   007412  104000                   14450       TYPE
    1717   007414  000002                   14500       RTI
    1718                                    14550
```

```
1720                                            14600   ;************
1721                                            14650   ;TXTRAP THIS ROUTINE CATCHES THE INTERRUPTS FROM
1722                                            14700   ;       DL11'S  IN USE BY THE MECHO ROUTINE
1723                                            14750   ;************
1727                                            14950
1728  007416  162716  000010                    15000   TXTRAP: SUB     #10,(SP)                ;SUB 10 FROM UPDATED PC ON STACK
1729  007422  011614                            15020           MOV     (SP),(R4)               ;PUT BASE VECTOR INTO STACK3
1730  007424  012746  016174                    15040           MOV     #LIN00+4,-(SP)          ;GET POINTER TO LINE TABLE VECTORS
1731  007430  027614  000000                    15060   1$:     CMP     @0(SP),(R4)             ;COMPARE TABLE TO STACK3
1732  007434  001403                            15080           BEQ     2$                      ;SAME - BRANCH
1733  007436  062716  000010                    15100           ADD     #10,(SP)                ;POINT TO NEXT TABLE ENTRY
1734  007442  000772                            15120           BR      1$                      ;KEEP LOOKING FOR A MATCH
1735  007444  162716  000002                    15130   2$:     SUB     #2,(SP)                 ;ADDR OF DLADR NOW ON STACK
1736  007450  017637  000000  016100            15140           MOV     @0(SP),TEMP             ;GET DLADR FROM TABLE
1737  007456  062737  000004  016100            15160           ADD     #4,TEMP                 ;POINT TO DVCTXS REGISTER
1738  007464  005077  006410                    15180           CLR     @TEMP                   ;DISABLE INTERRUPTS
1739  007470  062706  000006                    15200           ADD     #6,SP                   ;SET STACK POINTER TO DRIVER PC
1740  007474  005337  020670                    15220           DEC     ENDS                    ;DECRIMENT INTERRUPT PENDING COUNT
1741  007500  003002                            15240           BGT     3$
1742  007502  005037  007564                    15260           CLR     DELAYT                  ;ABORT TIMEOUT IF ALL ACCOUNTED FOR
1743  007506  000002                            15280   3$:     RTI                             ;RETURN TO I/O DRIVER
1744                                            15300
1745                                            15500
1746                                            15501
1747                                            15502
1748                                            15503
1749                                            15504   ;***************
1750                                            15505   ; STRAP                 SINGLE LINE TRANSMIT INTERRUPT CATCHER
1751                                            15506   ;                       USED IN CONJUNCTION WITH SECHO ROUTINE.
1752                                            15507   ;***************
1753                                            15508
1754                                            15509
1755  007510                                            STRAP:
1756  007510  005077  006424                                    CLR     @DVCTXS
1757  007514  005337  020670                                    DEC     ENDS
1758  007520  005037  007564                                    CLR     DELAYT
1759  007524  000002                            15515           RTI
1760  007526                                            S0000$:
 (3)  007526                                            S0001$:
 (2)  007526  000207                                            RTS     PC
1761                                            15517
1762                                            15518
1763                                            15519
1764                                            15550
1768                                            15750   ;************
1769                                            15800   ;DELAYM DELAYS FOR X MILLI SECONDS. X STORED IN - DELAYT
1770                                            15850   ;
1771                                            15900   ;
1772                                            15950   ;************
1773  007530  005737  007564                    15955   DELAYM: TST     DELAYT
1774  007534  001411                            15960           BEQ     3$
1775  007536  010346                                            MOV     R3,-(SP)
 (2)                                                                    .MEXIT
1776  007540  013703  007562                    16050   1$:     MOV     TIMER,R3                ;1MS LOOP TIME
1777  007544  005303                            16100   2$:     DEC     R3
1778  007546  001376                            16150           BNE     2$
```

```
 1779  007550  005337  007564             16200              DEC      DELAYT
 1780  007554  003371                     16250              BGT      1$
 1781  007556  012603                                        MOV      (SP)+,R3
    2)                                                                .MEXIT
 1782  007560  000002                     16350     3$:      RTI
 1783                                     16400
 1784  007562  000554                     16450     TIMER:   .WORD    554            ;SET FOR 11/35 - 11/40
 1785                                     16500                                      ;SET TO 202 IF 11/03
 1786                                     16550                                      ;       251    11/05 - 11/10
 1787                                     16600                                      ;       314    11/15 - 11/20
 1788                                     16650                                      ;       2127   11/45 BIPOLAP
 1789                                     16700                                      ;       1237   11/45 - 11/70
 1790                                     16750                                      ;       755    11/45 MOS
 1791  007564  000000                     16800     DELAYT:  .WORD    0              ;DELAY TIME BUFFFR
```

```
1793                                             16900          .SBTTL  CONVERSION ROUTINES
1794                                             16950
1795                                             17000
1796                                             17050  ;O2ASCI OCTAL TO ASCII CONVERSION ROUTINE - ENTER WITH
1797                                             17100  ;       NUMBER TO BE CONVERTED ON THE STACK, FOLLOWED
1798                                             17150  ;       BY THE NUMBER OF DIGITS TO CONVERT, FOLLOWED
1799                                             17200  ;       BY THE STORAGE ADDRESS FOR THE ASCII STRING.
1800                                             17250  ;*************
1801  007566  016637  000006  016150             17300  O2ASC:  MOV     6(SP),SAVE      ;GET WORK COPY OF NUMBER
1802  007574  013746  016150                     17350          MOV     SAVE,-(SP)
1803  007600  066666  000006  000004             17400          ADD     6(SP),4(SP)     ;ADD COUNT TO POINTER
1804  007606  005366  000004                     17450          DEC     4(SP)           ;DEC FOR END ADDR
1805  007612  042716  177770                     17500  2$:     BIC     #177770,(SP)    ;MASK OUT ALL BUT 3 BITS
1806  007616  052716  000060                     17550          BIS     #60,(SP)        ;MAKE CHAR ASCII
1807  007622  111676  000004                     17600          MOVB    (SP),@4(SP)     ;PUT ASCII CHAR IN BUFFER
1808  007626  005366  000004                     17650          DEC     4(SP)           ;INC POINTER
1809  007632  005366  000006                     17700          DEC     6(SP)           ;DEC DIGIT COUNT
1810  007636  001411                             17750          BEQ     1$              ;BRANCH IF DONE
1811  007640  006266  000010                     17800          ASR     10(SP)          ;
1812  007644  006266  000010                     17850          ASR     10(SP)          ;GET NEXT DIGIT
1813  007650  006266  000010                     17900          ASR     10(SP)
1814  007654  016616  000010                     17950          MOV     10(SP),(SP)
1815  007660  000754                             18000          BR      2$              ;DO NEXT CHAR FOR CONVERSION
1816  007662  016666  000002  000010             18050  1$:     MOV     2(SP),10(SP)    ;PUT RETURN PC AT TOP OF JUNK
1817  007670  062706  000010                     18100          ADD     #10,SP          ;POINT TO RETURN PC
1818  007674  000207                             18150          RTS     PC              ;EXIT...
1819                                             18200
1820                                             18250  ;*************
1821                                             18300  ;A2BIN    CONVERTS INPUT ASCII TO BINARY NUMBER
1822                                             18350  ;         ENTER WITH ADDR OF ASCII STRING ON STACK
1823                                             18400  ;         FOLLOWED BY # DIGITS TO CONVERT
1824                                             18450  ;         FOLLOWED BY ADDR OF WORD FOR ANSWER.
1825                                             18500  ;*************
1829                                             18700
1830  007676                                            A2BIN:
1831  007676  010046                                            MOV     R0,-(SP)
1832  007700  005037  010004                                    CLR     A2SAV
1833  007704  016600  000010                                    MOV     10(SP),R0
1834  007710                                            50002$:
1835  007710  142710  000370                                    BICB    #370,(R0)
1836  007714  005366  000006                                    DEC     6(SP)
1837  007720  152037  010004                                    BISB    (R0)+,A2SAV
1838  007724  005766  000006                                    TST     6(SP)
 (5)  007730  001407                                            BEQ     50003$
1839  007732  006337  010004                                    ASL     A2SAV
 (7)  007736  006337  010004                                    ASL     A2SAV
 (7)  007742  006337  010004                                    ASL     A2SAV
1840  007746  000760                                            BR      50002$
 (3)  007750                                            50003$:
1841  007750  016600  000004                                    MOV     4(SP),R0
1842  007754  013710  010004                                    MOV     A2SAV,(R0)
1843  007760  011637  010004                                    MOV     (SP),A2SAV
1844  007764  016600  000002                                    MOV     2(SP),R0
1845  007770  062706  000010                                    ADD     #10,SP
1846  007774  010016                                            MOV     R0,(SP)
1847  007776  013700  010004                                    MOV     A2SAV,R0
```

```
  1848  010002                                         50000$:
   (3)  010002                                         50001$:
   (2)  010002   000207                                          RTS      PC
  1849                                        19600
  1850  010004   000000                       19650    A2SAV:    .WORD    0          ;STORAGE AREA
  1851                                        19750
  1852                                        19850
  1853                                        19950
  1854                                        20050    ;************
  1855                                        20150    ;BIN2DA      BINARY TO DECIMAL ASCII CONVERSION ROUTINE
  1856                                        20250    ;            ENTER WITH NUMBER TO CONVERT ON THE STACK,
  1857                                        20450    ;            FOLLOWED BY THE ADDRESS OF THE ASCII BUFFER.
  1858                                        20500    ;            5 DIGITS WILL BE CONVERTED
  1859                                        20550    ;************
  1860                                        20650
  1861                                        20750
  1862  010006   012700   010146            20850    BIN2DA:   MOV      #TABDA,R0            ;INITIALIZE TABLE POINTER
  1863  010012   112737   000005   010162   20900              MOVB     #5,DIGITS
  1864  010020   005037   010160            20950              CLR      CNTDA
  1865  010024   021066   000004            21050    1$:       CMP (R0),4(SP)
  1866  010030   003005                     21150              BGT      2$
  1867  010032   161066   000004            21250              SUB      (R0),4(SP)
  1868  010036   105237   010160            21350              INCB     CNTDA
  1869  010042   000770                     21450              BR       1$
  1870  010044   152737   000060   010160   21550    2$:       BISB     #60,CNTDA
  1871  010052   105737   010161            21650              TSTB     FLAGDA
  1872  010056   001012                     21750              BNE      4$
  1873  010060   123727   010160   000060   21850              CMPB     CNTDA,#'0
  1874  010066   001004                     21950              BNE      3$
  1875  010070   112737   000177   010160   22050              MOVB     #177,CNTDA
  1876  010076   000402                     22150              BR       4$
  1877  010100   105137   010161            22250    3$:       COMB     FLAGDA
  1878  010104   113776   010160   000002   22350    4$:       MOVB     CNTDA,@2(SP)
  1879  010112   005266   000002            22400              INC      2(SP)
  1880  010116   062700   000002            22450              ADD      #2,R0
  1981  010122   105037   010160            22550              CLRB     CNTDA
  1882  010126   105337   010162            22650              DECB     DIGITS
  1883  010132   001334                     22750              BNE      1$
  1884  010134   011666   000004            22800              MOV      (SP),4(SP)
  1885  010140   062706   000004            22825              ADD      #4,SP
  1886  010144   000207                     22850              RTS      PC
  1887                                        22950
  1888  010146   023420   001750   000144   23050    TABDA:    .WORD    10000.,1000.,100.,10.,1
        010154   000012   000001
  1889  010160      000                     23150    CNTDA:    .BYTE    0
  1890  010161      000                     23250    FLAGDA:   .BYTE    0
  1891  010162      000      000            23300    DIGITS:   .BYTE    0,0
  1892                                        23350
  1893
```

```
 1898                                    00250            .SBTTL  LA36 OPTION TESTS
 1899                                    00300  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1900                                    00350  ;
 1901                                    00400  ;TEST0    SECONDARY CHARACTER SET OPTION
 1902                                    00450  ;         NO MANUAL INTERVENTION REQUIRED
 1903                                    00500  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1904                                    00550
 1905  010164  012705  010352            00600  TEST0:    MOV     #T00BLK,R5                ;SET UP POINTER TO MODULE BLOCK
 1906  010170  012700  010366            00650            MOV     #T0,R0          ;SU TEST ID
 1907  010174  004737  007010                             JSR     PC,MTYPE
 1908  010200  012700  010424            00750  T01:      MOV     #PRI,R0         ;SU PRIMARY MSG
 1909  010204  004737  007010                             JSR     PC,MTYPE
 1910  010210  004737  010310            00850            JSR     PC,CHARS        ;SEND ALL CHARACTERS
 1911  010214  012700  017730            00900            MOV     #L1,R0
 1912  010220  004737  007010                             JSR     PC,MTYPE
 1913  010224  012700  010434            01000            MOV     #SEC,R0         ;SU SECONDARY MSG.
 1914  010230  004737  007010                             JSR     PC,MTYPE
 1915  010234  012702  000016            01100            MOV     #S0,R2          ;SEND S0 - SELECT APL SET
 1916  010240  004737  006270                             JSR     PC,MECHO
 1917  010244  004737  010310            01200            JSR     PC,CHARS        ;SEND ALL CHARS AGAIN
 1918  010250  012700  017730            01250            MOV     #L1,R0
 1919  010254  004737  007010                             JSR     PC,MTYPE
 1920  010260  012702  000017            01350            MOV     #SI,R2          ;SEND SI-SELECT ASCII
 1921  010264  004737  006270                             JSR     PC,MECHO
 1922                                    01450
 1923  010270  052765  020000  000004    01500            BIS     #TDONE,MFLAGS(R5)         ;SET DONE AND ATTENTION FLAGS
 1924  010276  012702  000012            01550            MOV     #12,R2          ;SU FOR LF
 1925  010302  004737  006270                             JSR     PC,MECHO
 1926  010306  000207                    01650            RTS     PC
 1927                                    01700  ;************
 1928                                    01750  ; SUBROUTINE TO FILL OUTPUT LINE WITH ALL CHARACTERS
 1929                                    01800  ;
 1930  010310  013701  016146            01850  CHARS:    MOV     WIDTH,R1        ;SAVE WIDTH
 1931  010314  012702  000040            01900            MOV     #40,R2          ;SAVE ;START CHAR
 1932  010320  162701  000007            01950            SUB     #7,R1           ;ADJUST WIDTH FOR PRI/SEC MSG
 1933  010324                            02000  2$:
  (3)  010324  004737  006270                             JSR     PC,MECHO
 1934  010330  005202                    02050            INC     R2              ;NEXT CHAR
 1935  010332  020237  010364            02100            CMP     R2,RUB          ;LAST CHAR?
 1936  010336  001403                    02150            BEQ     3$              ;YES - EXIT
 1937  010340  005301                    02200            DEC     R1              ;FND OF PAPER?
 1938  010342  001401                    02250            BEQ     3$              ;YES - EXIT
 1939  010344  000767                    02300            BR      2$              ;SEND NEXT
 1940  010346  000207                    02350  3$:       RTS     PC
 1941  010350  000005                    02400            .WORD   6               ;ITERATION COUNT
 1942  010352  000000                    02450  T00BLK:   .WORD   0               ;CTLCNT
 1943  010354  000000                    02500            .WORD   0                         ;PASS COUNT
 1944  010356  000000                    02550            .WORD   0                         ;STATUS FLAGS
 1945  010360  000000                    02600            .WORD   0                         ;POINTER
 1946  010362  010200                    02650            .WORD   T01                       ;RETURN PC
 1947  010364  000177                    02700  RUB:      .WORD   177
 1948                                    02750  .NLIST BEX
 1949  010366  042524  052123  030040    02800  T0:        ASCIZ  *TEST 0  APL/ASCII CHAR SET*<15><12><12>
 1950  010424  051501  044503  026511    02850  PRI:      .ASCIZ  /ASCII--/
 1951  010434  050101  026514  026455    02900  SEC:      .ASCIZ  /APL----/
 1952                                    02950            .EVEN
 1954                                  03050
 1955                                  03100   .LIST BEX
 1956                                  03150   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1957                                  03200   ;
 1958                                  03250   ;TEST1   SELECTIVE ADDRESSING OPTION
 1959                                  03300   ;        OPERATOR MUST COMPARE TYPEOUT AND SWITCHES ON THE M7737
 1960                                  03350   ;        TO VERIFY CORRECT OPERATION.
 1961                                  03400   ;        IF A GROUP OR UNIT SELECT CODE OF LESS THAN 20(8)
 1962                                  03450   ;        IS USED MODIFY LOCATION GSEL ACCORDINGLY.
 1963                                  03500   ;
 1964                                  03550   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1965                                  03600
 1966  010444                                  TEST1:
 1967  010444  012705  010722                  03700            MOV     #T01BLK,R5          ;SET UP POINTER TO MODULE BLOCK
 1968  010450  012700  010742                  03750            MOV     #T1,R0
 1969  010454  004737  007010                                   JSR     PC,MTYPE
 1970  010460                          03850   T11:     ;DESELECT ALL TERMINALS, THEN TRY TO
 1971                                  03900            ;PRINT ERROR MESSAGES....SHOULD NOT PRINT
 1972                                  03950            ;TRANSMIT A BAD SELECT SEQUENCE, THEN TRY TO
 1973                                  04000            ;PRINT ERROR MESSAGES...SHOULD NOT PRINT
 1974                                  04050            ;SELECT ALL TERMINALS, PRINT GP MESSAGE.
 1975                                  04100
 1976  010460  012765  010566  000010                   MOV     #T13,RPC(R5)
 1977  010466  013701  010734                           MOV     GSEL,R1
 1978  010472  012737  011176  010740                   MOV     #TABL1,T1TEMP+2
 1979  010500  012737  000001  010736                   MOV     #1,T1TEMP
  (5)  010506  000402                                   BR      50002$
  (4)  010510                                  50003$:
  (7)  010510  005237  010736                           INC     T1TEMP
  (5)  010514                                  50002$:
  (5)  010514  023727  010736  000010                   CMP     T1TEMP,#8.
  (7)  010522  003014                                   BGT     50004$
 1980  010524  012700  017730                           MOV     #L1,R0
 1981  010530  004737  007010                           JSR     PC,MTYPE
 1982  010534  017700  000200                           MOV     @T1TEMP+2,R0
 1983  010540  004737  007010                           JSR     PC,MTYPE
 1984  010544  062737  000002  010740                   ADD     #2,T1TEMP+2
 1985  010552  000756                                   BR      50003$
  (3)  010554                                  50004$:
 1986                                  04650            ; TRANSMIT SELECT CODES TO ALL TERMINALS
 1987                                  04700            ; FOLLOWED BY ASCII EQUIV OF CODE.
 1988  010554                          04750   T12:
  (4)  010554  012765  010460  000010                   MOV     #T11,RPC(R5)
 1989  010562  013701  010734                           MOV     GSEL,R1
 1990  010566                          04850   T13:     ;OUTPUT ALL CODES AND ACCII EQUIVELANTS
 1991  010566                                  50005$:
 1992  010566  020127  000200                           CMP     R1,#200
  (5)  010572  001420                                   BEQ     50006$
 1993  010574  012700  020421                           MOV     #SCODE,R0
 1994  010600  110160  000003                           MOVB    R1,3(R0)
 1995  010604  004737  007010                           JSR     PC,MTYPE
 1996  010610  112702  000002                           MOVB    #STX,R2
 1997  010614  004737  006270                           JSR     PC,MECHO
 1998                                  05250            ; NOW CONVERT SELECT CODE TO ASCII FOR OUTPUT
 1999  010620  004737  010662                           JSR     PC,CON
 2000  010624  004737  007010                           JSR     PC,MTYPE
 2001  010630  005201                                     INC     R1
 2002  010632  000755                                     BR      50005$
  (3)  010634                               50006$:
 2003                                05500                ; TURN ALL TERMINALS ON AND EXIT TEST
 2004  010634                        05550  T16:
  (4)  010634  012765  010460  000010                     MOV     #T11,RPC(R5)
 2005  010642  052765  020000  000004                     BIS     #TDONE,MFLAGS(R5)
 2006  010650  012700  020411                             MOV     #ALLON,R0
 2007  010654  004737  007010                             JSR     PC,MTYPE
 2008  010660                               50000$:
   3)  010660                               50001$:
  (2)  010660  000207                                     RTS     PC
 2009                                05750                ; THIS ROUTINE CONVERTS THE SELECT CODE
 2010                                05800                ; TO ASCII FOR OUTPUT IN OCTALC MESSAGE.
 2011  010662                               CON:
 2012  010662  005037  010736                             CLR     T1TEMP
 2013  010666  110137  010736                             MOVB    R1,T1TEMP
 2014  010672  013746  010736                             MOV     T1TEMP,-(SP)
 2015  010676  012746  000003                             MOV     #3,-(SP)
 2016  010702  012746  011520                             MOV     #OCTALC,-(SP)
 2017  010706  004737  007566                             JSR     PC,O2ASC
 2018  010712  012700  011520                             MOV     #OCTALC,R0
 2019  010716                               50000$:
  (3)  010716                               50001$:
  (2)  010716  000207                                     RTS     PC
 2020                                06300
 2021  010720  000002                05350                .WORD   2                   ;ITERATION COUNT
 2022  010722  000000                06400  T01BLK:       .WORD   0                   ;CTLCNT
 2023  010724  000000                06450                .WORD   0                   ;PASS COUNT
 2024  010726  000000                06500                .WORD   0                   ;STATUS FLAGS
 2025  010730  000000                06550                .WORD   0                   ;POINTER
 2026  010732  010460                06600                .WORD   T11                 ;RETURN PC
 2027  010734  000020                06650  GSEL:         .WORD   20                  ;;START OF SELECT CODES
 2028  010736  000000  000000        06700  T1TEMP:       .WORD   0,0
 2029                                06750  .NLIST BEX
 2030  010742  005015  052012  051505 06800 T1:           .ASCIZ  <15><12><12>/TEST 1  SELECTIVE ADDRESSING/<15  12 <12
 2031  011005     105  051122  051117 06850 E9:           .ASCIZ  /ERROR - THIS SHOULD NOT PRINT */
 2032  011045     116  020117  042523 06900 E12:          .ASCIZ  /NO SELECT CHARACTER SENT/<15><12>
 2033  011100  042523  042514  052103 06950 GP:           .ASCIZ  /SELECT CHARACTERS RECOGNIZED =/
 2034  011137     101  046114  052040 07000 E10:          .ASCIZ  /ALL TERMINALS SHOULD BE OFF/<15><12>
 2035          011176                07050                .EVEN
 2036  011176  020416  011005  011137 07100 TABL1:        .WORD   ALLOFF,E9,E10,NSELC,E9,E12,ALLON,GP
 2037                                07150
 2038                                07200
 2039                                07250
 2040                                07300
 2041                                07350  ;************
 2042                                07400  ;;GETANS              THIS ROUTINE SETS UP AND READS THE ANSWERBACK
 2043                                07450  ;                     MESSAGE FROM THE TERMINAL UNDER TEST.
 2044                                07500  ;************
 2045                                07550
 2046                                07600
 2047                                07650
 2048  011216                               GETANS:
 2049  011216  010337  011304                             MOV     R3,2$
 2050  011222  012702  013144                             MOV     #T220,R2
```

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2051   011226  004737  007124                                    JSR     PC,READS
2052   011232  012702  000005                                    MOV     #ENQ,R2
2053   011236  004737  006654                                    JSR     PC,SECHO
2054   011242                             08000   1$:
 (4)   011242  013702  011304                                    MOV     2$,R2
2055   011246  004737  007024                                    JSR     PC,READIO
2056   011252  032765  100000  000004                            BIT     #MERR,MFLAGS(R5)
 (9)   011260  001405                                            BEQ     50002$
2057   011262  042765  100000  000004                            BIC     #MERR,MFLAGS(R5)
2058   011270  105011                                            CLRB    (R1)
2059   011272  000403                                            BR      50003$
 (3)   011274                                     50002$:
2060   011274  105237  013212                                    INCB    T2CNT1
2061   011300  000760                     08350                  BR      1$
2062   011302                                     50003$:
2063   011302                                     50000$:
 (3)   011302                                     50001$:
 (2)   011302  000207                                            RTS     PC
2064   011304  000000                     08500   2$:            .WORD   0
2065                                      08550
2066                                      08600
2067                                      08650   ;************
2068                                      08700   ;TYPANS     THIS ROUTINE PRINTS THE ANSWERBACK MESSAGE
2069                                      08750   ;           IN OCTAL FORMATT , AND ASCII FORMATT.
2070                                      08800   ;************
2071                                      08850
2072                                      08900
2073   011306                                     TYPANS:
2074                                      09000
2075   011306  012700  020421                                    MOV     #SCODE,R0
2076   011312  004737  007110                                    JSR     PC,TYPES
2077   011316  012702  000002                                    MOV     #STX,R2
2078   011322  004737  006654                                    JSR     PC,SECHO
2079   011326  012700  011472                                    MOV     #ANSHOR,R0
2080   011332  004737  007110                                    JSR     PC,TYPES
2081   011336  013746  013212                                    MOV     T2CNT1,-(SP)
2082   011342                             09337   1$:
 (4)   011342  005046                                            CLR     -(SP)
2083   011344  112116                                            MOVB    (R1)+,(SP)
2084   011346  012746  000003                                    MOV     #3,-(SP)
2085   011352  012746  011520                                    MOV     #OCTALC,-(SP
2086   011356  004737  007566                                    JSR     PC,O2ASC
2087   011362  012700  011520                                    MOV     #OCTALC,R0
2088   011366  004737  007110                                    JSR     PC,TYPES
2089   011372  105337  013212                                    DECB    T2CNT1
2090   011376  105737  013212                                    TSTB    T2CNT1
 (9)   011402  003402                                            BLE     50002$
2091   011404  000756                     09700                  BR      1$
2092   011406  000426                                            BR      50003$
 (3)   011410                                     50002$:
2093   011410  012700  017730                                    MOV     #L1,R0
2094   011414  004737  007110                                    JSR     PC,TYPES
2095   011420  012700  000023                                    MOV     #19.,R0
2096   011424                                     50004$:
2097   011424  012702  000040                                    MOV     #40,R2
2098   011430  004737  006654                                    JSR     PC,SECHO
```

```
 2099  011434  005300                                          DEC     R0
 2100  011436  005700                                          TST     R0
  (5)  011440  001401                                          BEQ     50005$
 2101  011442  000770                                          BR      50004$
  (3)  011444                                         50005$:
 2102  011444  012700  013220                                  MOV     #T2BUF,R0
 2103  011450  004737  007110                                  JSR     PC,TYPES
 2104  011454  012700  017730                                  MOV     #L1,R0
 2105  011460  004737  007110                                  JSR     PC,TYPES
 2106  011464                                         50003$:
 2107  011464  012637  013212                                  MOV     (SP)+,T2CNT1
 2108  011470                                         50000$:
  (3)  011470                                         50001$:
  (2)  011470  000207                                          RTS     PC
 2109  011472  005015  047101  053523  10100          ANSHDR: .ASCIZ  <15><12>/ANSWERBACK RECVD =
 2110  011520  030060  027460     000  10150          OCTALC: .ASCIZ  *000/*
 2111          011526                  10200                  .EVEN
 2112                                  10250
 2114                                   10350          .LIST BEX
 2115                                   10400   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2116                                   10450   ;
 2117                                   10500   ;TEST2  AUTO ANSWER BACK OPTION
 2118                                   10550   ;       SINGLE LINE TESTS REQUIRE MANUAL INTERVENTION
 2119                                   10600   ;
 2120                                   10650   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2121                                   10700
 2122                                   10750   .ENABL LSB
 2123   011526                                  TEST2:
 2124   011526  012700  013326          10850          MOV     #T2,R0
 2125   011532  012701  013220          10900          MOV     #T2BUF,R1          ;SET UP STACK-2 AS INPUT BUFFER
 2126   011536  012705  013176          10950          MOV     #T02BLK,R5         ;SET UP POINTER TO MODULE BLOCK
 2127   011542  004737  007010                         JSR     PC,MTYPE
 2128   011546                          11050   T21:   ;IF THE LINE UNDER TEST HASN'T BEEN SIZED
 2129                                   11100          ;FOR THE ANSWERBACK OPTION DO SO NOW.
 2130                                   11150          ;
 2131   011546  105737  016134                         TSTB    DLOTH
  (9)   011552  001065                                 BNE     50002$
 2132   011554  012701  013220                         MOV     #T2BUF,R1
 2133                                   11300          ;CHECK DLOTH ENTRY OF LINE TABLE FOR CURRENT
 2134                                   11350          ;LINE. IF LOBYTE IS 0 NO SIZE HAS BEEN DONE.
 2135                                   11400          ; IF = 200  LINE SIZED BUT NO ANSWER RECVD.
 2136                                   11450          ;
 2137   011560  013737  010734  013214                 MOV     GSEL,T2TEMP
 2138   011566  013737  016160  013216                 MOV     ONLIN,T2TEMP+2
  (7)   011574  006337  013216                         ASL     T2TEMP+2
  (7)   011600  006337  013216                         ASL     T2TEMP+2
  (7)   011604  006337  013216                         ASL     T2TEMP+2
 2139   011610  062737  016176  013216                 ADD     #LIN00+6,T2TEMP+2
 2140   011616  112777  000200  001372                 MOVB    #200,@T2TEMP+2
 2141   011624                                  50003$:
 2142   011624  023727  013214  000200                 CMP     T2TEMP,#200
  (5)   011632  001435                                 BEQ     50004$
 2143                                   11800          ;  SEND EACH POSSABLE SELECT CODE TO THE
 2144                                   11850          ;TERMINAL, THEN REQUEST AN ANSWERBACK.
 2145                                   11900          ;IF AN ANSWER IS REVIEVED STORE THE SELECT
 2146                                   11950          ;CODE IN DLOTH ENTRY OF THE LINE TABLE.
 2147                                   12000          ;OTHERWISE SET DLOTH TO 200.
 2148   011634  113737  013214  020424                 MOVB    T2TEMP,SCODE+3
 2149   011642  012700  020421                         MOV     #SCODE,R0
 2150   011646  004737  007110                         JSR     PC,TYPES
 2151   011652  012703  000310                         MOV     #200, R3
 2152   011656  105037  013212                         CLRB    T2CNT1
 2153   011662  004737  011216                         JSR     PC,GETANS
 2154   011666  105737  013212                         TSTB    T2CNT1
  (9)   011672  001412                                 BEQ     50005$
 2155   011674  113777  013214  001314                 MOVB    T2TEMP,@T2TEMP+2
 2156   011702  113737  013214  016134                 MOVB    T2TEMP,DLOTH
 2157   011710  012737  000200  013214                 MOV     #200,T2TEMP
 2158   011716  000402                                 BR      50006$
  (3)   011720                                  50005$:
 2159   011720  105237  013214                         INCB    T2TEMP
 2160   011724                                  50006$:
 2161   011724  000737                                 BR      50003$
  (3)   011726                                  50004$:
     011726                               50002$:
     011726                               T22:      ;IF THE LINE HAS BEEN SIZED, BUT NO
                                                    ;SELECT CODE HAS BEEN MAPPED NOTIFY THE
                                                    ;OPERATOR .
                                                    ;
     011726  123727  016134  000200                 CMPB    DLOTH,#200
 (9) 011734  001015                                 BNE     50007$
                                                    ; ERROR #0          NO ANSWERBACK FROM TERMINAL
                                                    ;**************
                                                    ;
     011736  012765  012530  000010                 MOV     #T24,RPC(R5)
     011744  052765  100000  000004                 BIS     #MERR,MFLAGS(R5)
     011752  105065  000004                         CLRB    MFLAGS(R5)
     011756  012765  013356  000006                 MOV     #E14,POINT(R5)
     011764  000207                                 RTS     PC
     011766  000463                                 BR      50010$
 (3) 011770                               50007$:
     011770  012701  013220                         MOV     #T2BUF,R1
                                                    ;GET THE SELECT CODE FROM THE LINE TABLE &
                                                    ;REQUEST AN ANSWERBACK.
                                                    ;
     011774  113737  016134  020424                 MOVB    DLOTH,SCODE+3
     012002  012700  020421                         MOV     #SCODE,R0
     012006  004737  007110                         JSR     PC,TYPES
     012012  012703  000310                         MOV     #200.,R3
     012016  105037  013212                         CLRB    T2CNT1
     012022  004737  011216                         JSR     PC,GETANS
                                                    ;CHECK FOR ANY RESPONSE FROM TERMINAL
                                                    ;
     012026  105737  013212                         TSTB    T2CNT1
 (9) 012032  001015                                 BNE     50011$
                                                    ; ERROR #1        NO ANSWERBACK RECIEVED.
                                                    ;************
                                          :
     012034  012765  012530  000010                 MOV     #T24,RPC(R5)
     012042  052765  100000  000004                 BIS     #MERR,MFLAGS(R5)
     012050  112765  000001  000004                 MOVB    #1,MFLAGS(R5)
     012056  012765  013356  000006                 MOV     #E14,POINT(R5)
     012064  000424                                 BR      50012$
 (3) 012066                               50011$:
     012066  012765  012140  000010                 MOV     #T23,RPC(R5)
                                                    ;TEST LENGTH OF ANSWERBACK SHOULD BE 20 MAX.
                                                    ;
     012074  123727  013212  000024                 CMPB    T2CNT1,#20.
 (9) 012102  003411                                 BLE     50013$
                                                    ; ERROR #2        ANSWERBACK OVER 20 CHARS LONG.
                                                    ;************
                                                    ;
     012104  052765  100000  000004                 BIS     #MERR,MFLAGS(R5)
     012112  112765  000002  000004                 MOVB    #2,MFLAGS(R5)
     012120  012765  013404  000006                 MOV     #E15,POINT(R5)
     012126                               50013$:
     012126  012701  013220                         MOV     #T2BUF,R1
     012132  004737  011306                         JSR     PC,TYPANS
     012136                               50012$:
```

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2213  012136                                            500010$:
2214  012136  000207                          15150             RTS     PC
2215  012140                                  15200    T23:      ;SAVE COPIES OF THE ANSWERBACK AND IT'S LENGTH
2216                                          15250              ;THEN READ ANSWERBACKS 10 TIMES MORE.
2217                                          15300              ;VERIFY THEY ARE ALL THE SAME.
2218                                          15350              ;
2219  012140  012765  012206  000010                             MOV     #T23A,RPC(R5)
2220  012146  113737  013212  013213                             MOVB    T2CNT1,T2CNT2
2221  012154  012701  013220                                     MOV     #T2BUF,R1
2222  012160  012700  020574                                     MOV     #STACK3,R0
2223  012164                                           500014$:
2224                                          15650              ;COPY ANSWERBACK TO STACK3 FOR COMPARISONS
2225  012164  105737  013212                                     TSTB    T2CNT1
 (5)  012170  001404                                             BEQ     500015$
2226  012172  112120                                             MOVB    (R1)+,(R0)+
2227  012174  105337  013212                                     DECB    T2CNT1
2228  012200  000771                                             BR      500014$
 (3)  012202                                           500015$:
2229  012202  105037  013210                                     CLRB    T2SAV1
2230                                          15950
2231  012206                                  16000    T23A:     ;RESET INPUT BUFFER POINTER AND ZERO COUNTER
2232                                          16050              ;
2233  012206  012701  013220                                     MOV     #T2BUF,R1
2234  012212  105037  013212                                     CLRB    T2CNT1
2235                                          16200    ;SEND SELECT SEQUENCE TO TERMINAL
2236                                          16250    ;THEN READ ANSWER
2237  012216  012700  020422                                     MOV     #SCODE,R0
2238  012222  012703  000310                                     MOV     #200.,R3
2239  012226  004737  011216                                     JSR     PC,GETANS
2240  012232  105237  013210                                     INCB    T2SAV1
2241                                          16500              ;IF NO ANSWER NOTIFY OPERATOR
2242                                          16550              ;IF OLD ANSWER DIFFERENT FROM NEW ANSWER
2243                                          16600              ;NOTIFY OPERATOR.
2244                                          16650    ;
2245  012236  105737  013212                                     TSTB    T2CNT1
 (9)  012242  001012                                             BNE     500016$
2246                                          16750              ; ERROR #30         NO ANSWERBACK DURING TEN READ LOOP
2247                                          16800              ;************
2248                                          16850              ;
2249  012244  052765  100000  000004                             BIS     #MERR,MFLAGS(R5)
2250  012252  012765  013356  000006                             MOV     #E14,PCINT(R5)
2251  012260  112765  000030  000004                             MOVB    #30,MFLAGS(R5)
2252  012266  000500                                             BR      S0017$
 (3)  012270                                           500016$:
2253  012270  105011                                             CLRB    (R1)
2254                                          17150              ;COMPARE LENGTHS OF ANSWERS
2255  012272  123737  013212  013213                             CMPB    T2CNT1,T2CNT2
 (9)  012300  001416                                             BEQ     500020$
2256  012302  012701  013220                                     MOV     #T2BUF,R1
2257  012306  004737  007110                                     JSR     PC,TYPES
2258                                          17350              ;ERROR #31     INCONSISTANT ANSWERBACKS
2259                                          17400              ;************
2260                                          17450              ;
2261  012312  052765  100000  000004                             BIS     #MERR,MFLAGS(R5)
2262  012320  112765  000031  000004                             MOVB    #31,MFLAGS(R5)
2263  012326  012765  013356  000006                             MOV     #E14,POINT R5
```

```
2264  012334  000455                                  BR      50021$
 (3)  012336                                 50020$:
2265  012336  012701  013220                          MOV     #T2BUF,R1
2266  012342  012700  020574                          MOV     #STACK3,R0
2267                                  17800           ;COMPARE MASSAGES FOR SAME DATA
2268                                  17850           ;
2269  012346  005037  013214                          CLR     T2TEMP
2270  012352  113737  013212  013214                  MOVB    T2CNT1,T2TEMP
2271  012360  005037  013216                          CLR     T2TEMP+2
2272  012364  012737  000001  013216                  MOV     #1,T2TEMP+2
 (5)  012372  000402                                  BR      50022$
 (4)  012374                                 50023$:
 (7)  012374  005237  013216                          INC     T2TEMP+2
 (5)  012400                                 50022$:
 (5)  012400  023737  013216  013214                  CMP     T2TEMP+2,T2TEMP
 (7)  012406  003024                                  BGT     50024$
2273  012410  122021                                  CMPB    (R0)+,(R1)+
 (9)  012412  001421                                  BEQ     50025$
2274                                  18150           ;ERROR #32      INCONSISTANT ANSWERBACKS
2275                                  18200           ;************
2276                                  18250           ;
2277  012414  052765  100000  000004                  BIS     #MERR,MFLAGS(R5)
2278  012422  112765  000032  000004                  MOVB    #32,MFLAGS(R5)
2279  012430  012765  013575  000006                  MOV     #E21,POINT(R5)
2280  012436  012701  013220                          MOV     #T2BUF,R1
2281  012442  113737  013213  013212                  MOVB    T2CNT2,T2CNT1
2282  012450  013737  013214  013216                  MOV     T2TEMP,T2TEMP+2
2283  012456                                 50025$:
2284  012456  000746                                  BR      50023$
 (3)  012460                                 50024$:
2285                                  18700           ;ECHO ANSWER TO TERMINAL IN ASCII AND
2286                                  18750           ;OCTAL FORMATTS.
2287  012460  012701  013220                          MOV     #T2BUF,R1
2288  012464  004737  011306                          JSR     PC,TYPANS
2289  012470                                 50021$:
2290  012470                                 50017$:
2291  012470  032765  100000  000004                  BIT     #MERR,MFLAGS(R5)
 (9)  012476  001401                                  BEQ     50026$
2292  012500  000207                  19050           RTS     PC
2293  012502                                 50026$:
2294                                  19150           ;CHECK FOR TEN ITERATIONS
2295  012502  123727  013210  000010                  CMPB    T2SAV1,#10
 (9)  012510  001005                                  BNE     50027$
2296  012512  012765  012530  000010                  MOV     #T24,RPC(R5)
2297  012520  000207                  19300           RTS     PC
2298  012522  000402                                  BR      50030$
 (3)  012524                                 50027$:
2299  012524  000137  012206          19400           JMP     T23A
2300  012530                                 50030$:
2301                                  19500
2302  012530                          19550  T24:     ;RESTORE POINTERS & TEST THE BROADCAST (BEL)
2303                                  19600           ;WON'T ACTIVATE THE AUTOANSWER.
2304                                  19650           ;
2305  012530  012701  013220                          MOV     #T2BUF,R1
2306  012534  105037  013212                          CLRB    T2CNT1
2307  012540  012702  000002                          MOV     #STX,R2
```

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  2308  012544  004737  006654                                  JSR     PC,SECHO
  2309  012550  012700  020421                                  MOV     #SCODE,R0
  2310  012554  112737  000007  020424  .                       MOVB    #7,SCODE+3
  2311  012562  004737  007110                                  JSR     PC,TYPES
  2312  012566  012703  000310                                  MOV     #200.,R3
  2313  012572  004737  011216                                  JSR     PC,GETANS
  2314  012576  105737  013212                                  TSTb    T2CNT1
   (9)  012602  001415                                          BEQ     S0031$
  2315                                  20050                   ;ERROR #4      RECVD ANSWERBACK FROM BROADCAST
  2316                                  20100                   ;************
  2317                                  20150                   ;
  2318  012604  052765  100000  000004                          BIS     #MERR,MFLAGS(R5)
  2319  012612  112765  000004  000004                          MOVB    #4,MFLAGS(R5)
  2320  012620  012765  013632  000006                          MOV     #E22,POINT(R5)
  2321  012626  012765  012636  000010                          MOV     #T25,RPC(R5)
  2322  012634  000207                          20400           RTS     PC
  2323  012636                                          S0031$:
  2324  012636                                  20500   T25:    ;IF IN MULTI LINE MODE SETUP NEXT LINE POINTERS
  2325                                          20550           ;IF SINGLE LINE MODE TEST KEYBOARD STUFF.
  2326                                          20600           ;
  2327  012636  032737  000040  001364                          BIT     #MULTI,PCFLAG
   (9)  012644  001424                                          BEQ     S0032$
  2328  012646  004737  002110                                  JSR     PC,LINMON
  2329  012652  012765  012734  000010                          MOV     #T25A,RPC(R5)
  2330  012660  032737  000400  001364                          BIT     #LDONE,PCFLAG
   (9)  012666  001406                                          BEQ     S0033$
  2331  012670  042737  000400  001364                          BIC     #LDONE,PCFLAG
  2332  012676  052765  020000  000004                          BIS     #TDONE,MFLAGS(R5)
  2333  012704                                          S0033$:
  2334  012704  012765  011546  000010                          MOV     #T21,RPC(R5)
  2335  012712  000207                          21000           RTS     PC
  2336  012714  000512                                          BR      S0034$
   (3)  012716                                          S0032$:
  2337  012716  113737  016134  020424                          MOVB    DLOTH,SCODE+3
  2338  012724  012700  020421                                  MOV     #SCODE,R0
  2339  012730  004737  007110                                  JSR     PC,TYPES
  2340  012734                                  21100   T25A:
   (4)  012734  012765  013034  000010                          MOV     #T26,RPC(R5)
  2341  012742  012701  013220                                  MOV     #T2BUF,R1
  2342  012746  012702  000002                                  MOV     #STX,R2
  2343  012752  004737  006654                                  JSR     PC,SECHO
  2344                                  21300                   ;SET UP TO TEST HERE-IS KEY  SINGLE LINE ONLY
  2345                                  21350                   ;
  2346  012756  012700  013252                                  MOV     #HI,R0
  2347  012762  004737  007110                                  JSR     PC,TYPES
  2348  012766  105037  013212                                  CLRB    T2CNT1
  2349  012772  012703  007640                                  MOV     #4000.,R3
  2350                                  21600                   ;READ ANSWERBACK
  2351  012776  004737  011216                                  JSR     PC,GETANS
  2352  013002  105737  013212                                  TSTB    T2CNT1
   (9)  013006  001012                                          BNE     S0035$
  2353                                  21750                   ;ERROR #5      NO ANSWERBACK FROM HERE-IS KEY
  2354                                  21800                   ;**********
  2355                                  21850                   ;
  2356  013010  052765  100000  000004                          BIS     #MERR,MFLAGS(R5)
  2357  013016  112765  000005  000004                          MOVB    #5,MFLAGS(R5)
```

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2358  013024  012765  013475  000006                    MOV     #E17,POINT(R5)
2359  013032  000207                    22050           RTS     PC
2360  013034                                    S0035$:
2361                                    22150
2362  013034                            22200   T26:    ;TEST CTL-E FUNCTION
2363                                    22250
2364                                    22300           ;SE  UP TO TEST CTL-E FUNCTION
2365                                    22350           ;
2366  013034  012765  011726  000010                    MOV     #T22,RPC(R5)
2367  013042  012701  013220                            MOV     #T2BUF,R1
2368  013046  012700  013305                            MOV     #CE,R0
2369  013052  012703  007640                            MOV     #4000.,R3
2370  013056  105037  013212                            CLRB    T2CNT1
2371  013062  004737  007110                            JSR     PC,TYPES
2372  013066  004737  011216                            JSR     PC,GETANS
2373  013072  105737  013212                            TSTB    T2CNT1
 (9)  013076  001013                                    BNE     S0036$
2374                                    22800           ; ERROR #6     NO ANSWERBACK FROM CTL-E KEY
2375                                    22850           ;***********
2376                                    22900           ;
2377  013100  052765  100000  000004                    BIS     #MERR,MFLAGS(R5)
2378  013106  112765  000006  000004                    MOVB    #6,MFLAGS(R5)
2379  013114  012765  013540  000006                    MOV     #E18,POINT(R5)
2380  013122  000207                    23100           RTS     PC
2381  013124  000406                                    BR      S0037$
 (3)  013126                                    S0036$:
2382  013126  052765  020000  000004                    BIS     #TDONE,MFLAGS(R5)
2383  013134  012765  011726  000010                    MOV     #T22,RPC(R5)
2384  013142                                    S0037$:
2385  013142                                    S0034$:
2386  013142  000207                    23400           RTS     PC
2387                                    23450   ;************
2388                                    23500   ;THIS ROUTINE IS THE KEYBOARD INTERRUPT HANDLER
2389                                    23550   ;FOR TESTS #1 AND #2
2390                                    23600   ;************
2391                                    23650
2392  013144  117721  002766            23700   T220:   MOVB    @DVCRXB,(R1)+           ;STORE CHAR IN POINTER
2393  013150  052737  004000  001364    23750           BIS     #DATAIN,PCFLAG          ;SET DATA-IN FLAG
2394  013156  012777  000101  002744    23800           MOV     #101,@DLADR             ;REENABLE THE RECVR
2395  013164  005037  007564            23850           CLR     DELAYT          ;ABORT THE TIMEOUT
2396  013170  000002                    23900           RTI
2397                                    23950
2398  013172                                    S0000$:
 (3)  013172                                    S0001$:
 (2)  013172  000207                                    RTS     PC
2399                                    24050   ;************
2400                                    24100   .DSABL LSB
2401  013174     000     003            24150           .BYTE   0,3             ;ITERATION COUNTS
2402  013176  000000                    24200   T02BLK: .WORD   0               ;CTLCNT
2403  013200  000000                    24250           .WORD   0               ;PASS COUNT
2404  013202  000000                    24300           .WORD   0               ;STATUS FLAGS
2405  013204  000000                    24350           .WORD   0               ;POINTER
2406  013206  011546                    24400           .WORD   T21             ;RETURN PC
2407  013210  000000                    24450   T2SAV1: .WORD   0
2408  013212     000                    24500   T2CNT1: .BYTE   0
2409  013213     000                    24550   T2CNT2: .BYTE   0
```

```
 2410  013214  000000  000000          24600   T2TEMP: .WORD   0,0
 2411  013220  000000  000000  000000  24605   T2BUF:  .WORD   0,0,0,0,0,0,0,0,0,0,0,0.          ; BUFFER FOR ANSWERBACK
       013226  000000  000000  000000
       013234  000000  000000  000000
       013242  000000  000000  000000
       013250  000000
 2412                                  24650
 2413                                  24700   .NLIST BEX
 2414  013252  005015  042504  051120  24750   HI:     .ASCIZ  <15><12>/DEPRESS HERE IS -- KEY/<15><12>
 2415  013305     015  052012  050131  24800   CE:     .ASCIZ  <15><12>/TYPE CONTL-E/<15><12>
 2416                                  24850
 2417  013326  005015  052012  051505  24900   T2:     .ASCIZ  <15><12><12>/TEST 2 AUTO ANSWER/<15><12>
 2418  013356  047516  040440  051516  24950   E14:    .ASCIZ  /NO ANSWERBACK RECVD/<15><12>
 2419  013404  047101  041123  041501  25000   E15:    .ASCIZ  /ANSBACK MSG OVER 20 CHARS/<15><12>
 2420  013440  047101  041123  041501  25050   E16:    .ASCIZ  /ANSBACK MSG CONTAINED NULL/<15><12>
 2421  013475     110  051105  020105  25100   E17:    .ASCIZ  /HERE IS KEY DIDN'T TXMIT ANSBACK/<15><12>
 2422  013540  052103  026514  020105  25150   E18:    .ASCIZ  /CTL-E DIDN'T TXMIT ANSBACK/<15><12>
 2423  013575     101  051516  042527  25200   E21:    .ASCIZ  /ANSWERBACKS DIDN'T COMPARE/<15><12>
 2424  013632  047101  041123  041501  25250   E22:    .ASCIZ  /ANSBACK RECVD FROM BROADCAST SELECT/<15><12>
 2425                                  25300           .EVEN
 2426                                  25350   .LIST BEX
```

```
                                        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        ;
                                        ;TEST3   TOP OF FORM OPTION
                                        ;        OPERATOR INTERVENTION REQUIRED IN SINGLE LINE MODE
                                        ;
                                        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                 .ENABL  LSB

013700  012700  014376                  TEST3:   MOV      #T3,RO              ;SU FOR TEST HEADER
013704  004737  007010                           JSR      PC,MTYPE
013710  012705  014342                           MOV      #T03BLK,R5          ;SET UP POINTER TO MODULE BLOCK
013714  032737  000040  001364                   BIT      #MULTI,PCFLAG       ;CHECK FOR SINGLE LINE MODE
013722  001424                                   BEQ      3$                  ;SINGLE MODE - BRANCH
013724  012701  000102                  1$:      MOV      #66.,R1             ;FILL COUNT FOR 11" FORMS
013730  113702  016167                           MOVB     FF,R2               ;MOVE TO TOP OF FORM
013734  004737  006270                           JSR      PC,MECHO
013740  012702  000006                  2$:      MOV      #ACK,R2
013744  004737  006270                           JSR      PC,MECHO
013750  005301                                   DEC      R1
013752  001372                                   BNE      2$
013754  012700  014427                           MOV      #DAS,RO
013760  004737  007010                           JSR      PC,MTYPE
013764  052765  020000  000004                   BIS      #TDONE,MFLAGS(R5)         ;SET ATTENTION & DONE FLAGS

013772  000207                                   RTS      PC
                                        ;############
                                        ;THIS SECTION FOR SINGLE LINE MANUAL INTERVENTION

013774  012765  013774  000010          3$:      MOV      #3$,RPC(R5)         ;SET RETURN PC TO HERE
014002  012737  014610  014356                   MOV      #HORS,T3SAV1        ;GET LIST OF FORM LENGTHS
014010  012737  014362  014354                   MOV      #FILL3,T3SAV        ;GET FIL COUNT
014016  012700  014443                           MOV      #HOR3,RO
014022  004737  007110                           JSR      PC,TYPES
014026  012700  014646                           MOV      #HORSA,RO           ;SET UP MESSAGE WITH
014032  112037  014564                           MOVB     (RO)+,HOR4+5        ;INSTRUCTIONS FOR 3"
014036  112037  014565                           MOVB     (RO)+,HOR4+6        ;FORMS.
014042  111037  014566                           MOVB     (RO),HOR4+7
014046  012700  014557                  A3$:     MOV      #HOR4,RO            ;SEND SU MSG
014052  004737  007110                           JSR      PC,TYPES
014056  013700  014356                           MOV      T3SAV1,RO
014062  112037  014564                           MOVB     (RO)+,HOR4+5        ;MODIFY INSTRUCTIONS FOR
014066  112037  014565                           MOVB     (RO)+,HOR4+6        ;NEXT LOOP
014072  112037  014566                           MOVB     (RO)+,HOR4+7
014076  010037  014356                           MOV      RO,T3SAV1           ;SAVE THE  LIST POINTER
014102  012702  014124                  5$:      MOV      #6$,R2                     ; PASS 6$ AS VECTOR TO READ ROUTINE
014106  004737  007124                           JSR      PC,READS                   ; GO SET VECTORS
014112  012702  035230                           MOV      #15000.,R2                 ;SET UP 15 SEC DELAY
014116  004737  007024                           JSR      PC,READIO
014122  000406                                   BR       9$
014124  005037  007564                  6$:      CLR      DELAYT              ;ABORT THE TIMEOUT
014130  052737  004000  001364                   BIS      #DATAIN,PCFLAG
014136  000002                                   RTI
014140  012700  017730                  9$:      MOV      #L1,RO
014144  004737  007110                           JSR      PC,TYPES                         ;SEND CR-LF
014150  042737  004000  001364                   BIC      #DATAIN,PCFLAG      ;IN CASE LINE 0
```

```
2484  014156  042765  100000  000004    28250              BIC     #MERR,MFLAGS(R5);IN CASE OF READ ERROR
2485  014164  117737  000164  014360    28300              MOVB    @T3SAV,T3SAV2   ;GET FILL COUNT
2486  014172  113702  016167            28350              MOVB    FF,R2
2487  014176  004737  006654            28400              JSR     PC,SECHO                        ;DO FORM FEED
2488  014202  012702  000006            28450   7$:        MOV     #ACK,R2
2489  014206  004737  006654            28500              JSR     PC,SECHO                        ;SEND FILL CHARS
2490  014212  005337  014360            28550              DEC     T3SAV2
2491  014216  001371                    28600              BNE     7$              ;COUNT NOT DONE - BRANCH
2492  014220  012700  014427            28650              MOV     #DAS,R0         ;LINE OF DASHES
2493  014224  004737  007110            28700              JSR     PC,TYPES
2494  014230  012702  000012            28750              MOV     #LF,R2          ;SEND CR/LF
2495  014234  004737  006654            28800              JSR     PC,SECHO
2496  014240  117737  000110  014360    28850              MOVB    @T3SAV,T3SAV2   ;GET FILL COUNT
2497  014246  113702  016167            28900              MOVB    FF,R2           ;DO FORM FEED
2498  014252  004737  006654            28950              JSR     PC,SECHO
2499  014256  012702  000006            29000   8$:        MOV     #ACK,R2         ;SEND ACK CHARS
2500  014262  004737  006654            29050              JSR     PC,SECHO
2501  014266  005337  014360            29100              DEC     T3SAV2
2502  014272  001371                    29150              BNE     8$              ;COUNT NOT DONE - BRANCH
2503  014274  012700  014427            29200              MOV     #DAS,R0
2504  014300  004737  007110            29250              JSR     PC,TYPES                        ;LINE OF DASHES
2505  014304  012702  000012            29300              MOV     #LF,R2
2506  014310  004737  006654            29350              JSR     PC,SECHO
2507                                    29400
2508  014314  005237  014354            29450              INC     T3SAV           ;GET NEW FILL COUNT
2509  014320  023727  014356  014651    29500              CMP     T3SAV1,#HDRSE           ;END OF INSTRUCTION LIST?
2510  014326  001247                    29550              BNE     A3$             ;NO - DO NEXT
2511  014330  052765  020000  000004    29600              BIS     #TDONE,MFLAGS(R5)       ;SET ATTENTION & DONE FLAGS
2512                                    29650
2513  014336  000207                    29700              RTS     PC
2514                                    29750
2515  014340     000     003            29800              .BYTE   0,3             ;ITERATION COUNT
2516  014342  000000                    29850   T03BLK:    .WORD   0               ;CTLCNT
2517  014344  000000                    29900              .WORD   0               ;PASS COUNT
2518  014346  000000                    29950              .WORD   0               ;STATUS FLAGS
2519  014350  000000                    30000              .WORD   0               ;POINTER
2520  014352  013724                    30050              .WORD   1$              ;RETURN PC
2521                                    30100
2522  014354  000000                    30150   T3SAV:     .WORD   0               ;STORAGE
2523  014356  000000                    30200   T3SAV1:    .WORD   0
2524  014360  000000                    30250   T3SAV2:    .WORD   0
2525                                    30300
2526                                    30350
2527                                    30400   .NLIST BEX
2528  014362     022     025     030    30450   FILL3:     .BYTE   18.,21.,24.,33.,36.,42. ;FILL COUNTS FOR TEST 3
2529  014370     060     063     102    30500              .BYTE   48.,51.,66.,72.,84.,18.
2530  014376  005015  052012  051505    30550   T3:        .ASCIZ  <15><12><12>/TEST 3 TOP OF FORMS/<15><12>
2531  014427     075  036475  036475    30600   DAS:       .ASCIZ  /==========/<15>
2532  014443     120  042522  051523    30650   HDR3:      .ASCII  /PRESS TOF RESET SWITCH/<15><12>
2533  014473     101  052106  051105    30700              .ASCII  /AFTER EACH SWITCH SETTING/<15`<12>
2534  014526  054524  042520  042040    30750              .ASCIZ  /TYPE DELETE WHEN READY/<15><12>
2535  014557     055  042523  020124    30800   HDR4:      .ASCIZ  /-SET   3 INCH FORM FEED/
2536          014610                    30850              .EVEN
2537  014610  027063     065            30900   HDR5:      .ASCII  /3.5/
2538  014613     040  032040            30950              .ASCII  /  4/
2539  014616  027065     065            31000              .ASCII  /5.5/
```

```
2540  014621     040  033040          31050             .ASCII  /  6/
2541  014624  020040     067          31100             .ASCII  /  7/
2542  014627     040  034040          31150             .ASCII  /  8/
2543  014632  027070     065          31200             .ASCII  /8.5/
2544  014635     040  030461          31250   HDR5B:    .ASCII  / 11/
2545  014640  030440     062          31300             .ASCII  / 12/
2546  014643     040  032061          31350             .ASCII  / 14/
2547  014646  020040     063          31400   HDR5A:    .ASCII  /  3/
2548  014651                          31450   HDR5E:
2549          014652                  31500             .EVEN
2550                                  31550   .LIST BEX
```

```
2552                                     31650           .DSABL  LSB
2553                                     31700
2554                                     31750   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2555                                     31800   ;
2556                                     31850   ;TEST4   HORIZONTAL TAB OPTION
2557                                     31900   ;        IF USING OTHER THAN 132 COL PAPEK CHANGE LOC "WIDTH"
2558                                     31950   ;        TO APPROPRIATE VALUE. SEE WN COMMAND .
2559                                     32000   ;
2560                                     32050   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2561                                     32100
2562  014652  012705  015246             32150   TEST4:   MOV     #TO4BLK,R5        ;SET UP POINTER TO MODULE BLOCK
2563  014656  012700  015320             32200            MOV     #T4,R0
2564                                     32250   ; PRINT TEST HEADER
2565  014662  004737  007010                              JSR     PC,MTYPE
2566  014666  012737  015270  015264     32350   T41:     MOV     #TABL4,T4SAV2
2567  014674  012765  014702  000010     32400            MOV     #T42,RPC(R5)
2568  014702  012702  000033             32450   T42:     MOV     #ESC,R2
2569  014706  013737  016146  015262     32500            MOV     WIDTH,T4SAV1
2570                                     32550   ; SEND ESC-2 TO RESET ALL TABS.
2571  014714  004737  006270                              JSR     PC,MECHO
2572  014720  012702  000062             32650            MOV     #'2,R2
2573  014724  004737  006270                              JSR     PC,MECHO
2574  014730  117737  000330  015316     32750            MOVB    @T4SAV2,TAB       ;GET TAB COUNT FROM TABL4
2575  014736  005237  015264             32800            INC     T4SAV2
2576  014742  105077  000316             32850            CLRB    @T4SAV2           ;INITIALIZE COUNT TO ZIP
2577  014746  013701  015316             32900            MOV     TAB,R1
2578  014752  012700  017730             32950            MOV     #L1,R0
2579                                     33000   ; SEND CR/LF
2580  014756  004737  007010                              JSR     PC,MTYPE
2581  014762  163737  015316  015262     33100   3$:      SUB     TAB,T4SAV1                ;SU TAB COUNT PER LINE
2582  014770  002434                     33150            BLT     6$                ;FINISHED THIS LINE - BRANCH
2583                                     33200                                      ;TYPE (TAB-1) PERIODS
2584  014772  005301                     33250   4$:      DEC     R1                ;AS A FORMATT FOR
2585  014774  001405                     33300            BEQ     5$                ;COMPARISON
2586  014776  012702  000056             33350            MOV     #'.,R2            ;PRINT PERIOD
2587  015002  004737  006270                              JSR     PC,MECHO
2588  015006  000771                     33450            BR      4$
2589  015010  012702  000033             33500   5$:      MOV     #ESC,R2           ;SET TAB
2590                                     33550   ; SEND ESC-1 TO SET A TAB
2591  015014  004737  006270                              JSR     PC,MECHO
2592  015020  012702  000061             33650            MOV     #'1,R2
2593  015024  004737  006270                              JSR     PC,MECHO
2594                                     33750   ; SEND A BACKSPACE
2595  015030  012702  000010             33800            MOV     #10,R2            :
2596  015034  004737  006270                              JSR     PC,MECHO
2597                                     33900   ; PRINT A  V FOR REFERENCE
2598  015040  012702  000126             33950            MOV     #'V,R2
2599  015044  004737  006270                              JSR     PC,MECHO
2600  015050  105277  000210             34050            INCB    @T4SAV2           ;INCB TAB COUNT
2601  015054  013701  015316             34100            MOV     TAB,R1            ;GET TAB POS AGAIN
2602  015060  000740                     34150            BR      3$                ;FORMATT NEXT SECTION
2603                                     34200   ;LINE SHOULD LOOK LIKE THIS: .....V.....V.....V..ETC
2604                                     34250
2605  015062  012737  000003  015266     34300   6$:      MOV     #3,COUNT          ;DO 3 LINES OF TABS
2606  015070  117737  000170  015316     34350   7$:      MOVB    @T4SAV2,TAB       ;GET TAB COUNT
2607  015076  001440                     34400            BEQ     11$               ;=0? - BRANCH OUT
```

```
2608  015100  005237  015264          34450                  INC     T4SAV2
2609  015104  012700  017730          34500                  MOV     #L1,R0
2610                                  34550          ; SEND A CR/LF
2611  015110  004737  007010                                 JSR     PC,MTYPE
2612  015114  012702  000011          34650          8$:     MOV     #11,R2
2613                                  34700          ; SEND A HORIZ-TAB
2614  015120  004737  006270                                 JSR     PC,MECHO
2615  015124  117737  000134  015260  34800                  MOVB    @T4SAV2,T4SAV       ;GET FILL COUNT TABS 2
2616  015132  012702  000006          34850          9$:     MOV     #ACK,R2
2617                                  34900          ; SEND FILL CHARACTERS
2618  015136  004737  006270                                 JSR     PC,MECHO
2619  015142  005337  015260          35000                  DEC     T4SAV
2620  015146  001371                  35050                  BNE     9$
2621  015150  012702  000130          35100                  MOV     #'X,R2
2622                                  35150          ; PRINT AN  X  UNDER EACH  V
2623  015154  004737  006270                                 JSR     PC,MECHO
2624  015160  005337  015316          35250                  DEC     TAB                 ;DEC TAB COUNT
2625  015164  001353                  35300                  BNE     8$                  ;MORE TABS - BRANCH
2626  015166  005337  015264          35350                  DEC     T4SAV2              ;FIX POINTER
2627  015172  005337  015266          35400          10$:    DEC     COUNT               ;DO 3 LINES
2628  015176  001334                  35450                  BNE     7$                  ;NOT DONE - BRANCH
2629  015200  012700  017051          35500          11$:    MOV     #L3,R0
2630  015204  004737  007010          35550                  JSR     PC,MTYPE
2631  015210  062737  000002  015264  35600                  ADD     #2,T4SAV2           ;GET NEXT TABLE ENTRY
2632  015216  023727  015264  015315  35650                  CMP     T4SAV2,#TAB-1             ;END OF TABLE?
2633  015224  001226                  35700                  BNE     T42                 ;NO - DO NEXT SET
2634                                  35750
2635  015226  052765  020000  000004  35950                  BIS     #TDONE,MFLAGS(R5)         ;SET ATTENTION AND DONE FLAGS
2636  015234  012765  014666  000010  36000                  MOV     #T41,RPC(R5)
2637  015242  000207                  36050                  RTS     PC
2638                                  36100
2639  015244     000     004          36150                  .BYTE   0,4                 ;ITERATION COUNTS
2640  015246  000000                  36200          T04BLK: .WORD   0                   ;CTLCNT
2641  015250  000000                  36250                  .WORD   0                   ;PASS COUNT
2642  015252  000000                  36300                  .WORD   0                   ;STATUS FLAGS
2643  015254  000000                  36350                  .WORD   0                   ;POINTER
2644  015256  014702                  36400                  .WORD   T42                 ;RETURN PC
2645                                  36450
2646  015260  000000                  36500          T4SAV:  .WORD   0                   ;STORAGE
2647  015262  000000                  36550          T4SAV1: .WORD   0
2648  015264  000000                  36600          T4SAV2: .WORD   0
2649                                  36650
2650                                  36700
2651  015266  000002                  36750          COUNT:  .WORD 2
2652  015270     004     000     002  36800          TABL4:  .BYTE   4,0,2               ;TAB, TAB COUNT, FILL COUNT
2653  015273     010     000     004  36850                  .BYTE   8.,0,4
2654  015276     011     000     005  36900                  .BYTE   9.,0,5              ;TABLE FOR TEST 4
2655  015301     020     000     010  36950                  .BYTE   16.,0,8.
2656  015304     022     000     012  37000                  .BYTE   18.,0,10.
2657  015307     040     000     021  37050                  .BYTE   32.,0,17.
2658  015312     100     000     041  37100                  .BYTE   64.,0,33.,0
      015315     000
2659  015316  000000                  37150          TAB:    .WORD 0
2660  015320  005015  052012  051505  37200          T4:     .ASCIZ  <15><12><12>/TEST 4 HORIZONTAL TAB <15><12>
      015326  020124  020064  047510
      015334  044522  047532  052116
```

```
        015342  046101  052040  041101
        015350  005015     000
 2661           015354                  37250           .EVEN
```

```
                                        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        ;
                                        ;TESTS    VERTICAL TAB OPTION
                                        ;         SINGLE LINE TEST REQUIRES OPERATOR INTERVENTION
                                        ;
                                        ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                  .ENABL LSB

015354  012700  016040                  TESTS:    MOV       #T5,R0            ;SU TEST HEADER
015360  012705  016014                            MOV       #TOSBLK,R5        ;SET UP POINTER TO MODULE BLOCK
015364  004737  007010                            JSR       PC,MTYPE
015370  032737  000040  001364                    BIT       #MULTI,PCFLAG     ;MULTI LINF MODE?
015376  001046                                    BNE       4$                ;YES - BRANCH OVER INTERVENTION
015400  012700  014635                            MOV       #HDRS8,R0         ;SET UP INSTRUCTIONS
015404  112037  014564                            MOVB      (R0)+,HDR4+5
015410  112037  014565                            MOVB      (R0)+,HDR4+6
015414  112037  014566                            MOVB      (R0)+,HDR4+7
                                        ; TYPE INSTRUCTIONS
015420  012700  014443                  TS1:      MOV       #HDR3,R0
015424  004737  007110                            JSR       PC,TYPES
015430  012700  014557                            MOV       #HDR4,R0
015434  004737  007110                            JSR       PC,TYPES
015440  012702  015500                            MOV       #3$,R2            ;SU FOR INTERRUPT TO 3$
015444  004737  007124                            JSR       PC,READS          ;INITIALIZE VECTOR AREA
015450  012702  035230                  2$:       MOV       #15000.,R2                  ;ALLOW 15 SEC.
015454  004737  007024                            JSR       PC,READIO
015460  032737  004000  001364                    BIT       #DATAIN,PCFLAG
015466  001770                                    BEQ       2$
015470  042737  004000  001364                    BIC       #DATAIN,PCFLAG
015476  000406                                    BR        4$
                                        ;*************** THIS SECTION HANDLES RECVR INTERRUPTS**********
                                        ;
015500  005037  007564                  3$:       CLR       DELAYT            ;ABORT THE TIMEOUT
015504  052737  004000  001364                    BIS       #DATAIN,PCFLAG    ; FLAG RECIEVED CHAR.
015512  000002                          10$:      RTI

                                        ;***************

015514  012737  000002  015266          4$:       MOV       #2,COUNT
015522  012765  015514  000010                    MOV       #4$,RPC(R5.       ;SET RETURN TO 4$
015530  012737  000001  016032                    MOV       #1,LINES
015536  005037  016036                            CLR       TABS
015542  012737  000014  016034                    MOV       #12.,MAX
015550  012702  000033                            MOV       #ESC,R2           ;RESET ALL TABS
                                        ; ESC-4   RESETS THE TABS.
015554  004737  006270                            JSR       PC,MECHO
015560  012702  000064                            MOV       #'4,R2
015564  004737  006270                            JSR       PC,MECHO
015570  013701  016032                  5$:       MOV       LINES,R1          ;GET LINE COUNT
015574  012702  000012                  6$:       MOV       #12,R2            ;
                                        ; SEND LINE FEED.
015600  004737  006270                            JSR       PC,MECHO
015604  005301                                    DEC       R1
015606  001372                                    BNE       6$
015610  012702  000033                            MOV       #ESC,R2           ;SET TAB
```

```
2719  015614  004737  006270                            JSR     PC,MECHO
2720  015620  012702  000063          40200             MOV     #'3,R2
2721                                  40250   ; ESC-3  SETS A TAB LOCATION.
2722  015624  004737  006270                            JSR     PC,MECHO
2723  015630  012700  014427          40350             MOV     #DAS,R0
2724                                  40400
2725  015634  004737  007010                            JSR     PC,MTYPE
2726  015640  005237  016032          40500             INC     LINES
2727  015644  023737  016032  016034  40550             CMP     LINES,MAX           ;11 TABS YET?
2728  015652  001346                  40600             BNE     5$                  ;NO - BRANCH
2729  015654  012737  000001  016032  40650   7$.       MOV     #1,LINES            ;RESET LINE COUNT
2730  015662  012737  000001  016030  40700             MOV     #1,TSSAV1                     ;FILL COUNT
2731  015670  012702  000013          40750   8$:       MOV     #13,R2
2732                                  40800   ; SEND A VERT-TAB COMMAND.
2733  015674  004737  006270                            JSR     PC,MECHO
2734  015700  012702  000006          40900   9$:       MOV     #ACK,R2
2735                                  40950   ; SEND A FILL CHARACTER.
2736  015704  004737  006270                            JSR     PC,MECHO
2737  015710  005337  016030          41050             DEC     TSSAV1
2738  015714  001371                  41100             BNE     9$
2739                                  41150   ;
2740                                  41200   ; CONVERT NO. OF LINES FOR OUTPUT MSG.
2741                                  41250   ;
2742  015716  013746  016032          41300             MOV     LINES,-(SP)
2743  015722  012746  016071          41400             MOV     #TS2,-(SP)
2744  015726  004737  010006          41450             JSR     PC,BIN2DA
2745  015732  012700  016071          41500             MOV     #TS2,R0
2746  015736  004737  007010          41550             JSR     PC,MTYPE
2747  015742  012700  014427          41600             MOV     #DAS,R0             ;SU LINE OF DASHES
2748  015746  004737  007010                            JSR     PC,MTYPE
2749  015752  005237  016032          41700             INC     LINES               ;NEW LINE COUNT
2750  015756  013737  016032  016030  41750             MOV     LINES,TSSAV1        ;FILL COUNT =#LINES
2751  015764  023737  016032  016034  41800             CMP     LINES,MAX           ;11 TABS DONE?
2752  015772  001336                  41850             BNE     8$                  ;NO - CONTINUE
2753  015774  005337  015266          41900             DEC     COUNT               ;DO 2 PAGES TOTAL
2754  016000  001325                  41950             BNE     7$                  ;RE-DO PAGE
2755  016002  052765  020000  000004  42000             BIS     #TDONE,MFLAGS(R5)             ;SET ATTENTION & DONE FLAGS
2756                                  42050
2757  016010  000207                  42100             RTS     PC
2758                                  42150
2759                                  42200   ;..................................................
2760  016012     000     002          42250             .BYTE   0,2                 ;ITERATION COUNTS
2761  016014  000000                  42300   TO5BLK:   .WORD   0                   ;CTLCNT
2762  016016  000000                  42350             .WORD   0                   ;PASS COUNT
2763  016020  000000                  42400             .WORD   0                   ;STATUS FLAGS
2764  016022  000000                  42450             .WORD   0                   ;POINTER
2765  016024  015420                  42500             .WORD   TS1                 ;RETURN PC
2766                                  42550
2767  016026  000000                  42600   TSSAV:    .WORD   0
2768  016030  000000                  42650   TSSAV1:   .WORD   0
2769                                  42700
2770  016032  000000                  42750   LINES:    .WORD 0
2771  016034  000000                  42800   MAX:      .WORD 0
2772  016036  000000                  42850   TABS:     .WORD 0
2773  016040  005015  052012  051505  42900   TS:       .ASCIZ  <15><12><12>/TEST 5 VERTICAL TAB  15  12
      016046  020124  020065  042526
```

```
       016054  052122  041511  046101
       016062  052040  041101  005015
       016070     000
       016071     060  030060  030060  42950   TS2:    .ASCIZ  /00000/
       016076     000
               016100                  43000           .EVEN
                                       43050           .DSABL LSB
```

```
 2778                                         43150               .SBTTL  STORAGE & CONSTANTS
 2779                                         43200       ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2780                                         43250       ;       PROGRAM STORAGE, CONSTANTS, AND VARIABLES
 2781                                         43300
 2782                                         43350               .EVEN
 2783  016100  000000  000000  000000        43400       TEMP:   .WORD   0,0,0,0,0,0             ;TEMPORARY WORK AREA
       016106  000000  000000  000000
 2784  016114  000004                        43450       INBUF:  .BLKW   4                       ;INPUT BUFFER
 2785  016124  177570                        43500       SWR:    177570                          ;SWITCH REGISTER POINTER
 2786                                         43550                                               ;MAY BE CHANGED TO 176
 2787                                         43600       ;**************** I/O DRIVER WORK AREA ******************
 2788                                         43650
 2789  016126  000000                        43700       DLFLAG: .WORD   0                       ;LINE FLAG WORD
 2790  016130  000000                        43750       DLADR:  .WORD   0                       ;LINE ADDR WORD
 2791  016132  000000                        43800       DLVEC.  .WORD   0                       ;LINE VECTOR WORD
 2792  016134  000000                        43850       DLOTH:  .WORD   0                       ;LINE "OTHER WORL
 2793  016136  000000                        43900       DVCRXB: .WORD   0                       ;RECIEVER DATA BUFFER
 2794  016140  000000                        43950       DVCTXS: .WORD   0                       ;TRANSMI STATUS  REGISTER
 2795  016142  000000                        44000       DVCTXB: .WORD   0                       ;TRANSMIT DATA BUFFER
 2796  016144  000000                        44050       TXVEC:  .WORD   0                       ;TRANSMIT INTERRUPT VECTOR
 2797                                         44100
 2798                                         44150       ;************ GENERAL USE ********************************
 2799  016146  000204                        44200       WIDTH:  .WORD 132.
 2800  016150  000000                        44250       SAVE:   .WORD 0
 2801  016152  000000                        44300       NEXT:   .WORD   0                       ;NEXT TEST NO.
 2802  016154  000000                        44350       INTEST: .WORD   0                       ;CURRENT TEST
 2803  016156  000000                        44400       TESTAD: .WORD   0                       ;CERRENT TEST PC.
 2804  016160  000000                        44450       ONLIN:  .WORD   0                       ;CURRENT LINE UNDER TEST
 2805  016162  000000                        44500       NXTLIN: .WORD   0                       ;NEXT LINE TO TEST
 2806  016164  016114                        44550       PTR:    INBUF                           ;INPUT BUFFER POINTER
 2807  016166     177                        44600       DEL:    .BYTE   177
 2808  016167     014                        44650       FF:     .BYTE   14
 2809                                         44750               .EVEN
 2810                                         44800
```

```
2812                                    44900   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2813                                    44950   ;                     LINE INTERFACE TABLE
2814                                    45000   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2815                                    45050
2816  016170  000000  177560  000000   45100   LIN00:  .WORD   0,177560,0,0                ;CONSOLE INTERFACE
      016176  000000
2817  016200  000000  175610  000000   45150   LIN01:  .WORD   0,175610,0,400              ;DL11-C,D,E LINES
      016206  000400
2818  016210  000000  175620  000000   45200   LIN02:  .WORD   0,175620,0,1000
      016216  001000
2819  016220  000000  175630  000000   45250   LIN03:  .WORD   0,175630,0,1400
      016226  001400
2820  016230  000000  175640  000000   45300   LIN04:  .WORD   0,175640,0,2000
      016236  002000
2821  016240  000000  176500  000000   45350   LIN05:  .WORD   0,176500,0,2400
      016246  002400
2822  016250  000000  176510  000000   45400   LIN06:  .WORD   0,176510,0,3000
      016256  003000
2823  016260  000000  176520  000000   45450   LIN07:  .WORD   0,176520,0,3400             ;FIRST WORD : FLAGS
      016266  003400
2824  016270  000000  176530  000000   45500   LIN10:  .WORD   0,176530,0,4000             ;BIT 15 = DVC PRESENT
      016276  004000
2825  016300  000000  175650  000000   45550   LIN11:  .WORD   0,175650,0,4400             ;BIT 7 = DVC SELECTED
      016306  004400
2826  016310  000000  175660  000000   45600   LIN12:  .WORD   0,175660,0,5000             ;BIT 4 = ABORT FLAG
      016316  005000
2827  016320  000000  175670  000000   45650   LIN13:  .WORD   0,175670,0,5400             ;BIT 3 THRU
      016326  005400
2828  016330  000000  175700  000000   45700   LIN14:  .WORD   0,175700,0,6000             ;BIT 0 = ERROR COUNT
      016336  006000
2829  016340  000000  175710  000000   45750   LIN15:  .WORD   0,175710,0,6400
      016346  006400
2830  016350  000000  175720  000000   45800   LIN16:  .WORD   0,175720,0,7000
      016356  007000
2831  016360  000000  175730  000000   45850   LIN17:  .WORD   0,175730,0,7400             ;THIRD WORD WILL CONTAIN
      016366  007400
2832  016370  000000  175740  000000   45900   LIN20:  .WORD   0,175740,0,10000            ;THE DEVICES INTERRUPT
      016376  010000
2833  016400  000000  176540  000000   45950   LIN21:  .WORD   0,176540,0,10400            ;VECTOR  SUPPLIED BY PROGRAM
      016406  010400
2834  016410  000000  176550  000000   46000   LIN22:  .WORD   0,176550,0,11000
      016416  011000
2835                                    46050
2836  016420  000000  176560  000000   46100   LIN23:  .WORD   0,176560,0,11400
      016426  011400
2837  016430  000000  176570  000000   46150   LIN24:  .WORD   0,176570,0,12000            ;WORD FOUR :
      016436  012000
2838  016440  000000  176600  000000   46200   LIN25:  .WORD   0,176600,0,12400            ;BITS 7 THRU 0
      016446  012400
2839  016450  000000  176610  000000   46250   LIN26:  .WORD   0,176610,0,13000            ;WILL BE SET TO
      016456  013000
2840  016460  000000  175750  000000   46300   LIN27:  .WORD   0,175750,0,13400            ;UNIQUE SELECT CODE
      016466  013400
2841  016470  000000  175760  000000   46350   LIN30:  .WORD   0,175760,0,14000
      016476  014000
2842  016500  000000  175770  000000   46400   LIN31:  .WORD   0,175770,0,14400            ;BITS 13 THRU 8
```

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       016506  014400
2843   016510  000000  176000  000000  46450   LIN32:  .WORD   0,176000,0,15000        ;BINARY LINE NO.
       016516  015000
2844   016520  000000  176010  000000  46500   LIN33:  .WORD   0,176010,0,15400
       016526  015400
2845   016530  000000  176020  000000  46550   LIN34:  .WORD   0,176020,0,16000
       016536  016000
2846   016540  000000  176030  000000  46600   LIN35:  .WORD   0,176030,0,16400
       016546  016400
2847   016550  000000  176040  000000  46650   LIN36:  .WORD   0,176040,0,17000
       016556  017000
2848   016560  000000  176620  000000  46700   LIN37:  .WORD   0,176620,0,17400
       016566  017400
2849   016570  000000  176630  000000  46750   LIN40:  .WORD   0,176630,0,20000
       016576  020000
2850   016600  000000  176640  000000  46800   LIN41:  .WORD   0,176640,0,20400
       016606  020400
2851   016610  000000  176650  000000  46850   LIN42:  .WORD   0,176650,0,21000
       016616  021000
2852   016620  000000  176660  000000  46900   LIN43:  .WORD   0,176660,0,21400
       016626  021400
2853   016630  000000  176670  000000  46950   LIN44:  .WORD   0,176670,0,22000
       016636  022000
2854   016640  000000  176050  000000  47000   LIN45:  .WORD   0,176050,0,22400
       016646  022400
2855   016650  000000  176060  000000  47050   LIN46:  .WORD   0,176060,0,23000
       016656  023000
2856   016660  000000  176070  000000  47100   LIN47:  .WORD   0,176070,0,23400
       016666  023400
2857   016670  000000  176100  000000  47150   LIN50:  .WORD   0,176100,0,24000
       016676  024000
2858   016700  000000  176110  000000  47200   LIN51:  .WORD   0,176110,0,24400
       016706  024400
2859   016710  000000  176120  000000  47250   LIN52:  .WORD   0,176120,0,25000
       016716  025000
2860   016720  000000  176130  000000  47300   LIN53:  .WORD   0,176130,0,25400
       016726  025400
2861   016730  000000  176140  000000  47350   LIN54:  .WORD   0,176140,0,26000
       016736  026000
2862   016740  000000  176150  000000  47400   LIN55:  .WORD   0,176150,0,26400
       016746  026400
2863   016750  000000  176160  000000  47450   LIN56:  .WORD   0,176160,0,27000
       016756  027000
2864   016760  000000  176170  000000  47500   LIN57:  .WORD   0,176170,0,27400
       016766  027400
2865   016770  177777                  47550   TABEND: .WORD   -1
2866                                   47600
```

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 2868                                          47700  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2869                                          47750  ;              SYSTEM MESSAGES
 2870                                          47800                 .NLIST  BEX
 2871                                          47850
 2872  016772  005015  055103  040514  47900  PROGID: .ASCII  <15><12>/CZLAFAO   LA36 OPTIONS TESTS/
 2873  017030  005015  042522  052123  47950          .ASCII  <15><12>/RESTART AT 1372/
 2874  017051     015  005012  000012  48000  L3:     .ASCIZ  <15><12><12><12>
 2875  017056  047503  046515  047101  48050  HEADR1: .ASCIZ  /COMMAND SUMMARY :/<15><12><12>
 2876  017103     123  020040  020040  48100  COMSUM: .ASCII  /S          SINGLE LINE MODE/<15><12><1>
 2877  017135     115  020040  020040  48150          .ASCII  /M          MULTI-LINE MODE/<15><12><1>
 2878  017166  020121  020040  020040  48200          .ASCII  /Q          SEQUENCE TESTS/<15><12><1>
 2879  017216  047122  020040  020040  48250          .ASCII  /RN         RUN TEST "N" /<15><12><1>
 2880  017245     104  020116  020040  48300          .ASCII  /DN         DROP LINE "N" /<15><12><1>
 2881  017275     101  020116  020040  48350          .ASCII  /AN         ADD LINE "N" /<15><12><1>
 2882  017324  020124  020040  020040  48400          .ASCII  /T          TYPE LINE TABLE /<15><12><1>
 2883  017356  047127  020040  020040  48450          .ASCII  /WN         CHANGE "WIDTH" TO N/<15><12><1>
 2884  017413     114  020040  020040  48500          .ASCII  /L          LOOP ON ERROR /<15><12><1>
 2885  017443     110  020040  020040  48550          .ASCII  /H          HALT ON ERROR /<15><12><1>
 2886  017473     103  020040  020040  48600          .ASCII  /C          CLEAR : RESETS H & L COMMANDS/<15><12><1>
 2887  017542  020116  020040  020040  48650          .ASCII  /N          INHIBIT REPORTS /<15><12><1>
 2888  017574  020120  020040  020040  48700          .ASCII  /P          PRINT ERROR REPORTS /<15><12><1>
 2889  017632  051505  020103  020040  48750          .ASCIZ  /ESC        TO EXECUTE COMMAND STRING/<15><12><12>
 2890  017676  005015  046012  047111  48800  HEADR2: .ASCII  <15><12><12>/LINE# ADDR   VECTOR SEL/
 2891  017730  005015     000          48850  L1:     .ASCIZ  <15><12>
 2892  017733     060  020060  020040  48900  LIN:    .ASCII  /00    17/
 2893  017743     060  030060  020060  48950  DLAD:   .ASCII  /0000   /
 2894  017752  030060  030060  020040  49000  DLV:    .ASCIZ  /000   /
 2895  017761     052  051105  047522  49050  ER0:    .ASCIZ  /*ERROR 000 TEST 00 LINE 00/<15><12><7>
 2896  020017     040  020040  037477  49100  ER1:    .ASCIZ  /     ????/<15><12><7>
 2897  020032  026455  046055  047111  49150  ER2:    .ASCIZ  /---LINE INVALID/<15><12><7>
 2898  020055     116  020117  047111  49200  ER7:    .ASCIZ  /NO INTERRUPT ON TXMIT/<15><12>
 2899  020105     104  047522  050120  49250  DR:     .ASCIZ  /DROPPED/<15><12>
 2900  020117     052  005015     000  49300  S1:     .ASCIZ  /*/<15><12>
 2901  020123     015  051012  040505  49350  RDY:    .ASCIZ  <15><12>/READY /<15><12>
 2902  020136  005015  040520  051523  49400  EOPM:   .ASCIZ  <15><12>/PASS 00000   TEST 00/<15><12>
 2903  020166  005015  025052  020052  49450  EOTM:   .ASCIZ  <15><12>/*** END OF TEST 00/<15><12>
 2904                                          49500
 2905  020215     015  050012  043103  49550  SW:     .ASCIZ  <15><12>/PCFLAG : 000000 /<15><12>
 2906  020242  054105  042503  051523  49600  DR0:    .ASCII  /EXCESSIVE ERRORS..LINE/
 2907  020270  030060  042040  047522  49650  DR1:    .ASCIZ  /00 DROPPED/<15><12><7>
 2908  020306  047516  046040  047111  49700  E19:    .ASCIZ  /NO LINES AVAILABLE FOR TEST/<15><12><7>
 2909  020345     114  047111  020105  49750  E20:    .ASCIZ  /LINE RE-SELECTED/<15><12>
 2910  020370  047503  051516  046117  49800  CTLM:   .ASCIZ  /CONSOLE CONTROL?/
 2911                                          49850
 2912  020411     004  003401  000002  49900  ALLON:  .ASCIZ  <4><1><7><2>          ;SELECT ALL ESCAPE SEQUENCE
 2913  020416  000404     000          49950  ALLOFF: .ASCIZ  <4><1>                ;DESELECT ALL SEQUENCE
 2914  020421     004  001401  000000  50000  SCODE:  .ASCIZ  <4><1><3><000>        ;SELECT UNIQUE SEQUENCE
 2915  020426  000404  001003     000  50050  NSELC:  .ASCIZ  <4><1><3><2>          ;BAD SELECT SEQUENCE
 2916          020434                  50100          .EVEN
 2917  020434  000060                  50150  STACK2: .BLKW   48.
 2918  020574  000036                  50200  STACK3: .BLKW   30.
 2919  020670  000000                  50250  ENOS:   .WORD   0
 2920          001102                  50300          .END    START
```

M07

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CZLAFAO LA36 TERM TST   MACY11 30A(1052)  03-JAN 77  00:01  PAGE 4
CZLAFA.P11     03-JAN 78 11:20                SYMBOL TABLE                                                                    SEQ 0090

ABO    = 000020     CTLBLK   001364     ERRVEC= 000004     ICNT   = 177776     LIN44    016630
ACK    = 000006     CTLC   = 000003     ERO      017761     INBUF    016114     LIN45    016640
ADDC   = 000004     CTLCNT= 000000      ER1      020017     INHR   = 000040     LIN46    016650
ALLOFF   020416     CTLG   = 000007     ER2      020032     INHRPT= 020000      LIN47    016660
ALLON    020411     CTLGX    003064     ER7      020055     INTEST   016154     LIN50    016670
ANSHDR   011472     CTLH   = 000010     ESC    = 000033     INTRAP   007162     LIN51    016700
ATTN   = 000200     CTLK   = 000013     ETX    = 000003     IOTVEC= 000020      LIN52    016710
A2BIN    007676     CTLL   = 000014     ETYPE    006240     ISP    = 005726     LIN53    016720
A2SAV    010004     CTLM     020370     E10      011137     ISP2   = 022626     LIN54    016730
A3$      014046     CTLN   = 000016     E12      011045     ITRAP  = 104004     LIN55    016740
BIN2DA   010006     CTLP   = 000020     E14      01335[illegible]     LDONE  = 000400     LIN56    016750
BIT0   = 000001     DAS      014427     E15      013404     LF     = 000012     LIN57    016760
BIT00  = 000001     DATA     004776     E16      013440     LIN      017733     LOOPC  = 000100
BIT01  = 000002     DATAIN= 004000      E17      013475     LINENO   001370     LOOPOE= 040000
BIT02  = 000004     DATA2    005000     E18      013540     LINES    016032     LOOP1    001454
BIT03  = 000010     DDISP  = 177570     E19      020306     LINESE   002204     LOOP2    001466
BIT04  = 000020     DECODE   004230     E20      020345     LINMON   002110     L1       017730
BIT05  = 000040     DECSAV   004774     E21      013575     LIN00    016170     L3       017051
BIT06  = 000100     DECTBL   004656     E22      013632     LIN01    016200     MACHER   000004
BIT07  = 000200     DEL      016166     E9       011005     LIN02    016210     MAJOR  = 003000
BIT08  = 000400     DELAYM   007530     FF       016167     LIN03    016220     MAX      016034
BIT09  = 001000     DELAYR= 104006      FILL3    014362     LIN04    016230     MECHO    006270
BIT1   = 000002     DELAYT   007564     FLAGDA   010161     LIN05    016240     MERR   = 100000
BIT10  = 002000     DIGITS   010162     FLAG1  = 000001     LIN06    016250     MERRN  = 100377
BIT11  = 004000     DLAD     017743     FLAG2  = 000002     LIN07    016260     MFLAGS= 000004
BIT12  = 010000     DLADR    016130     GETANS   011216     LIN10    016270     MSAVE    006646
BIT13  = 020000     DLFLAG   016126     GETSRC   003350     LIN11    016300     MTW      002432
BIT14  = 040000     DLOTH    016134     GETSWS   003130     LIN12    016310     MTW1     002452
BIT15  = 100000     DLP    = 100000     GNL      002556     LIN13    016320     MTYPE    007010
BIT2   = 000004     DLV      017752     GN1      002600     LIN14    016330     MULTI  = 000040
BIT3   = 000010     DLVEC    016132     GN2      002604     LIN15    016340     NEWMOD= 001000
BIT4   = 000020     DR       020105     GN3      002612     LIN16    016350     NEWTST= 002000
BIT5   = 000040     DROPC  = 000010     GN4      002644     LIN17    016360     NEXT     016152
BIT6   = 000100     DRO      020242     GN5      002650     LIN20    016370     NOOP   = 000240
BIT7   = 000200     DR1      020270     GP       011100     LIN21    016400     NOP    = 000240
BIT8   = 000400     DSWR   = 177570     GSEL     010734     LIN22    016410     NREQ   = 000340
BIT9   = 001000     DTEND    004774     GV1      002332     LIN23    016420     NSELC    020426
BPTVEC= 000014      DVCRXB   016136     G1A      002340     LIN24    016430     NXTLIN   016162
BUILD    005640     DVCTXB   016142     G1B      002344     LIN25    016440     OCTALC   011520
CATCH    006126     DVCTXS   016140     [illegible]      002356     LIN26    016450     ONLIN    016160
CE       013305     ECHO     005044     G1C      002370     LIN27    016460     O2ASC    007566
CFLAGS   002032     EMTABL   006230     HALTC  = 000200     LIN30    016470     PASCNT= 000002
CHARS    010310     EMTBOS   006162     HALTOE= 100000      LIN31    016500     PCFLAG   001364
CHKW     005006     EMTVEC= 000030      HDR3     014443     LIN32    016510     PIRQ   = 177772
CMDERR   005062     ENDS     020670     HDR4     014557     LIN33    016520     PIRQVE= 000240
CNTDA    010160     ENQ    = 000005     HDR5     014610     LIN34    016530     POINT  = 000006
COMSUM   017103     EOL    = 004000     HDRSA    014646     LIN35    016540     PRI      010424
CON      010662     EOP    = 020000     HDRSB    014635     LIN36    016550     PRINT  = 000020
CONSON   003332     EOPM     020136     HDRSE    014651     LIN37    016560     PRINTT= 010000
COUNT    015266     EOT    = 040000     HEADR1   017056     LIN40    016570     PRI0   = 000000
CR     = 000015     EOTM     020166     HEADR2   017676     LIN41    016600     PRI4   = 000200
CRLF   = 000200     ERROR    005124     HI       013252     LIN42    016610     PRI7   = 000340
CSI      004000     ERRSAV   005434     HT     = 000011     LIN43    016620     PROGID   016772
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CZLAFAO LA36 TERM TST   MACY11 30A(1052)  03-JAN-77  00:01  PAGE 4-1
CZLAFA.P11     03-JAN-78 11:20                SYMBOL TABLE

PRTLTB  007212      SWR     016124      TKV   = 000060      T4SAV1  015262      $NSK0 = 000300
PRTTBL= 104002      SWRTST  003006      TKVEC = 000060      T4SAV2  015264      $NSK1 = 000110
PR0   = 000000      SWTEST  000172      TFB   = 177566      T41     014666      $NSK10= 000110
PR1   = 000040      SW0   = 000001      TPS   = 177564      T42     014702      $NSK11= 000110
PR2   = 000100      SW00  = 000001      TPVEC = 000064      T5      016040      $NSK12= 000110
PR3   = 000140      SW01  = 000002      TRAPVE= 000034      T5SAV   016026      $NSK2 = 000110
PR4   = 000200      SW02  = 000004      TRTVEC= 000014      T5SAV1  016030      $NSK3 = 000210
PR5   = 000240      SW03  = 000010      TSCCNT  002036      T51     015420      $NSK4 = 000110
PR6   = 000300      SW04  = 000020      TSCPTR  002034      T52     016071      $NSK5 = 000110
PR7   = 000340      SW05  = 000040      TSTBL   002040      UPDATE  002660      $NSK6 = 000110
PS    = 177776      SW06  = 000100      TSTCTL  001446      WIDTH   016146      $NSK7 = 000110
PSW   = 177776      SW07  = 000200      TSTMON= 050000      $BGNLE= 177777      $SAVLE= 177777
PTR     016164      SW08  = 000400      TXTRAP  007416      $ERFLG= 000400      $SSK0 = 050023
PWRVEC= 000024      SW09  = 001000      TXVEC   016144      $F$AND= 000310      $SVPC = 000204
RDSAV   003776      SW1   = 000002      TYPANS  011306      $F$BAD= 000401      $SWR  = 160000
RDY     020123      SW10  = 002000      TYPE  = 104000      $F$BLA= 000170      $TAGLE= 177777
READIO  007024      SW11  = 004000      TYPES   007110      $F$CAS= 000150      $TAGNU= 050040
READKB  003466      SW12  = 010000      T0      010366      $F$DEC= 000220      $TEMP = 000300
READS   007124      SW13  = 020000      T00BLK  010352      $F$DO = 000340      $TN   = 000001
READY = 000200      SW14  = 040000      T01     010200      $F$FAL= 000405      $TSK0 = 050034
REPORT  005436      SW15  = 100000      T01BLK  010722      $F$GOO= 000400      $TSK1 = 050037
RESTRT  001372      SW2   = 000004      T02BLK  013176      $F$IF = 000110      $TSK10= 050023
RESVEC= 000010      SW3   = 000010      T03BLK  014342      $F$INC= 000210      $TSK11= 050024
RPC   = 000010      SW4   = 000020      T04BLK  015246      $F$LOO= 000200      $TSK2 = 050024
RUB     010364      SW5   = 000040      T05BLK  016014      $F$NAM= 000160      $TSK3 = 050023
R6    =%000006      SW6   = 000100      T1      010742      $F$NO = 000403      $TSK4 = 050025
R7    =%000007      SW7   = 000200      T1TEMP  010736      $F$OR = 000320      $TSK5 = 050022
SAVE    016150      SW8   = 000400      T11     010460      $F$RTN= 000300      $TSK6 = 050017
SCODE   020421      SW9   = 001000      T12     010554      $F$SEL= 000140      $TSK7 = 050021
SEC     010434      S1      020117      T13     010566      $F$THE= 000330      $$ARGC= 000000
SECHO   006654      TAB     015316      T16     010634      $F$TRU= 000404      $$BYTE= 000402
SEL   = 000200      TABDA   010146      T2      013326      $F$UNT= 000130      $$CASE= 000000
SELERR  005100      TABEND  016770      T2BUF   013220      $F$WHI= 000120      $$DST = 000000
SEQ   = 000100      TABL1   011176      T2CNT1  013212      $F$YES= 000402      $$ELOC= 000402
SETIO   005600      TABL4   015270      T2CNT2  013213      $HO   = 000003      $$ERFL= 000000
SI    = 000017      TABS    016036      T2SAV1  013210      $IFLEV= 177777      $$FLAG= 000001
SO    = 000016      TBITVE= 000014      T2TEMP  013214      $ISK0 = 000001      $$FROM= 000000
SOH   = 000001      TDONE = 020000      T21     011546      $ISK1 = 000001      $$LOC = 013076
SSWR    000176      TEMP    016100      T22     011726      $ISK10= 000001      $$LOCN= 000000
STACK = 001100      TEMPF   005002      T220    013144      $ISK11= 000001      $$REG = 177777
STACK2  020434      TEMPT   005004      T23     012140      $ISK2 = 000001      $$RETU= 000000
STACK3  020574      TESTAD  016156      T23A    012206      $ISK3 = 000001      $$RTN1= 050003
START   001102      TESTNO  001366      T24     012530      $ISK4 = 000001      $$RTN2= 050001
START2  001172      TESTO   010164      T25     012636      $ISK5 = 000001      $$SRC = 000000
START3  001230      TEST1   010444      T25A    012734      $ISK6 = 000001      $$TGSV= 000000
STKLMT= 177774      TEST2   011526      T26     013034      $ISK7 = 000001      $$TGS1= 000000
STRAP   007510      TEST3   013700      T3      014376      $LOCTA= 177777      $$TGS2= 000000
STX   = 000002      TEST4   014652      T3SAV   014354      $LSTCN= 177777      $$TO  = 000000
SUTEST  002056      TEST5   015354      T3SAV1  014356      $LSTIN= 000000      $$$TAG= 050000
SW      020215      TIMER   007562      T3SAV2  014360      $LSTST= 177777      .     = 020672
SWCTL = 000020      TKB   = 177562      T4      015320      $LSTTA= 000000
SWLINE  000174      TKS   = 177560      T4SAV   015260      $NESTL= 177777

. ABS.  020672      000
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 ERRORS DETECTED:  0

 CZLAFA,CZLAFA.LST=SYSMAC.SML/ML,SPMAC.SML ML,CZLAFA.P11
 RUN-TIME: 120 101 .6 SECONDS
 RUN-TIME RATIO: 60633/222=272.2
 CORE USED:  19K  (37 PAGES)
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C08