IDENTIFICATION

Product code: AC-E099A-MC

Product Name: CZLAFA0 LA36 TERM TST

Date Created: MARCH 1978

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TABLE OF CONTENTS

## 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 contstant. 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 is 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. |
| Q | (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 on the test section which caused the error, and continue to loop until a Klear command is issued.<br>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-G (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 can 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. Ø6, with Halt on error set.

```
READY
Q(CR)     = Sequence tests
S(CR)     = Single line mode.
AØ6(CR)   = Add line #Ø6
H(CR)     = Halt on error
$         = ESC = echoed as $.
```

EXAMPLE 3. How do I run tests on 1Ø 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.Ø 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.

6.0 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.

6.1 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 line 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.

```
 10                                  00200
 11                                          .TITLE  CZLAFA0 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
```



```
 13                                  00260
 14                                  00280   ;****** OPERATING INSTRUCTIONS ********************************
 15                                  00300   ;
 16                                  00320   ;_1,    THIS TEST ASSUMES THAT THE BASIC INTERFACE
 17                                  00340   ;       LOGIC TESTS & BASIC LA36 FUNCTIONS TEST
 18                                  00360   ;       MDEC-11-DZLAC-X HAVE BEEN RUN SUCESSFULLY.
 19                                  00380   ;
 20                                  00400   ;       TIMING FOR ALL TESTS IS DEPENDENT ON CPU TYPE,
 21                                  00420   ;       THE TIMER IS SET FOR AN 11/40...IF THIS IS
 22                                  00440   ;       NOT THE CASE  CHANGE LOCATION "TIMER"
 23                                  00460   ;       ACCORDING TO THE TABLE SUPPLIED IN THIS LISTING.
 24                                  00480   ;
 25                                  00500   ;_2,    THE DIAGNOSTIC WILL START BY ASKING IF THE OPERATOR
 26                                  00520   ;       WANTS TO USE CONSOLE TERMINAL CONTROL, ANSWER Y OR N,
 27                                  00540   ;
 28                                  00560   ;       IF Y  IS ENTERED, A "MENUE" OF AVAILABLE COMMANDS IS
 29                                  00580   ;       PRINTED ON THE TERMINAL, AND THEN THE PROGRAM WAITS
 30                                  00600   ;       FOR INSTRUCTIONS THRU THE KEYBOARD,
 31                                  00620   ;
 32                                  00640   ;       IF N  IS ENTERED, THE PROGRAM WILL PRINT A LISTING OF
 33                                  00660   ;       INTERFACES BY LINE NUMBER, THEN HALTS,  SET THE SWITCHES
 34                                  00680   ;       TO THE DESIRED MODE  AND PRESS CONTINUE, THE PROGRAM WILL
 35                                  00700   ;       DECODE THE SWITCH REGISTER, AND IF RUNNING A SELECTED
 36                                  00720   ;       TEST, OR  A SELECTED LINE, WILL HALT AGAIN,
 37                                  00740   ;       ENTER THE DESIRED TEST NO, IN THE LOW ORDER BYTE, AND-OR
 38                                  00760   ;       THE DESIRED LINE NO, IN THE HIGH ORDER BYTE, PRESS CONTINUE,
 39                                  00780   ;
 40                                  00800   ;       IF NO HARDWARE SWITCH REGISTER IS PRESENT ON THE SYSTEM
 41                                  00820   ;       THE PROGRAM WILL USE LOCATION 176 AS A SOFTWARE SWITCH
 42                                  00840   ;       REGISTER, CONTROL WILL DEFAULT TO THE CONSOLE !
 43                                  00860   ;
 44                                  00880   ;
 45                                  00900   ;_3,    TO CHANGE MODES TYPE CTL-C,
 46                                  00920   ;       THE CONSOLE WILL RESPOND WITH READY.,
 47                                  00940   ;       ENTER YOUR COMMANDS FOLLOWED BY AN ESC,
 48                                  00950   ;       INTERACTIVE COMMANDS SUCH AS CTL-G MAY BE ENTERED
 49                                  00955   ;       DURING COMMAND, OR RUN MODES,
 50                                  00960   ;
 51                                  00980   ;_4,    IF MULTI-LINE MODE IS SELECTED, A TABLE
 52                                  01000   ;       OF INTERFACE LINES WILL BE PRINTED,
 53                                  01020   ;       ALL LINES PRESENT WILL BE INITIALLY SELECTED,
 54                                  01040   ;       IF YOU ADD OR DROP LINES USE THE LINE NO,
 55                                  01060   ;       SPECIFIED IN THE LINE TABLE LIST,
 56                                  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   ;               =0 (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           NREQ    = 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
```

```
                        003080          MERR   = BIT15
                        003120          NEWTST = BIT10
                        003140          NEWMOD = BIT9
                        003160          READY  = BIT7
                        003180          SEQ    = BIT6
                        003200          MULTI  = BIT5
                        003220          SWCTL  = BIT4
                        003240          PRINT  = BIT4
                        003260          MERRN  = 100377
                        003280          MFLAGS = 4
                        003281          TPS = 177564
                        003282          TPB = 177566
                        003283          TKS = 177560
                        003284          TKB = 177562
                        003285          TKV = 60
                        003300      ;****** EMT CALL EQUATES
                        003320          TYPE = EMT
                        003340          PRTTBL = EMT+2
                        003360          ITRAP = EMT+4
                        003380          DELAYR = EMT+6
                        003460
```



```
                        003500          .=0                     ;TRAP CATCHER
000000  000002          003520          .+2
000002  000000          003540          HALT
000004  000006          003560  MACHEN: .+2
000006  000000          003580          HALT
000010  000012          003600          .+2
000012  000000          003620          HALT
000014  007162          003640          INTRAP          ;BREAKPOINT TRAP
000016  000200          003660          PRI4            ;USED DURING SYSTEM SIZER
000020  007416          003680          TXTRAP          ;IOT TRAP
000022  000200          003700          PR14            ;USED BY TXMIT I/O DRIVER
000024  001372          003720          RESTRT          ;POWER FAIL TRAPS TO RESTART
000026  000000          003740          PRI0
000030  006162          003760          EMTBOS
000032  000000          003780          PRI0
                        004000          .=172
000172  000000          004020  SWTEST: .WORD   0
000174  000000          004040  SWLINE: .WORD   0
000176  000000          004060  SSWR:   .WORD   0
000200  000137  001102  004080          JMP     START
                        004100
                                .SBTTL  ACT11 HOOKS
                                ;;**************************************************************
                                ;HOOKS REQUIRED BY ACT11
000204                                  $SVPC=.                 ;SAVE PC
000046                                  .=46
001102                                  START                   ;;1)SET LOC.46 TO ADDRESS OF START
000052                                  .=52
020000                                  .WORD   20000           ;;2)SET LOC.52 TO 20000
000204                                  .=$SVPC                 ;; RESTORE PC
                        004140          .=1100
001100  000240          004160          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     #T00BLK,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
(9) 001204  001011                              BNE     500018
                                        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                                  500018:
001230  004737  003332          05220   START3: JSR     PC,CONSON
001234                                  500028:
                                        05260   ;
001234  032737  000020  001364                  BIT     #SWCTL,PCFLAG
```



```
(9) 001242  001403                              BEQ     500048
                                        05340   ; IF IN SWITCH CONTROL GET CONTENTS OF SW REG.
001244  004737  003130                          JSR     PC,GETSWS
001250  000421                              BR      500058
(3) 001252                                      500048:
                                        05420   ;
                                        05440   ; IN CONSOLE CONTROL SIGNIFY   READY
                                        05460   ; AND READ COMMANDS FROM THE CONSOLE.
                                        05480   ;
001252  012700  020123                          MOV     #RDY,R0
001256  104000                          05520           TYPE
001260                                  500068:
001260  000001                          05560               WAIT
001262  032737  000200  001364                  BIT     #ATTN,PCFLAG
(5) 001270  001001                              BNE     500078
001272  000772                              BR      500068
(3) 001274                                      500078:
                                        05620   ;
                                        05640   ; PRINT THE LINE TABLE IF REQUESTED.
                                        05660   ;
001274  032737  010000  001364                  BIT     #PRINTT,PCFLAG
(9) 001302  001404                              BEQ     500108
001304  104002                          05700           PRTTBL
001306  042737  010000  001364                  BIC     #PRINTT,PCFLAG
001314                                  500108:
001314                                  500058:
                                        05780   ;
                                        05800   ; SET UP THE I/O DRIVER AREAS
                                        05820   ; SET UP & EXECUTE REQUESTED TESTS.
                                        05840   ;
001314  004737  002110                          JSR     PC,LINMON
001320  012700  020411          05870           MOV     #ALLON,R0       ;ISSUE A SELECT ALL COMMAND
001324  004737  007010          05872           JSR     PC,MTYPE        ;IN CASE THERE ARE SELECTIVE
                                05874                                   ;TERMINALS ON LINE.
001330  004737  001446                          JSR     PC,TSTCTL
001334  032737  004000  002032                  BIT     #EOL,CFLAGS
(5) 001342  001406                              BEQ     500038
001344  042737  004000  002032                  BIC     #EOL,CFLAGS
001352  004737  001372                          JSR     PC,RESTRT
001356  000726                              BR      500028
(3) 001360                                      500038:
001360  000137  001172          05990           JMP START2
001364                                  500008:
                                        06020
                                        06040   ;               ****************************************
                                        06060   ;               *                                      *
                                        06080   ;               * NOTE,,,TYPING CTL=G WHILE IN CONSOLE   *
                                        06100   ;               *          CONTROL MODE WILL CAUSE THE  *
                                        06120   ;               *          PCFLAG WORD TO BE PRINTED.   *
                                        06140   ;               *                                      *
                                        06160   ;               ****************************************
001364                                  06180   CTLBLK:                 ;PROGRAM CONTROL BLOCK
001364  000001                          06200   PCFLAG: .WORD   1                       ;PROGRAM CONTROL FLAGS
001366  000000                          06220   TESTNO: .WORD   0                       ;TESTNO
001370  000000                          06240   LINENO: .WORD   0                       ;LINENO
                                        06260
```

```
                                        06280   ;*************************
                                        06281   ; PCFLAG BIT DEFINITIONS  *
                                        06282   ;*************************
                                        06283   ;
                                        06284   ; BIT 15         HALTOE          HALT ON ERROR  (SW=15)
                                        06285   ; BIT 14         LOOPOE          LOOP ON ERROR  (SW=14)
                                        06286   ; BIT 13         INHRPT          INHIBIT REPORTS  (SW=13)
                                        06287   ; BIT 12         PRINTT          PRINT TABLE  (SW=12)
                                        06288   ; BIT 11         DATAIN          DATA IN FROM KBD,
                                        06289   ; BIT 10         NEWTST          CHANGE IN TEST NO,
                                        06290   ; BIT  9         NEWMOD          CHANGE IN MODE,
                                        06291   ; BIT  8         LDONE           END OF LINE TABLE REACHED
                                        06292   ; BIT  7         ATTN            ATTENTION !!!!!!!!!
                                        06293   ; BIT  6         SEQ             SEQUENCE TESTS MODE
                                        06294   ; BIT  5         MULTI           MULTI LINE MODE,
                                        06295   ; BIT  4         SWCTL           CONTROL VIA SWITCHES,
                                        06296   ; BIT  3         DROPC           DROP LINE COMMAND
                                        06297   ; BIT  2         ADDC            ADD LINE COMMAND
                                        06298   ; BIT  1         FLAG2           MODE  0 = NO CURRENT I/O TO CONSOLE
                                        06299   ; BIT  0         FLAG1                 1 = IN COMMAND INPUT MODE
                                        06300   ;                                     2 = I/O TESTING OF CONSOLE
                                        06301   ;                                     3 = ?
                                        06305
                                        06306
                                        06307
                                        06319   ;***************
                                        06320   ; RESTART
                                        06340   ;***************
                                        06360
001372  012706  001100          06380   RESTRT: MOV     #STACK,SP       ;REINITIALIZE EVERYTING
001376  005037  016152          06400           CLR     NEXT
001402  005037  016154          06420           CLR     INTEST
001406  012737  000001  001364  06440           MOV     #1,PCFLAG
001414  005037  016162          06460           CLR     NXTLIN
001420  005037  016160          06480           CLR     ONLIN
001424  012737  016114  016164  06500           MOV     #INBUF,PTR
001432  004737  000126          06520           JSR     PC,CATCH
001436  000240                  06540           NOP
001440  000005                  06560           RESET
001442  000137  001230          06580           JMP     START3
```



```
                                        06680   ;*************
                                        06700   ; TSTCTL  THIS SECTION CONTROLS TEST SELECTION, TEST
                                        06720   ;         SEQUENCING, AND INTERFACES TO ERROR AND REPORT
                                        06740   ;         MODULES AS REQUIRED BY THE TEST MODULES.
                                        06760   ;*************
                                        06780
001446  013737  001366  016152  06800   TSTCTL: MOV     TESTNO,NEXT             ;GET TEST NO,
001454  013737  016152  016154  06820   LOOP1:  MOV     NEXT,INTEST             ;GET CURRENT TEST NO,
001462  004737  002056          06840           JSR     PC,SUTEST
001466  004777  014464          06920   LOOP2:  JSR     PC,@TESTAD              ;;START TEST
                                        06940   ;       .       .       .       .       .       .       .
                                        06942   ;
                                        06944   ; CHECK FOR ERROR FLAG FROM TEST
                                        06946   ;
001472  032737  000020  001364                  BIT     #SWCTL,PCFLAG
(9) 001500  001414                              BEQ     500115
001502  017737  014416  016100                  MOV     @SWR,TEMP
001510  042737  003777  016100                  BIC     #3777,TEMP
001516  042737  174000  001364                  BIC     #174000,PCFLAG
001524  053737  016100  001364                  BIS     TEMP,PCFLAG
001532                                  500115:
                                        06953
001532  032765  100000  000004                  BIT     #MERR,MFLAGS(R5)
(9) 001540  001414                              BEQ     500126
001542  016537  000004  002032                  MOV     MFLAGS(R5),CFLAGS
001550  016537  000006  002034                  MOV     POINT(R5),TSCPTR
                                        07002   ;
                                        07004   ; CALL ERROR HANDLER ROUTINE
                                        07006   ;
001556  004737  005124                          JSR     PC,ERROR
001562  042765  100377  000004                  BIC     #MERRN,MFLAGS(R5)
001570  000421                          (3) 001572
                                        500126:
                                        07062   ;
                                        07064   ; SEE IF TEST IS REPORTING DONE CONDITION
                                        07066   ;
001572  032765  020000  000004                  BIT     #TDONE,MFLAGS(R5)
(9) 001600  001415                              BEQ     500148
                                        07082   ;
                                        07084   ;UPDATE THE PASS COUNT  THEN REPORT END OF PASS
                                        07086   ;
001602  005265  000002                          INC     PASCNT(R5)
001606  042765  020000  000004                  BIC     #TDONE,MFLAGS(R5)
001614  052737  020000  002032                  BIS     #EOP,CFLAGS
001622  016537  000002  002036                  MOV     PASCNT(R5),TSCCNT
001630  004737  005436                          JSR     PC,REPORT
001634                                  500148:
001634                                  500138:
                                        07222   ;
                                        07224   ; IF LOOP ON ERROR IS SET AND AN ERROR IS
                                        07226   ;DETECTED THE ERROR HANDLER WILL MAKE THE
                                        07228   ;RETURN ADDRESS OF THE TEST   ODD     .
                                        07230   ;
                                        07232   ;CHECK FOR ODD ADDRESS....IN LOOP MODE...
                                        07234   ;
001634  032765  000001  000010                  BIT     #BIT0,RPC(R5)
```

```
(9)  001642  001413                          BEQ     500158
                                     07242   ;
                                     07244   ; IF THE LOOP ON ERROR IS TURNED OFF THEN
                                     07246   ; CONTINUE TEST AT THE NEXT SUBTEST,
                                     07248   ;
001644  032737  040000  001364               BIT     #LOOPOE,PCFLAG
(9)  001652  001006                          BNE     500168
001654  042765  000001  000010               BIC     #BIT0,RPC(R5)
001662  016537  000010  016156               MOV     RPC(R5),TESTAD
001670                               500165$:
001670  000456                               BR      500178
(3)  001672                          500158$:
                                     07342   ;
                                     07344   ; CHECK TO SEE IF THE ITERATION COUNT IS COMPLETED
                                     07346   ;
001672  026565  000002  000000               CMP     PASCNT(R5),CTLCNT(R5)
(9)  001700  003447                          BLE     500208
001702  052737  040000  002032               BIS     #EOT,CFLAGS
001710  005037  002036                       CLR     TSCCNT
                                     07402   ;
                                     07404   ; REPORT END OF TEST CONDITION
                                     07406   ;
001714  004737  005436                       JSR     PC,REPORT
001720  016565  000002  000000               MOV     PASCNT(R5),CTLCNT(R5)
(6)  001726  066565  177776  000000         ADD     ICNT(R5),CTLCNT(R5)
                                     07442   ;
                                     07444   ; IF IN SEQUENCE TESTS MODE SET UP NEXT TEST
                                     07446   ;
001734  032737  000100  001364               BIT     #SEQ,PCFLAG
(9)  001742  001423                          BEQ     500218
001744  013737  016152  016154               MOV     NEXT,INTEST
001752  005237  016152                       INC     NEXT
                                     07520
                                     07522   ;
                                     07524   ; IF NEXT IS A NON EXISTANT TEST SET EOL
                                     07526   ; AND RETURN TO MONITOR FOR NEW COMMANDS
                                     07528   ;
001756  023727  016154  000005               CMP     INTEST,#5
(9)  001764  003407                          BLE     500228
001766  005037  016152                       CLR     NEXT
001772  052737  004000  002032               BIS     #EOL,CFLAGS
002000  000207                       07600           RTS     PC
002002  000402                               BR      500238
(3)  002004                          500228$:
002004  004737  002056                       JSR     PC,SUTEST
002010                               500238$:
002010  000402                               BR      500248
(3)  002012                          500218$:
                                     07682   ;
                                     07684   ;  SET UP TEST ADDRESS FOR THE SAME TEST AGAIN,
                                     07686   ;
002012  004737  002056                       JSR     PC,SUTEST
002016                               500248$:
002016  000403                               BR      500258
(3)  002020                          500208$:
                                     07742   ;
```



```
                                     07744   ; RETURN TO TEST VIA ADDRESS SUPPLIED BY TEST
                                     07746   ;
002020  016537  000010  016156               MOV     RPC(R5),TESTAD
002026                               500258$:
002026                               500178$:
002026  000137  001466               07820           JMP     LOOP2
                                     08160
                                     08180   ;*************
002032  000000                       08200   CFLAGS: ,WORD   0       ;FLAGS
002034  000000                       08220   TSCPTR: ,WORD   0       ;POINTER
002036  000000                       08240   TSCCNT: ,WORD   0       ;PASCNT
                                     08260
                                     08300
002040  010164                       08320   TSTBL:  TEST0           ; TABLE OF TEST ADDRESSES ******************
002042  010444                       08340           TEST1
002044  011526                       08360           TEST2
002046  013700                       08380           TEST3
002050  014652                       08400           TEST4
002052  015354                       08420           TEST5
002054  177777                       08440           -1
                                     08441
                                     08442
                                     08443
                                     08444
                                     08445   ;*************
                                     08446   ;SUTEST  INITIALIZES THE TEST ADDRESS POINTER
                                     08447   ;        FOR TEST # IN 'INTEST'
                                     08448   ;*************
                                     08449
002056                               SUTEST:
002056  006337  016154                       ASL     INTEST
002062  012700  002040                       MOV     #TSTBL,R0
(6)  002066  063700  016154                 ADD     INTEST,R0
002072  011037  016156                       MOV     (R0),TESTAD
002076  006237  016154                       ASR     INTEST
002102  005065  000004                       CLR     MFLAGS(R5)
002106                               500008$:
002106                               500018$:
(2)  002106  000207                          RTS     PC
                                     08480
                                     08485
                                     08490
```

```
                                        08500           .SBTTL  LINE CONTROL & INITIALIZATION
                                        08520   ;************
                                        08540   ;THIS SECTION CONTROLS THE SELECTION AND SEQUENCING
                                        08560   ;OF SINGLE OR MULTIPLE LINES FOR TESTING.
                                        08580   ;************
                                        08600
                                        08620
002110                                          LINMON:
002110  032737  001000  001364                          BIT     #NEWMOD,PCFLAG
(9)     002116  001427                              BEQ     50002$
                                        08680   ;
                                        08700   ; INITIALIZE THE DEVICE HANDLER :
                                        08720   ; SET UP A POINTER AREA WITH THE
                                        08740   ; DEVICE ADDRESSES & VECTORS ETC.
                                        08760   ;
002120  032737  000040  001364                          BIT     #MULTI,PCFLAG
(9)     002126  001407                              BEQ     50003$
002130  004737  002332                              JSR     PC,GVL
002134  004737  002432                              JSR     PC,MTW
002140  004737  002556                              JSR     PC,GNL
002144  000410                                      BR      50004$
(3)     002146                                  50003$:
                                        08880   ;
                                        08900   ; GET SELECTED LINE NUMBER AND
                                        08920   ; PULL THE DATA FROM THE TABLE.
                                        08940   ;
002146  013737  001370  016160                          MOV     LINENO,ONLIN
002154  004737  002432                              JSR     PC,MTW
002160  013737  016160  016162                      MOV     ONLIN,NXTLIN
002166                                          50004$:
002166  042737  001000  001364                          BIC     #NEWMOD,PCFLAG
002174  000402                                      BR      50005$
(3)     002176                                  50002$:
                                        09080   ;
                                        09100   ; DO LINESEL SECTION FOR EACH DEVICE
                                        09120   ; TO BE TESTED.
                                        09140   ;
002176  004737  002204                              JSR     PC,LINESEL
002202                                          50005$:
002202                                          50000$:
002202                                          50001$:
002202  000207                                      RTS     PC
                                        09220
                                        09240
                                        09260   ;************
                                        09280   ;LINESEL  ROUTINE TO FURNISH THE IODRIVER WITH DVC POINTERS
                                        09300   ;************
                                        09320
002204                                          LINESEL:
                                        09360   ;
                                        09380   ; MULTIPLE LINES UNDER TEST ?
                                        09400   ;
002204  032737  000040  001364                          BIT     #MULTI,PCFLAG
002212  001426                                      BEQ     50002$
                                        09440   ;
                                        09460   ; SET UP POINTER AREA WITH DATA FOR
```



```
                                        09480   ; THE NEXT DEVICE TO BE TESTED
                                        09500   ;
002214  013737  016162  016160                          MOV     NXTLIN,ONLIN
                                        09540   ;
                                        09560   ; RESET EVERYTHING IF AT THE END OF OUR DEVICE LIST.
                                        09580   ;
002222  023727  016160  177777                          CMP     ONLIN,#-1
(9)     002230  001012                              BNE     50003$
002232  052737  000400  001364                      BIS     #LDONE,PCFLAG
002240  004737  002332                              JSR     PC,GVL
002244  004737  002432                              JSR     PC,MTW
002250  004737  002556                              JSR     PC,GNL
002254  000404                                      BR      50004$
(3)     002256                                  50003$:
                                        09720   ;
                                        09750   ; SET UP POINTER AREA FOR LINE = 'ONLIN'.
                                        09780   ;
002256  004737  002432                              JSR     PC,MTW
002262  004737  002556                              JSR     PC,GNL
002266                                          50004$:
002266  000420                                      BR      50005$
002270                                          50002$:
002270  004737  002432                              JSR     PC,MTW
002274  032737  000200  016126                      BIT     #SEL,DLFLAG
(9)     002302  001404                              BEQ     50006$
                                        09920   ;
                                        09940   ; CHECK TO SEE IF ALL DEVICES
                                        09960   ; HAVE BEEN TESTED YET, SET LDONE FLAG.
                                        09980   ;
002304  052737  000400  001364                      BIS     #LDONE,PCFLAG
002312  000406                                      BR      50007$
(3)     002314                                  50006$:
                                        10040   ;
                                        10060   ; MAKE SHURE THAT WHEN TESTING A SINGLE
                                        10080   ; DEVICE , IT DOESN'T GET DROPPED
                                        10100   ; BECAUSE OF EXCESSIVE ERRORS.
                                        10120   ;
002314  052737  000200  016126                      BIS     #SEL,DLFLAG
002322  012700  020345                              MOV     #E20,R0
002326  104000                                      TYPE
002330                                          50007$:
002330                                          50005$:
002330                                          50000$:
002330                                          50001$:
002330  000207                                      RTS     PC
                                        10260
                                        10280   ;************
                                        10300   ; GVL   THIS ROUTINE FINDS A VALID LINE FOR TESTING
                                        10320   ;************
                                        10340
002332                                          GVL:
(4)     002332  010346                              MOV     R3,-(SP)
002334  012703  016170                      10380           MOV     #LIN00,R3       ;GET ADDR OF LINE TABLE
002340  005713                              10400   G1A:    TST     (R3)            ;LIN PRESENT?
002342  100412                              10420           BMI     G1D             ;YES BRANCH
002344  062703  000010                      10440   G1B:    ADD     #10,R3          ;POINT TO OTHER WORD
```

```
002350  020027  016770          10460          CMP     R0,#TABEND              ;END OF TABLE ?
002354  001371                  10480          BNE     G1A                     ;NO BRANCH
002356  012700  020306          10500  G1C:    MOV     #E19,R0                 ;NOTIFY OPERATOR - NO LINES
002362  104000                  10520          TYPE
002364  000137  001372          10540          JMP     RESTRT
002370  105713                  10560  G1D:    TSTB    (R3)                    ;LINE SELECTED?
002372  100364                  10580          BPL     G1B                     ;NO TRY ANOTHER LINE
002374  062703  000006          10600          ADD     #6,R3                   ;POINT TO OTHER WORD
002400  011337  016160          10620          MOV     (R3),ONLIN      ;GET DATA FROM TABLE
002404  000337  016160          10640          SWAB    ONLIN           ;
002410  105037  016161          10660          CLRB    ONLIN+1
002414  005037  000174          10680          CLR     SWLINE
002420  113737  016160  000174  10700          MOVB    ONLIN,SWLINE
002426  012603                  10700          MOV     (SP)+,R3
002430  000207                  10740          RTS     PC              ;EXIT
                                10760  ;************
                                10780  ; MTW   THIS ROUTINE TRANSFERS TABLE DATA TO THE WORK AREA
                                10800  ;************
                                10820
002432                          10840  MTW:
(4)  002432  010346                            MOV     R3,-(SP)
002434  013703  016160          10860          MOV     ONLIN,R3        ;GET LINE NO,
002440  006303                  10880          ASL     R3
002442  006303                  10900          ASL     R3
002444  006303                  10920          ASL     R3              ;X8 FOR OFFSET
002446  062703  016170          10940          ADD     #LIN00,R3       ;ADD IN BASE ADDR
002452  012337  016126  10960  MTW1:   MOV     (R3)+,DLFLAG    ;GET FLAG WORD
002456  012337  016130          10980          MOV     (R3)+,DLADR     ;GET ADDRESS
002462  012337  016132          11000          MOV     (R3)+,DLVEC     ;GET VECTOR
002466  011337  016134          11020          MOV     (R3),DLOTH      ;GET "OTHER WORD"
002472  013737  016130  016136  11040          MOV     DLADR,DVCRXB
002500  062737  000002  016136  11060          ADD     #2,DVCRXB
002506  013737  016136  016140  11080          MOV     DVCRXB,DVCTXS
002514  062737  000002  016140  11100          ADD     #2,DVCTXS
002522  013737  016140  016142  11120          MOV     DVCTXS,DVCTXB
002530  013737  016132  016144  11140          MOV     DLVEC,TXVEC
002536  062737  000004  016144  11160          ADD     #4,TXVEC
002544  062737  000002  016142  11180          ADD     #2,DVCTXB
002552  012603                  11200          MOV     (SP)+,R3
002554  000207                  11220          RTS     PC
                                11240  ;************
                                11260  ; GNL   THIS ROUTINE FINDS THE NEXT VALID LINE TO TEST
                                11280  ;************
                                11300
002556                          11320  GNL:
(4)  002556  010346                            MOV     R3,-(SP)
002560  013703  016160          11340          MOV     ONLIN,R3        ;GET CURRENT LINE
002564  005203                  11360          INC     R3              ;CURRENT +1
002566  006303                  11380          ASL     R3
002570  006303                  11400          ASL     R3
002572  006303                  11420          ASL     R3              ;X8 FOR OFFSET
002574  062703  016170          11440          ADD     #LIN00,R3       ;ADD IN BASE ADDR OF TABLE
002600  005713                  11460  GN1:    TST     (R3)            ;LINE PRESENT?
002602  100403                  11480          BMI     GN3             ;YES - BRANCH
002604  062703  000010          11500  GN2:    ADD     #10,R3          ;POINT TO NEXT LINE ENTRY
002610  000773                  11520          BR      GN1             ;CHECK NEXT
```



```
002612  105713                  11540  GN3:    TSTB    (R3)            ;LINE SELECTED?
002614  100373                  11560          BPL     GN2             ;NO TRY ANOTHER
002616  021327  177777          11580          CMP     (R3),#-1        ;END OF TABLE?
002622  001412                  11600          BEQ     GN5             ;YES - BRANCH
002624  062703  000006          11620          ADD     #6,R3           ;GET "OTHER WORD
002630  011337  016162          11640          MOV     (R3),NXTLIN
002634  000337  016162          11660          SWAB    NXTLIN          ; = NEXT AVAILABLE LINE
002640  105037  016163          11680          CLRB    NXTLIN+1
002644                          11700  GN4:
(4)  002644  012603                            MOV     (SP)+,R3
002646  000207                  11720          RTS     PC              ;EXIT
002650  012737  177777  016162  11740  GN5:    MOV     #-1,NXTLIN      ;SET NXTLIN TO -1 = NO SELECT
002656  000772                  11760          BR      GN4
                                11780
                                11800
                                11820  ;************
                                11840  ;UPDATE  ROUTINE TO UPDATE INTERFACE TABLE FROM COMMANDS
                                11860  ;************
                                11880
002660                          UPDATE:
                                11902  ; SHIFT THE CONVERTED LINE NO, FOR AN
                                11904  ; OFFSET TO THE LINE TABLE,
                                11906  ;
002660  006337  004776                          ASL     DATA
(7)  002664  006337  004776                    ASL     DATA
(7)  002670  006337  004776                    ASL     DATA
                                11930  ; ADD IN THE BASE ADDRESS OF THE TABLE,
002674  062737  016170  004776                  ADD     #LIN00,DATA
                                11960  ;
                                11980  ; IF THE LINE SELECTED DOESN'T EXIST -
                                12000  ; SEND AN ERROR MESSAGE,
                                12020  ;
002702  032777  100000  002066                  BIT     #DLP,@DATA
(9)  002710  001003                            BNE     5$0002$
002712  004737  005100                          JSR     PC,SELERR
002716  000430                  12080          BR      5$0003$
(3)  002720                     12100  5$0002$:
                                12120  ;
                                12140  ; ADDING A LINE  SETS IT'S "SELECTED" FLAG
                                12160  ; AND CLEARS OUT THE ERROR COUNT FOR THAT LINE
                                12180  ;
002720  032737  000004  005002          12200          BIT     #ADDC,TEMPF
(9)  002726  001415                            BEQ     5$0004$
002730  052777  000200  002040                  BIS     #SEL,@DATA
002736  042777  000037  002032                  BIC     #ABO!#17,@DATA
002744  062737  000007  004776                  ADD     #7,DATA
002752  117737  002020  001370                  MOVB    @DATA,LINENO
002760  000407                  12300          BR      5$0005$
(3)  002762                     12320  5$0004$:
                                12340  ;
                                12360  ; DROPPING A LINE JUST RESETS IT'S "SELECTED" FLAG
                                12380  ;
002762  032737  000010  005002          12400          BIT     #DROPC,TEMPF
(9)  002770  001403                            BEQ     5$0006$
002772  042777  000200  001776                  BIC     #SEL,@DATA
003000                          12440  5$0006$:
```

```
                                        50005$:
                                        50003$:
003000  005037  004776                          CLR     DATA
003004                                  50000$:
003004                                  50001$:
003004  000207                                  RTS     PC
                                12480
                                12500
```



```
                                12540           .SBTTL  SWITCH REGISTER ROUTINES
                                12560   ;************
                                12580   ;SWRTST TESTS FOR HARDWARE SWITCH REGISTER
                                12600   ;************
003006  012737  003040  000004  12620   SWRTST: MOV     #4$,MACHER      ;SU NXM TRAP TO 4$
003014  012737  000340  000006  12640           MOV     #PRI7,MACHER+2
003022  005777  013076          12660           TST     @SWR            ;ACCESS SWITCH REG.
003026  000240                  12680           NOP
003030  012737  177570  016124  12700           MOV     #177570,SWR     ;RETAIN HARDWARE POINTER
003036  000404                  12720           BR      6$              ;
003040  012737  000176  016124  12740   4$:     MOV     #SSWR,SWR       ;SU FOR SOFTWARE SWITCH REG.
003046  022626                  12760           ISP2                    ;CLEAN THE STACK
003050  012737  000006  000004  12780   6$:     MOV     #6,MACHER       ;RESET TRAP CATCHER
003056  005037  000006          12800           CLR     MACHER+2
003062  000207                  12820           RTS     PC              ;EXIT
                                12840
                                12860   ;************
                                12880   ; CTLGX    THIS ROUTINE PRINTS THE PROGRAM CONTROL FLAGS ON THE CONSOLE.
                                12900   ;************
                                12920
003064                          CTLGX:
003064  013746  001364                  MOV     PCFLAG,-(SP)
003070  012746  000006                  MOV     #6,-(SP)
003074  012746  020230                  MOV     #SW+11.,-(SP)
003100  004737  007566                  JSR     PC,Q2ASC
003104  142737  000006  020226          BICB    #6,SW+11
003112  012700  020215                  MOV     #SW,R0
003116  104000          13080       TYPE
003120  012700  017730                  MOV     #L1,R0
003124  104000          13120       TYPE
003126                          50000$:
003126                          50001$:
003126  000207                  13140   RTS     PC
                                13160
                                13180   ;************
                                13200   ;GETSWS    THIS ROUTINE READS THE SWITCH REGISTER AND
                                13220   ;          CONVERTS THE DATA TO THE APPROPRIATE CONTROL
                                13240   ;          FLAGS OR POINTERS.
                                13260   ;************
                                13280
003130                          GETSWS:
                                13320   ;
                                13340   ; STOP HERE FOR OPERATOR TO ENTER CONTROL SWITCHES
                                13360   ;
003130  000000          13380       HALT
003132  017737  012766  016100          MOV     @SWR,TEMP
                                13420   ;
                                13440   ; IF SWITCHES INDICATE A SINGLE LINE OR A SINGLE TEST
                                13460   ; IO BE DONE STOP SO OPERATOR CAN ENTER LINE/TEST DATA
                                13480   ;
003140  032737  000100  016100          BIT     #SEQ,TEMP
003146  001404                          BEQ     50002$
003150  032737  000040  016100          BIT     #MULTI,TEMP
003156  001016                          BNE     50003$
003160                          50002$:
003160  000000                  13520   HALT
```

```
                                                        ;
  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    @#IKB,@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  001003                                     BEQ     50005$
  823  003456  052737  000020  001364                     BIS     #SWCTL,PCFLAG
  824  003464                                     50005$:
  825  003464                                     50000$:
  (3)  003464                                     50001$:
  (2)  003464  000207                                     RTS     PC
```

```
                                        15540   ;************
                                        15560   ; READKB   THIS MODULE IS AN INTERRUPT HANDLER
                                        15580   ;          FOR THE CONSOLE TERMINAL.
                                        15600   ;************
                                        15620
003466                                  READKB:
003466  010046                                  MOV     R0,-(SP)
                                        15650   ;
                                        15655   ; GET CHAR FROM KEYBOARD BUFFER REG.
                                        15660   ; CLEAR PARITY BIT IF SET.
                                        15665   ;
003470  013737  177562  003776                   MOV     @#TKB,RDSAV
003476  142737  000200  003776                   BICB    #200,RDSAV
                                        15680   ;
                                        15685   ; CHECK FOR DEVICE ERROR
                                        15690   ;
003504  032737  100000  003776                   BIT     #MERR,RDSAV
(9) 003512  001405                              BEQ     5$0028
003514  004737  005062                           JSR     PC,CMDERR
003520  005037  177560                           CLR     @#TKS
003524  000516                                  BR      5$0038
(3) 003526                              5$0028:
                                        15715   ;
                                        15720   ; IF CMD CHAR WAS A CTL-G  DO THE CTLGX ROUTINE.
                                        15725   ; PRINT OUT PCFLAGS ON CONSOLE.
                                        15730   ;
003526  123727  003776  000007                   CMPB    RDSAV,#CTLG
(9) 003534  001006                              BNE     5$0048
003536  004737  003064                           JSR     PC,CTLGX
003542  012700  017730                           MOV     #L1,R0
                                        15750           TYPE
003546  104000                                  .TTYOUT
003550  000504                                  BR      5$0058
(3) 003552                              5$0048:
                                        15756   ;
                                        15757   ; IF IN I/O MODE PUT DATA IN I/O BUFFER
                                        15758   ;
003552  032737  000002  001364                   BIT     #FLAG2,PCFLAG
(9) 003560  001410                              BEQ     5$0068
003562  113711  003776                           MOVB    RDSAV,(R1)
003566  052737  004000  001364                   BIS     #DATAIN,PCFLAG
003574  005037  007564                           CLR     DELAYT
003600  000470                                  BR      5$0078
(3) 003602                              5$0068:
                                        15776   ;
                                        15777   ;IF IN COMMAND MODE PUT DATA IN INBUF
                                        15778   ;AND CALL INTERPRITER
                                        15779   ;
003602  032737  000001  001364                   BIT     #FLAG1,PCFLAG
(9) 003610  001406                              BEQ     5$0108
003612  113777  003776  012344                   MOVB    RDSAV,@PTR
003620  004737  004000                           JSR     PC,CSI
003624  000456                                  BR      5$0118
(3) 003626                              5$0108:
                                        15796   ;
                                        15797   ; CLEAR AND GO TO READY STATE.
                                        15798   ;
```



```
003626  123727  003776  000003                   CMPB    RDSAV,#CTLC
(9) 003634  001003                              BNE     5$0128
003636  004737  001372                           JSR     PC,RESTRT
003642  000447                                  BR      5$0138
(3) 003644                              5$0128:
                                        15811   ;
                                        15812   ; CHECK FOR PRINT REPORTS COMMAND
                                        15813   ;
003644  123727  003776  000020                   CMPB    RDSAV,#CTLP
(9) 003652  001004                              BNE     5$0148
003654  042737  020000  001364                   BIC     #INHRPT,PCFLAG
003662  000437                                  BR      5$0158
(3) 003664                              5$0148:
                                        15826   ;
                                        15827   ; CHECK FOR NO REPORTS COMMAND
                                        15828   ;
003664  123727  003776  000016                   CMPB    RDSAV,#CTLN
(9) 003672  001004                              BNE     5$0168
003674  052737  020000  001364                   BIS     #INHRPT,PCFLAG
003702  000427                                  BR      5$0178
(3) 003704                              5$0168:
                                        15841   ;
                                        15842   ; CHECK FOR HALT ON ERROR COMMAND
                                        15843   ;
003704  123727  003776  000010                   CMPB    RDSAV,#CTLH
(9) 003712  001004                              BNE     5$0208
003714  052737  100000  001364                   BIS     #HALTOE,PCFLAG
003722  000417                                  BR      5$0218
(3) 003724                              5$0208:
                                        15856   ;
                                        15857   ; CHECK FOR LOOP ON ERROR COMMAND
                                        15858   ;
003724  123727  003776  000014                   CMPB    RDSAV,#CTLL
(9) 003732  001004                              BNE     5$0228
003734  052737  040000  001364                   BIS     #LOOPOE,PCFLAG
003742  000407                                  BR      5$0238
(3) 003744                              5$0228:
                                        15871   ;
                                        15872   ; CHECK FOR CLEAR COMMAND
                                        15873   ;
003744  123727  003776  000013                   CMPB    RDSAV,#CTLK
(9) 003752  001003                              BNE     5$0248
003754  042737  140000  001364                   BIC     #HALTOE!#LOOPOE,PCFLAG
003762                                  5$0248:
003762                                  5$0238:
003762                                  5$0218:
003762                                  5$0178:
003762                                  5$0158:
003762                                  5$0138:
003762                                  5$0118:
003762                                  5$0078:
003762                                  5$0058:
003762                                  5$0038:
                                        15935   ;
                                        15940   ; TURN CONSOLE BACK ON & EXIT.
                                        15945   ;
```

```
000762  012737  000101  177560                  MOV     #101,@#TKS
003770  012600                                  MOV     (SP)+,R0
003772  000002                          15960   RTI
003774                                  50000$:
003774                                  50001$:
003774  000207                                  RTS     PC
                                        16580
003776  000000                          16600   RDSAV:  .WORD   0
```



```
                                        16640   ;***************
                                        16660   ; CSI   COMMAND STRING INTERPRETER
                                        16680   ;***************
                                        16700
004000                                  CSI:
                                        16740   ;
                                        16760   ; IF CMD CHAR IS AN ESCAPE  ECHO A "$"
                                        16780   ; AND SET MODE BACK TO 0.
                                        16800   ;
004000  123727  003776  000033                  CMPB    RDSAV,#ESC
004006  001030                                  BNE     50002$
004010  112777  000044  012146                  MOVB    #'$,@PTR
004016  004737  005044                          JSR     PC,ECHO
004022  012700  017051                          MOV     #L3,R0
004026  104000                          16900   TYPE
004030  042737  000001  005002                  BIC     #FLAG1,TEMPF
                                        17100   ;
                                        17120   ; MOVE NEW CONTROL FLAGS TO THE PCFLAG WORD,
                                        17140   ; RESET THE BUFFER POINTER,
                                        17160   ;
004036  013737  005002  001364                  MOV     TEMPF,PCFLAG
004044  013737  005004  001366                  MOV     TEMPI,TESTNO
004052  012737  016114  016164                  MOV     #INBUF,PTR
                                        17235   ; CLEAR ATTENTION FLAGS FROM TEMPF
004060  042737  017603  005002                  BIC     #17603,TEMPF
                                        17260
004066  000457                                  BR      50003$
004070                                  50002$:
                                        17300   ;
                                        17320   ; IF CMD CHAR WAS A DELETE   RESET THE BUFFER
                                        17340   ; POINTER AND ECHO A CR/LF.
                                        17360   ;
004070  123737  003776  016166                  CMPB    RDSAV,DEL
004076  001007                                  BNE     50004$
004100  012737  016114  016164                  MOV     #INBUF,PTR
004106  012700  017730                          MOV     #L1,R0
004112  104000                          17440       TYPE
004114  000444                                  BR      50003$
004116                                  50004$:
                                        17480   ;
                                        17500   ; IF CMD CHAR WAS A RETURN ECHO A CR/LF
                                        17520   ; AND CALL THE DECODER.
                                        17540   ;
004116  123727  003776  000015                  CMPB    RDSAV,#CR
004124  001021                                  BNE     50006$
004126  012700  017730                          MOV     #L1,R0
004132  104000                          17600   TYPE
004134  004737  004230                          JSR     PC,DECODE
004140  123727  016114  000121                  CMPB    INBUF,#'Q
004146  001007                                  BNE     50007$
004150  005037  001366                          CLR     TESTNO
004154  005037  005004                          CLR     TEMPT
004160  012737  000001  016152                  MOV     #1,NEXT
004166                                  50007$:
004166  000417                                  BR      50010$
004170                                  50006$:
```

```
                                        17800   ;
                                        17820   ; IF CMD CHAR WAS A '?' RETYPE THE COMMAND
                                        17840   ; SUMMARY & GO TO READY CONDITION.
                                        17860   ;
004170  123727  003776  000077                  CMPB    RDSAV,#'?
(9)  004176  001007                            BNE     50011$
004200  012700  017103                          MOV     #COMSUM,R0
004204  104000                          17920   TYPE
004206  012700  020123                          MOV     #RDY,R0
004212  104000                          17960   TYPE
004214  000404                                 BR      50012$
(3)  004216                             50011$:
                                        18000   ;
                                        18020   ; ECHO THE INPUT CHARACTER.
                                        18040   ;
004216  004737  005044                          JSR     PC,ECHO
004222  005237  016164                          INC     PTR
004226                                  50012$:
004226                                  50010$:
004226                                  50005$:
004226                                  50003$:
004226                                  50000$:
004226                                  50001$:
(2)  004226  000207                            RTS     PC
                                        18220
                                        18240
```



```
                                        18280   ;************
                                        18300   ;DECODE THIS SECTION DECODES THE COMMAND STRING FROM THE
                                        18320   ;       CONSOLE, AND SETS THE APPROPRIATE CONTROL FALGS.
                                        18340   ;************
                                        18360
004230                                  DECODE:
                                        18400
004230  010046                                  MOV     R0,-(SP)
004232  010146                                  MOV     R1,-(SP)
004234  010246                                  MOV     R2,-(SP)
004236  012702  001364                          MOV     #CTLBLK,R2
004242  012700  004656                          MOV     #DECTBL,R0
004246  012701  016114                          MOV     #INBUF,R1
004252                                  50002$:
                                        18560   ;
                                        18580   ; COMPARE CHAR IN TO FIRST BYTE OF TABLE
                                        18600   ;
004252  121110                                  CMPB    (R1),(R0)
(9)  004254  001145                            BNE     50004$
                                        18640   ;
                                        18660   ; IF SAME GET FLAGS FROM THE TABLE TO TEMPF
                                        18680   ;
004256  116037  000001  004774                  MOVB    1(R0),DECSAV
004264  056037  000002  005002                  BIS     2(R0),TEMPF
004272  046037  000004  005002                  BIC     4(R0),TEMPF
004300  005037  004776                          CLR DATA
004304  005037  005000                          CLR DATA2
                                        18800   ;
                                        18820   ; SEE IF THIS COMMAND REQUIRES ADDITIONAL DATA
                                        18840   ;
004310  032737  000340  004774                  BIT     #NREQ,DECSAV
(9)  004316  001520                            BEQ     50005$
004320  126127  000001  000015                  CMPB    1(R1),#CR
(9)  004326  001006                            BNE     50006$
                                        18900   ;
                                        18920   ; DATA REQUIRED BUT NOT PRESENT...ERROR
                                        18940   ;
004330  004737  005062                          JSR     PC,CMDERR
                                        18980   ;
                                        19000   ; IF A OR D COMMAND USE DATA FOR LINE NO.
                                        19020   ;
004334  012737  016114  016164                  MOV     #INBUF,PTR
004342  000505                                 BR      50007$
(3)  004344                             50006$:
                                        19080   ;
                                        19100   ; CONVERT THE CHARS TO OCTAL...DATA
                                        19120   ;
004344  012746  004776                          MOV     #DATA,-(SP)
004350  116137  000001  004776                  MOVB    1(R1),DATA
004356  126127  000002  000015                  CMPB    2(R1),#CR
(9)  004364  001003                            BNE     50010$
004366  012746  000001                          MOV     #1,-(SP)
004372  000417                                 BR      50011$
(3)  004374                             50010$:
004374  116137  000002  004777                  MOVB    2(R1),DATA+1
004402  126127  000003  000015                  CMPB    3(R1),#CR
```

```
  (9)  004410  001003                              BNE     5$0012$
1049   004412  012746  000002                      MOV     #2,-(SP)
1050   004416  000405                              BR      5$0013$
 (3)   004420                                5$0012$:
1051   004420  116137  000003  005000              MOVB    3(R1),DATA2
1052   004426  012746  000003                      MOV     #3,-(SP)
1053   004432                                5$0013$:
1054   004432                                5$0011$:
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     5$0014$
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     5$0015$
 (6)   004456  023727  004776  000005              CMP     DATA,#5
 (9)   004464  003403                              BLE     5$0016$
 (6)   004466                                5$0015$:
1066   004466  004737  005100                      JSR     PC,SELERR
1067                                  19640  ;
1068                                  19660  ; OUT OF RANGE   ERROR.
1069                                  19680  ;
1070   004472  000403                              BR      5$0017$
 (3)   004474                                5$0016$:
1071   004474  013737  004776  005004              MOV     DATA,TEMPT
1072   004502                                5$0017$:
1073   004502  052737  100000  005000              BIS     #MERR,DATA2
1074   004510                                5$0014$:
1075                                  19800  ;
1076                                  19820  ; IF W COMMAND USE DATA AS   WIDTH
1077                                  19840  ;
1078   004510  121027  000127                      CMPB    (R0),#'W
 (9)   004514  001005                              BNE     5$0020$
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                                5$0020$:
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     5$0021$
 (6)   004536  121027  000104                      CMPB    (R0),#'D
 (9)   004542  001005                              BNE     5$0022$
 (6)   004544                                5$0021$:
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                                5$0022$:
1095   004556                                5$0007$:
1096   004556  000403                              BR      5$0023$
 (3)   004560                                5$0005$:
1097   004560  052737  100000  005000              BIS     #MERR,DATA2
1098   004566                                5$0023$:
1099   004566  000415                              BR      5$0024$
 (3)   004570                                5$0004$:
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     5$0025$
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                                5$0025$:
1110   004622                                5$0024$:
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     5$0003$
1116   004632  000607                              BR      5$0002$
 (3)   004634                                5$0003$:
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                                5$0002$:
 (3)   004654                                5$0001$:
 (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:
```

```
1141  004724  010000  000000          21120          ,WORD   PRINTI,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 #
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     500028
 (6)  005016  023727  004776  000204          CMP     DATA,#132.
 (9)  005024  003403                          BLE     500038
 (6)  005026                          500028:
1171  005026  004737  005100                JSR     PC,SELERR
1172  005032  000403                        BR      500048
 (3)  005034                          500038:
1173  005034  013737  004776  016146        MOV     DATA,WIDTH
1174  005042                          500048:
1175  005042                          500058:
 (3)  005042                          500018:
 (2)  005042  000207                        RTS     PC
1176                                  21760
1177                                  21780
```



```
1179                                  21820  ;************
1180                                  21840  ;ECHO   CONSOLE KEYBOARD ECHO ROUTINE; PIR HAS ADDR OF CHAR
1181                                  21860  ;************
1182                                  21880
1183  005044  105737  177564          21900  ECHO:   TSTB    @#TPS
1184  005050  100375                  21920          BPL     ECHO
1185  005052  117737  011106  177566  21940          MOVB    @PIR,@#TPB
1186  005060  000207                  21960          RTS     PC
1187                                  21980
```

```
                                        22020           .SBTTL  ERROR & REPORT ROUTINES
                                        22040   ;************
                                        22060   ;CMDERR   ROUTINE TO HANDLE INVALID COMMANDS
                                        22080   ;************
                                        22100
005062                                  CMDERR:
005062  012700  020017                          MOV     #ER1,R0
005066  104000                          22160       TYPE
005070  012700  020123                          MOV     #RDY,R0
005074  104000                          22200       TYPE
005076                                  50000$:
005076                                  50001$:
005076  000207                                  RTS     PC
                                        22240   ;************
                                        22260   ;SELERR  ROUTINE TO HANDLE SELECTION ERRORS
                                        22280   ;************
                                        22300
005100                                  SELERR:
005100  012700  020032                          MOV     #ER2,R0
005104  104000                          22360       TYPE
005106  012700  020123                          MOV     #RDY,R0
005112  104000                          22400       TYPE
005114  012737  016114  016164                    MOV     #INBUF,PTR
005122                                  50000$:
005122                                  50001$:
005122  000207                                  RTS     PC
                                        22460
```



```
                                        22500   ;************
                                        22520   ;ERRORS ERROR LOGGER AND TYPEOUT ROUTINE
                                        22540   ;
                                        22560   ;************
                                        22580
005124                                  ERROR:
005124  005037  005434                          CLR     ERRSAV
005130  032737  020000  001364                    BIT     #INHRPT,PCFLAG
005136  001044                                    BNE     5000$
                                        22642   ;
                                        22644   ;CONVERT TEST NO. FOR OUTPUT
                                        22646   ;
005140  013746  016154                          MOV     INTEST,-(SP)
005144  012746  000002                          MOV     #2,-(SP)
005150  012746  020001                          MOV     #ER0+16.,-(SP)
005154  004737  007566                          JSR     PC,O2ASC
                                        22722   ;
                                        22724   ;CONVERT ERROR NO. FOR OUTPUT
                                        22726   ;
005160  113737  002032  005434                  MOVB    CFLAGS,ERRSAV
005166  013746  005434                          MOV     ERRSAV,-(SP)
005172  012746  000003                          MOV     #3,-(SP)
005176  012746  017770                          MOV     #ER0+7,-(SP)
005202  004737  007566                          JSR     PC,O2ASC
                                        22822   ;
                                        22824   ;CONVERT LINE NO. FOR OUTPUT
                                        22826   ;
005206  013746  016160                          MOV     ONLIN,-(SP)
005212  012746  000002                          MOV     #2,-(SP)
005216  012746  020011                          MOV     #ER0+24.,-(SP)
005222  004737  007566                          JSR     PC,O2ASC
005226  012700  017761                          MOV     #ER0,R0
005232  104000                          22940       TYPE
                                        22960   ;
                                        22980   ; CLEAR THE ERROR FLAG
                                        23000   ;
005234  042737  100377  002032                    BIC     #MERRN,CFLAGS
                                        23040   ;
                                        23060   ; GET THE POINTER SUPPLIED BY THE PROGRAM
                                        23080   ; AND PRINT THE ERROR DESCRIPTION MSG.
                                        23100   ;
005242  013700  002034                          MOV     TSCPTR,R0
005246  104000                          23140       TYPE
005250                                  5000Z$:
005250  005037  005434                          CLR     ERRSAV
                                        23200   ;
                                        23220   ; UPDATE THE ERROR COUNT FOR THE FAILING LINE
                                        23240   ;
005254  013737  016160  005434                    MOV     ONLIN,ERRSAV
005262  006337  005434                          ASL     ERRSAV
005266  006337  005434                          ASL     ERRSAV
005272  006337  005434                          ASL     ERRSAV
005276  062737  016170  005434                    ADD     #LIN00,ERRSAV
005304  005277  000124                          INC     @ERRSAV
                                        23340   ;
                                        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     #SEL1#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,O2ASC
 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+10.,-(SP)
 1324  005462  004737  007566                   JSR     PC,O2ASC
 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,O2ASC
 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
```

```
                                        00050   ;***************
                                        00070   ; SETIO  ROUTINE TO SET I/O MODE
                                        00090   ;***************
                                        00110
                                        00130
005600                                  SETIO:
005600                                  5000$$:
005600  032737  000001  001364                  BIT     #FLAG1,PCFLAG
(9)     005606  001003                         BNE     5000$$
005610  052737  000003  001364                  BIS     #FLAG1!#FLAG2,PCFLAG
005616                                  5000$$:
005616  032737  000001  001364                  BIT     #FLAG1,PCFLAG
(7)     005624  001765                         BEQ     5000$$
(4)     005626  032737  000002  001364          BIT     #FLAG2,PCFLAG
(7)     005634  001761                         BEQ     5000$$
005636                                  5000$$:
(3)     005636                          5000$$:
(2)     005636  000207                         RTS     PC
                                        00320
                                        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  000120  000004  01150           MOV     #48,MACHER      ;SET UP NXM TRAP
005654  012701  016170          01200           MOV     #LIN00,R1
005660  012137  016126          01220   1$:     MOV     (R1)+,DLFLAG
005664  012137  016130          01240           MOV     (R1)+,DLADR
005670  012137  016132          01260           MOV     (R1)+,DLVEC
005674  012137  016134          01280           MOV     (R1)+,DLOTH
005700  013737  016130  016140  01400           MOV     DLADR,DVCTXS
005706  062737  000004  016140  01430           ADD     #4,DVCTXS
005714  013737  016140  016142  01440           MOV     DVCTXS,DVCTXB
005722  062737  000002  016142  01450           ADD     #2,DVCTXB
005730  113737  016135  016160  01500           MOVB    DLOTH+1,ONLIN
005736  005777  010166          01750           TST     @DLADR                  ;TRY TO ACCESS DVC.
005742  052737  100000  016126  01850           BIS     #DLP,DLFLAG             ;SET DVC PRESENT FLAG
005750  012737  000300  007564  01900           MOV     #300,DELAYT             ; SET UP FOR DELAY
005756  112777  000076  010156  01925           MOVB    #'>,@DVCTXB             ;TXMIT A ">" CHARACTER
005764  052777  000100  016146  01950           BIS     #100,@DVCTXS            ;SET DVC TX INTR ENABLE
005772  104006                  02050           DELAYR                          ;WAIT FOR INTERRUPT
005774  005737  016132          02100           TST     DLVEC                   ;IF ZERO NO INTERRUPT OCCURED
006000  001433                  02125           BEQ     2$                      ;NO INTERRUPT = BRANCH
                                        02150                                   ;OTHERWISE DLVEC=ADDR THAT
                                        02200                                   ;DVC INTERRUPTED TO VIA INTMAP'
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                          MOV     #ER7,R0                 ;SU ERROR MSG
006114  104000                                  TYPE                            ;TYPE MSG ON CONSOLE
006116  000734                                  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  005046                  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 MOSI ROUTINES ACCESSED
1455                                  05600  ;BY TRAPS THROUGH LOCATION 30.
1456                                  05650  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1457                                  05700
1458  006162                          05750  EMTROS:
 (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
```

```
                                        ;SBTTL  I/O DRIVERS
                                        ;*************
                                        ;ETYPE CONSOLE OUTPUT ROUTINE, ENTER WITH ADDRESS OF
                                        ;       DATA IN R0, NULL TERMINATES OUTPUT.
                                        ;*************

006240  105710                  ETYPE:  TSTB    (R0)            ;CHECK FOR NULL
006242  001406                          BEQ     3$              ;EXIT ROUTINE
006244  105737  177564          1$:     TSTB    @#TPS           ;CHECK FOR TRANSMIT READY
006250  100375                          BPL     1$              ;WAIT
006252  112037  177566                  MOVB    (R0)+,@#TPB     ;TRANSMIT CHARACTER
006256  000770                          BR      ETYPE           ;GET NEXT CHAR
006260  105737  177564          3$:     TSTB    @#TPS           ;WAIT TILL ALL DONE
006264  100375                          BPL     3$
006266  000002                          RTI                     ;  EXIT...

                                        ;*************
                                        ;MECHO  TERMINAL OUTPUT ROUTINE - SINGLE CHAR
                                        ;       CHAR IN R2
                                        ;       INTERRUPT DRIVEN ALL LINES
                                        ;*************
006270  010237  006646          MECHO:  MOV     R2,MSAVE
006274  010446                          MOV     R4,-(SP)
006276  012702  020434                  MOV     #STACK2,R2      ;INITIALIZE STACK2
006302  005037  020670                  CLR     ENDS            ;ZERO COUNT
006306  012704  020574                  MOV     #STACK3,R4              ;INITIALIZE STACK3
006312  013722  016132          1$:     MOV     DLVEC,(R2)+     ;GET THE BASE VECTOR ADDR
006316  013737  016144  016150          MOV     TXVEC,SAVE              ;SAVE THE VECTOR
006324  062737  000002  016150          ADD     #2,SAVE         ;
006332  013777  016150  007604          MOV     SAVE,@TXVEC     ;PUT ADDR+2 INTO ADDR
006340  012777  000004  007602          MOV     #IOT,@SAVE      ;PUT TRAP INTO ADDR+2
006346  012737  000310  007564          MOV     #200.,DELAYT            ;WAIT FOR 200 MS.
006354  113777  006646  007560          MOVB    MSAVE,@DVCTXB           ;PUT CHAR IN BUF REG
006362  012777  000100  007550          MOV     #100,@DVCTXS    ;ENABLE IX INTERRUPT
006370  005237  020670                  INC     ENDS            ;ADD 1 TO INTR PENDING COUNT
006374  004737  002110                  JSR     PC,LINMON
006400  032737  000400  001364          BIT     #LDONE,PCFLAG           ;END OF DVC LIST ?
006406  001741                          BEQ     1$              ;NO DO THIS LINE
006410  042737  000400  001364          BIC     #LDONE,PCFLAG
006416  010237  006650                  MOV     R2,MSAVE+2              ;SAVE STACK2 POINTER
006422  104006                          DELAYR
006424  005737  020670                  TST     ENDS            ;ALL PENDING INTERRUPTS SHOULD
006430  001004                          BNE     3$              ;BE COUNTED DOWN BY TXTRAP.
006432                          1288:
 (4)    006432  012604                  MOV     (SP)+,R4
006434  013702  006646                  MOV     MSAVE,R2
006440  000207                  2$:     RTS     PC                      ;EXIT...
006442  010437  006652          3$:     MOV     R4,MSAVE+4              ;SAVE STACK 3 LIMIT
006446  012704  020574                  MOV     #STACK3,R4              ;RESET STACK3 POINTER
006452  012702  020434                  MOV     #STACK2,R2              ;RESET STACK2 POINTER
006456  021224                  4$:     CMP     (R2),(R4)+      ;VECTOR MATCH ?
006460  001404                          BEQ     5$              ;YES - BRANCH
006462  020437  006652                  CMP     R4,MSAVE+4              ;STACK END ?
006466  001403                          BEQ     6$              ;YES - BRANCH
006470  000772                          BR      4$              ;COMPARE NEXT VECT.
```



```
006472  005012                  5$:     CLR     (R2)                    ;ERASE VECT OUT
006474  005044                          CLR     -(R4)                   ;ERASE VECT IN
006476  062702  000002          6$:     ADD     #2,R2                   ;MOVE STACK POINTER
006502  020237  006650                  CMP     R2,MSAVE+2              ;END OF OUT STACK ?
006506  001403                          BEQ     7$                      ;YES - GO GET ODD VECTOR
006510  012704  020574                  MOV     #STACK3,R4              ;RESET STACK3 POINTER
006514  000760                          BR      4$              ;KEEP SORTING
006516  012702  020434          7$:     MOV     #STACK2,R2      ;RESET STACK2 POINTER
006522  005712                  8$:     TST     (R2)            ;CHECK FOR NON ZERO
006524  001003                          BNE     9$
006526  062702  000002                  ADD     #2,R2
006532  000773                          BR      8$
006534  012737  016174  006652  9$:     MOV     #LIN00+4,MSAVE+4        ;GET VECT FROM TABLE
006542  027712  000104          10$:    CMP     @MSAVE+4,(R2)   ;MATCH ?
006546  001404                          BEQ     11$             ;YES THIS LINE IS N,G.
006550  062737  000010  006652          ADD     #10,MSAVE+4             ;MOVE POINTER TO NEXT
006556  000771                          BR      10$
006560  062737  000002  006652  11$:    ADD     #2,MSAVE+4      ;GET LINE NUMBER
006566  017737  000060  016160          MOV     @MSAVE+4,ONLIN
006574  105037  016160                  CLRB    ONLIN
006600  000337  016160                  SWAB    ONLIN           ;ERASE JUNK BITS
006604  004737  002432                  JSR     PC,MTW                  ;MOVE TABLE TO WORK AREAS
006610  012737  020055  002034          MOV     #ER7,TSCPTR             ;POINT TO ERROR MESSAGE
006616  112737  000377  002032          MOVB    #377,CFLAGS             ;ERROR NO.
006624  052737  100000  002032          BIS     #MERR,CFLAGS            ;SET ERROR FLAG
                                        ;*******************
                                        ;    ERROR 377      *
                                        ;*******************
006632  004737  005124                  JSR     PC,ERROR
006636  042737  100377  002032          BIC     #MERRN,CFLAGS   ;ERASE ERROR DATA
006644  000672                          BR      12$             ;CLEAN HOUSE & EXIT
006646  000000  000000  000000  MSAVE:  .WORD   0,0,0

                                        ;***************
                                        ; SECHO    SINGLE LINE ECHO ROUTINE
                                        ;          ENTER WITH CHAR IN R2
                                        ;          TRANSMITTS TO DVC VIA I/O DRIVER WORK AREA
                                        ;***************

006654                          SECHO:
006654  013737  016144  016150          MOV     TXVEC,SAVE
006662  062737  000002  016150          ADD     #2,SAVE
006670  012777  007510  007246          MOV     #STRAP,@TXVEC
006676  012777  000200  007244          MOV     #PRI4,@SAVE
006704  012737  000144  007564          MOV     #100.,DELAYT
006712  110277  007224                  MOVB    R2,@DVCTXB
006716  012777  000100  007214          MOV     #100,@DVCTXS
006724  005237  020670                  INC     ENDS
006730  104006                  10877:  DELAYR
006732  005737  020670                  TST     ENDS
 (9)    006736  001413                  BEQ     500028
006740  012737  020055  002034          MOV     #ER7,TSCPTR
006746  052737  100376  002032          BIS     #3761#MERR,CFLAGS
```

```
 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 MOSI ROUTINES ACCESSED
 1455                                  05600  ;BY TRAPS THROUGH LOCATION 30.
 1456                                  05650  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1457                                  05700
 1458  006162                          05750  EMTROS:
  (4)  006162  011637  016112          05800          MOV     (SP),TEMP+12
 1459  006166  162737  000002  016112  05850          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
```

```
                                        ;SBTTL  I/O DRIVERS
                                ;*************
                                ;ETYPE CONSOLE OUTPUT ROUTINE, ENTER WITH ADDRESS OF
                                ;       DATA IN R0, NULL TERMINATES OUTPUT.
                                ;*************

006240  105710          ETYPE:  TSTB    (R0)            ;CHECK FOR NULL
006242  001406                  BEQ     3$              ;EXIT ROUTINE
006244  105737  177564  1$:     TSTB    @#TPS           ;CHECK FOR TRANSMIT READY
006250  100375                  BPL     1$              ;WAIT
006252  112037  177566          MOVB    (R0)+,@#TPB     ;TRANSMIT CHARACTER
006256  000770                  BR      ETYPE           ;GET NEXT CHAR
006260  105737  177564  3$:     TSTB    @#TPS           ;WAIT TILL ALL DONE
006264  100375                  BPL     3$
006266  000002                  RTI                     ;  EXIT...

                                ;*************
                                ;MECHO  TERMINAL OUTPUT ROUTINE - SINGLE CHAR
                                ;       CHAR IN R2
                                ;       INTERRUPT DRIVEN ALL LINES
                                ;*************
006270  010237  006646  MECHO:   MOV     R2,MSAVE
006274  010446                  MOV     R4,-(SP)
006276  012702  020434          MOV     #STACK2,R2      ;INITIALIZE STACK2
006302  005037  020670          CLR     ENDS            ;ZERO COUNT
006306  012704  020574          MOV     #STACK3,R4              ;INITIALIZE STACK3
006312  013722  016132  1$:     MOV     DLVEC,(R2)+     ;GET THE BASE VECTOR ADDR
006316  013737  016144  016150  MOV     TXVEC,SAVE              ;SAVE THE VECTOR
006324  062737  000002  016150  ADD     #2,SAVE         ;
006332  013777  016150  007604  MOV     SAVE,@TXVEC     ;PUT ADDR+2 INTO ADDR
006340  012777  000004  007602  MOV     #IOT,@SAVE      ;PUT TRAP INTO ADDR+2
006346  012737  000310  007564  MOV     #200.,DELAYT            ;WAIT FOR 200 MS.
006354  113777  006646  007560  MOVB    MSAVE,@DVCTXB           ;PUT CHAR IN BUF REG
006362  012777  000100  007550  MOV     #100,@DVCTXS    ;ENABLE TX INTERRUPT
006370  005237  020670          INC     ENDS            ;ADD 1 TO INTR PENDING COUNT
006374  004737  002110          JSR     PC,LINMON
006400  032737  000400  001364  BIT     #LDONE,PCFLAG           ;END OF DVC LIST ?
006406  001741                  BEQ     1$              ;NO DO THIS LINE
006410  042737  000400  001364  BIC     #LDONE,PCFLAG
006416  010237  006650          MOV     R2,MSAVE+2              ;SAVE STACK2 POINTER
006422  104006                  DELAYR
006424  005737  020670          TST     ENDS            ;ALL PENDING INTERRUPTS SHOULD
006430  001004                  BNE     3$              ;BE COUNTED DOWN BY TXTRAP,
006432                  12$:
 (4)    006432  012604          MOV     (SP)+,R4
006434  013702  006646          MOV     MSAVE,R2
006440  000207          2$:     RTS     PC                      ;EXIT...
006442  010437  006652  3$:     MOV     R4,MSAVE+4              ;SAVE STACK 3 LIMIT
006446  012704  020574          MOV     #STACK3,R4              ;RESET STACK3 POINTER
006452  012702  020434          MOV     #STACK2,R2              ;RESET STACK2 POINTER
006456  021224          4$:     CMP     (R2),(R4)+              ;VECTOR MATCH ?
006460  001404                  BEQ     5$                      ;YES - BRANCH
006462  020437  006652          CMP     R4,MSAVE+4                      ;STACK END ?
006466  001403                  BEQ     6$                      ;YES - BRANCH
006470  000772                  BR      4$                      ;COMPARE NEXT VECT.
```



```
006472  005012          5$:     CLR     (R2)                    ;ERASE VECT OUT
006474  005044                  CLR     -(R4)                   ;ERASE VECT IN
006476  062702  000002  6$:     ADD     #2,R2                   ;MOVE STACK POINTER
006502  020237  006650          CMP     R2,MSAVE+2              ;END OF OUT STACK ?
006506  001403                  BEQ     7$                      ;YES - GO GET ODD VECTOR
006510  012704  020574          MOV     #STACK3,R4              ;RESET STACK3 POINTER
006514  000760                  BR      4$              ;KEEP SORTING
006516  012702  020434  7$:     MOV     #STACK2,R2      ;RESET STACK2 POINTER
006522  005712          8$:     TST     (R2)            ;CHECK FOR NON ZERO
006524  001003                  BNE     9$
006526  062702  000002          ADD     #2,R2
006532  000773                  BR      8$
006534  012737  016174  006652  9$:     MOV     #LIN00+4,MSAVE+4        ;GET VECT FROM TABLE
006542  027712  000104  10$:     CMP     @MSAVE+4,(R2)   ;MATCH ?
006546  001404                  BEQ     11$             ;YES THIS LINE IS N.G.
006550  062737  000010  006652  ADD     #10,MSAVE+4             ;MOVE POINTER TO NEXT
006556  000771                  BR      10$
006560  062737  000002  006652  11$:     ADD     #2,MSAVE+4      ;GET LINE NUMBER
006566  017737  000060  016160  MOV     @MSAVE+4,ONLIN
006574  105037  016160          CLRB    ONLIN
006600  000337  016160          SWAB    ONLIN           ;ERASE JUNK BITS
006604  004737  002432          JSR     PC,MTM                  ;MOVE TABLE TO WORK AREAS
006610  012737  020055  002034  MOV     #ER7,TSCPTR             ;POINT TO ERROR MESSAGE
006616  112737  000377  002032  MOVB    #377,CFLAGS             ;ERROR NO.
006624  052737  100000  002032  BIS     #MERR,CFLAGS            ;SET ERROR FLAG
                                ;*******************
                                ;    ERROR 377      *
                                ;*******************
006632  004737  005124          JSR     PC,ERROR
006636  042737  100377  002032  BIC     #MERRN,CFLAGS   ;ERASE ERROR DATA
006644  000672                  BR      12$             ;CLEAN HOUSE & EXIT
006646  000000  000000  000000  MSAVE:  .WORD   0,0,0

                                ;***************
                                ; SECHO    SINGLE LINE ECHO ROUTINE
                                ;          ENTER WITH CHAR IN R2
                                ;          TRANSMITTS TO DVC VIA I/O DRIVER WORK AREA
                                ;***************

006654                  SECHO:
006654  013737  016144  016150          MOV     TXVEC,SAVE
006662  062737  000002  016150          ADD     #2,SAVE
006670  012777  007510  007246          MOV     #STRAP,@TXVEC
006676  012777  000200  007244          MOV     #PRI4,@SAVE
006704  012737  000144  007564          MOV     #100.,DELAYT
006712  110277  007224                  MOVB    R2,@DVCTXB
006716  012777  000100  007214          MOV     #100,@DVCTXS
006724  005237  020670                  INC     ENDS
006730  104006                  10877:  DELAYR
006732  005737  020670                  TST     ENDS
 (9)    006736  001413                  BEQ     5000$
006740  012737  020055  002034          MOV     #ER7,TSCPTR
006746  052737  100376  002032          BIS     #^C1#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$:
 (2)  007006  000207                      RTS     PC
1589                                10900
1590                                10950
1591                                11000  ;************
1592                                11050  ;MTYPE  TERMINAL OUTPUT ROUTINE - LINE TABLE VERSION
1593                                11100  ;       ENTER WITH ADDR OF MSG IN R0
1594                                11150
1595                                11200  ;************
1596  007010  112002                11250  MTYPE:  MOVB    (R0)+,R2        ;GET CHAR TO PRINT
1597  007012  001403                11300          BEQ     1$              ;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$:     RTS     PC              ;EXIT
1638                                11526
1639                                11528
1640                                11530  ;***************
1641                                11532  ; READS         THIS ROUTINE SETS UP DVC RECVR VECTOR AREAS
1642                                11533  ;               IF THE CURRENT LINE IS NOT LINE=00
1643                                11534  ;***************
1644                                11536
1645                                11538
1646  007124                              READS:
1647  007124  105737  016160                      TSTB    ONLIN
 (9)  007130  001003                              BNE     50002$
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
```

```
                                        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   ;************
1665  007162  005077  006752           11875   INTRAP: CLR     @DVCTXS         ;DISABLE THE INTERRUPTS,
1666  007166  012637  016132                           MOV     (SP)+,DLVEC
1667  007172  062706  000002           11900           ADD     #2,SP                   ;SP+2 ADJUST STACK POINTER
1668  007176  162737  000010  016132   11950           SUB     #10,DLVEC       ;ADJUST TO RCVR INTR ADDR
1669  007204  005037  007564           12000           CLR     DELAYT          ;RESET TIMER
1670  007210  000002                   12050           RTI                     ;GO BACK TO BUILD ROUTINE
1671                                   12100
1672                                   12150   ;************
1673                                   12200   ;PRTLTB THIS ROUTINE TYPES THE LINE TABLE ON THE CONSOLE
1674                                   12250   ;       DEVICE, DROPPED FLAGS ARE DECODED AND THE
1675                                   12300   ;       APPROPRIATE INFORMATION IS PRINTED FOR EACH LINE,
1676                                   12350   ;************
1677                                   12400
1678  007212                           12450   PRTLTB:
 (2)  007212  013746  016100                           MOV     TEMP,-(SP)
1679  007216  013746  016102                           MOV     TEMP+2,-(SP)
1680  007222  012702  016170           12650           MOV     #LIN00,R2       ;POINTER TO ;START OF TABLE
1681  007226  012700  017676           12700           MOV     #HEADR2,R0
1682  007232  104000                   12750           TYPE                    ;PRINT HEADER
1683  007234  005712                   12800   1$:     TST     (R2)            ;LINE PRESENT?
1684  007236  100406                   12850           BMI     2$              ;YES = BRANCH
1685  007240  062702  000010           12900           ADD     #10,R2          ;MOVE POINTER TO NEXT ENTRY
1686  007244  021227  177777           12950   6$:     CMP     (R2),#-1        ;END OF TABLE?
1687  007250  001452                   13000           BEQ     10$
1688  007252  000770                   13050           BR      1$              ;YES = BRANCH
1689  007254  012237  016100           13100   2$:     MOV     (R2)+,TEMP      ;SAVE FLAG WORD
1690  007260  012246                                   MOV     (R2)+,-(SP)
1691  007262  012746  000004                           MOV     #4,-(SP)
1692  007266  012746  017743                           MOV     #DLAD,-(SP)
1693  007272  004737  007566           13300           JSR     PC,O2ASC        ;CONVERT ADDRESS TO ASCII
1694  007276  012246                                   MOV     (R2)+,-(SP)
1695  007300  012746  000003           13400           MOV     #3,-(SP)
1696  007304  012746  017752                           MOV     #DLV,-(SP)
1697  007310  004737  007566           13500           JSR     PC,O2ASC        ;CONVERT LINE NO,
1698  007314  012237  016102           13550           MOV     (R2)+,TEMP+2
1699  007320  000337  016102           13600           SWAB    TEMP+2
1700  007324  013746  016102                           MOV     TEMP+2,-(SP)
1701  007330  012746  000002                           MOV     #2,-(SP)
1702  007334  012746  017733                           MOV     #LIN,-(SP)
1703  007340  004737  007566           13800           JSR     PC,O2ASC
1704  007344  012700  017733           13850           MOV     #LIN,R0         ;TYPE FORMATTED LINE
1705  007350  104000                   13900           TYPE
1706  007352  105737  016100           13950   3$:     TSTB    TEMP            ;SELECTED?
1707  007356  001403                   14000           BEQ     4$              ;NO = BRANCH
1708  007360  012700  020117           14050           MOV     #S1,R0          ;SEND STAR
1709  007364  000402                   14100           BR      5$
1710  007366  012700  020105           14150   4$:     MOV     #DR,R0          ;SEND DROPPED MSG
1711  007372  104000                   14200   5$:     TYPE
1712  007374  000723                   14250           BR      6$
1713  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
```

```
                                        ;************
                                        ;TXTRAP THIS ROUTINE CATCHES THE INTERRUPTS FROM
                                        ;       DL11'S  IN USE BY THE MECHO ROUTINE .
                                        ;************

007416  162716  000010          TXTRAP: SUB     #10,(SP)        ;SUB 10 FROM UPDATED PC ON STACK
007422  011614                          MOV     (SP),(R4)       ;PUT BASE VECTOR INTO STACK3
007424  012746  016174                  MOV     #LIN00+4,-(SP)  ;GET POINTER TO LINE TABLE VECTORS
007430  027614  000000          1$:     CMP     @0(SP),(R4)     ;COMPARE TABLE TO STACK3
007434  001403                          BEQ     2$              ;SAME = BRANCH
007436  062716  000010                  ADD     #10,(SP)        ;POINT TO NEXT TABLE ENTRY
007442  000772                          BR      1$              ;KEEP LOOKING FOR A MATCH
007444  162716  000002          2$:     SUB     #2,(SP)         ;ADDR OF DLADR NOW ON STACK
007450  017637  000000  016100          MOV     @0(SP),TEMP     ;GET DLADR FROM TABLE
007456  062737  000004  016100          ADD     #4,TEMP         ;POINT TO DVCTXS REGISTER
007464  005077  006410                  CLR     @TEMP           ;DISABLE INTERRUPTS
007470  062706  000006                  ADD     #6,SP           ;SET STACK POINTER TO DRIVER PC
007474  005337  020670                  DEC     ENDS            ;DECRIMENT INTERRUPT PENDING COUNT
007500  003002                          BGT     3$
007502  005037  007564                  CLR     DELAYT          ;ABORT TIMEOUT IF ALL ACCOUNTED FOR
007506  000002          3$:     RTI                             ;RETURN TO I/O DRIVER
                                        ;***************
                                        ; STRAP         SINGLE LINE TRANSMIT INTERRUPT CATCHER
                                        ;               USED IN CONJUNCTION WITH SECHO ROUTINE.
                                        ;***************

007510          STRAP:
007510  005077  006424                  CLR     @DVCTXS
007514  005337  020670                  DEC     ENDS
007520  005037  007564                  CLR     DELAYT
007524  000002                  RTI
007526          50000$:
007526          50001$:
007526  000207                  RTS     PC
                                        ;************
                                        ;DELAYM DELAYS FOR X MILLI SECONDS, X STORED IN = DELAYT
                                        ;
                                        ;************

007530  005737  007564          DELAYM: TST     DELAYT
007534  001411                          BEQ     3$
007536  010346                          MOV     R3,-(SP)
                                        ,MEXIT
007540  013703  007562          1$:     MOV     TIMER,R3        ;1MS LOOP TIME
007544  005303                  2$:     DEC     R3
007546  001376                          BNE     2$
```



```
007550  005337  007564          DELAY:  DEC     DELAYT
007554  003371                          BGT     1$
007556  012603                          MOV     (SP)+,R3
                                        ,MEXIT
007560  000002          3$:     RTI
                                        ;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
                                        ;       1237    11/45 = 11/70
                                        ;       755     11/45 MOS
007562  000554          TIMER:  ,WORD   554             ;SET FOR 11/35 = 11/40
007564  000000          DELAYT: ,WORD   0               ;DELAY TIME BUFFER
```

```
 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$:     MOV     2(SP),10(SP)    ;PUT RETURN PC AT TOP OF JUNK
 1817  007670  062706  000010          18100           ADD     #10,SP          ;POINT TO RETURN PC
 1818  007674  000207                  18150           RTS     PC              ;EXIT...
 1819                                   18200
 1820                                   18250   ;*************
 1821                                   18300   ;A2BIN   CONVERTS INPUT ASCII TO BINARY NUMBER
 1822                                   18350   ;        ENTER WITH ADDR OF ASCII STRING ON STACK
 1823                                   18400   ;        FOLLOWED BY # DIGITS TO CONVERT
 1824                                   18450   ;        FOLLOWED BY ADDR OF WORD FOR ANSWER.
 1825                                   18500   ;*************
 1829                                   18700
 1830  007676                          18750   A2BIN:
 1831  007676  010046                  18800           MOV     R0,-(SP)
 1832  007700  005037  010004          18850           CLR     A2SAV
 1833  007704  016600  000010          18900           MOV     10(SP),R0
 1834  007710                          18950   50002$:
 1835  007710  142710  000370          19000           BICB    #370,(R0)
 1836  007714  005366  000006          19050           DEC     6(SP)
 1837  007720  152037  010004          19100           BISB    (R0)+,A2SAV
 1838  007724  005766  000006          19150           TST     6(SP)
  (5)  007730  001407                  19200           BEQ     50003$
 1839  007732  006337  010004          19250           ASL     A2SAV
  (7)  007736  006337  010004          19300           ASL     A2SAV
  (7)  007742  006337  010004          19350           ASL     A2SAV
 1840  007746  000760                  19400           BR      50002$
  (3)  007750                          19450   50003$:
 1841  007750  016600  000004          19500           MOV     4(SP),R0
 1842  007754  013710  010004          19550           MOV     A2SAV,(R0)
 1843  007760  011637  010004          19600           MOV     (SP),A2SAV
 1844  007764  016600  000002          19650           MOV     2(SP),R0
 1845  007770  062706  000010          19700           ADD     #10,SP
 1846  007774  010016                  19750           MOV     R0,(SP)
 1847  007776  013700  010004          19800           MOV     A2SAV,R0
```



```
 1848  010002                          19850   50000$:
  (3)  010002                          19900   50001$:
  (2)  010002  000207                  19950           RTS     PC
 1849                                   20000
 1850  010004  000000                  20050   A2SAV:  .WORD   0       ;STORAGE AREA
 1851                                   20100
 1852                                   20150
 1853                                   20200
 1854                                   20250   ;*************
 1855                                   20300   ;BIN2DA    BINARY TO DECIMAL ASCII CONVERSION ROUTINE
 1856                                   20350   ;       ENTER WITH NUMBER TO CONVERT ON THE STACK,
 1857                                   20400   ;       FOLLOWED BY THE ADDRESS OF THE ASCII BUFFER.
 1858                                   20450   ;       5 DIGITS WILL BE CONVERTED
 1859                                   20500   ;*************
 1860                                   20550
 1861                                   20600
 1862  010006  012700  010146          20650   BIN2DA: MOV     #TABDA,R0       ;INITIALIZE TABLE POINTER
 1863  010012  112737  000005  010162  20700           MOVB    #5,DIGITS
 1864  010020  005037  010160          20750           CLR     CNTDA
 1865  010024  021066  000004          20800   1$:     CMP (R0),4(SP)
 1866  010030  003005                  20850           BGT     2$
 1867  010032  161066  000004          20900           SUB     (R0),4(SP)
 1868  010036  105237  010160          20950           INCB    CNTDA
 1869  010042  000770                  21000           BR      1$
 1870  010044  152737  000060  010160  21050   2$:     BISB    #60,CNTDA
 1871  010052  105737  010161          21100           TSTB    FLAGDA
 1872  010056  001012                  21150           BNE     4$
 1873  010060  123727  010160  000060  21200           CMPB    CNTDA,#'0
 1874  010066  001004                  21250           BNE     3$
 1875  010070  112737  000177  010160  21300           MOVB    #177,CNTDA
 1876  010076  000402                  21350           BR      4$
 1877  010100  105137  010161          21400   3$:     COMB    FLAGDA
 1878  010104  113776  010160  000002  21450   4$:     MOVB    CNTDA,@2(SP)
 1879  010112  005266  000002          21500           INC     2(SP)
 1880  010116  062700  000002          21550           ADD     #2,R0
 1881  010122  105037  010160          21600           CLRB    CNTDA
 1882  010126  105337  010162          21650           DECB    DIGITS
 1883  010132  001334                  21700           BNE     1$
 1884  010134  011666  000004          21750           MOV     (SP),4(SP)
 1885  010140  062706  000004          21800           ADD     #4,SP
 1886  010144  000207                  21850           RTS     PC
 1887                                   21900
 1888  010146  023420  001750  000144  21950   TABDA:  .WORD   10000.,1000.,100.,10.,1
       010154  000012  000001
 1889  010160     000                  22000   CNTDA:  .BYTE   0
 1890  010161     000                  22050   FLAGDA: .BYTE   0
 1891  010162     000     000          22100   DIGITS: .BYTE   0,0
 1892                                   22150
 1893
```

```
                                        00250           .SBTTL  LA36 OPTION TESTS
                                        00300   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        00350   ;
                                        00400   ;TEST0  SECONDARY CHARACTER SET OPTION
                                        00450   ;       NO MANUAL INTERVENTION REQUIRED
                                        00500   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        00550
010164  012705  010352                 00600   TEST0:  MOV     #T00BLK,R5              ;SET UP POINTER TO MODULE BLOCK
010170  012700  010366                 00650           MOV     #T0,R0          ;SU TEST ID
010174  004737  007010                         JSR     PC,MTYPE
010200  012700  010424                 00750   T01:    MOV     #PRI,R0         ;SU PRIMARY MSG
010204  004737  007010                         JSR     PC,MTYPE
010210  004737  010310                 00850           JSR     PC,CHARS        ;SEND ALL CHARACTERS
010214  012700  017730                 00900           MOV     #L1,R0
010220  004737  007010                         JSR     PC,MTYPE
010224  012700  010434                 01000           MOV     #SEC,R0         ;SU SECONDARY MSG,
010230  004737  007010                         JSR     PC,MTYPE
010234  012702  000016                 01100           MOV     #SO,R2          ;SEND SO = SELECT APL SET
010240  004737  006270                         JSR     PC,MECHO
010244  004737  010310                 01200           JSR     PC,CHARS        ;SEND ALL CHARS AGAIN
010250  012700  017730                 01250           MOV     #L1,R0
010254  004737  007010                         JSR     PC,MTYPE
010260  012702  000017                 01350           MOV     #SI,R2          ;SEND SI=SELECT ASCII
010264  004737  006270                         JSR     PC,MECHO
                                        01450
010270  052765  020000  000004         01500           BIS     #TDONE,MFLAGS(R5)       ;SET DONE AND ATTENTION FLAGS
010276  012702  000012                 01550           MOV     #12,R2          ;SU FOR LF
010302  004737  006270                         JSR     PC,MECHO
010306  000207                         01650           RTS     PC
                                        01700   ;************
                                        01750   ; SUBROUTINE TO FILL OUTPUT LINE WITH ALL CHARACTERS
                                        01800   ;
010310  013701  016146                 01850   CHARS:  MOV     WIDTH,R1        ;SAVE WIDTH
010314  012702  000040                 01900           MOV     #40,R2          ;SAVE ;START CHAR
010320  162701  000007                 01950           SUB     #7,R1           ;ADJUST WIDTH FOR PRI/SEC MSG
010324                                 02000   2$:
(3) 010324  004737  006270                         JSR     PC,MECHO
010330  005202                         02050           INC     R2              ;NEXT CHAR
010332  020237  010364                 02100           CMP     R2,RUB          ;LAST CHAR?
010336  001403                         02150           BEQ     3$              ;YES = EXIT
010340  005301                         02200           DEC     R1              ;END OF PAPER?
010342  001401                         02250           BEQ     3$              ;YES = EXIT
010344  000767                         02300           BR      2$              ;SEND NEXT
010346  000207                         02350   3$:     RTS     PC
010350  000006                         02400           .WORD   6               ;ITERATION COUNT
010352  000000                         02450   T00BLK: .WORD   0               ;CTLCNT
010354  000000                         02500           .WORD   0                       ;PASS COUNT
010356  000000                         02550           .WORD   0                       ;STATUS FLAGS
010360  000000                         02600           .WORD   0                       ;POINTER
010362  010200                         02650           .WORD   T01                     ;RETURN PC
010364  000177                         02700   RUB:    .WORD   177
                                        02750   .NLIST BEX
010366  042524  052123  030040         02800   T0:     .ASCIZ  *TEST 0  APL/ASCII CHAR SET*<15><12><12>
010424  051501  044503  026511         02850   PRI:    .ASCIZ  /ASCII==/
010434  050101  026514  026455         02900   SEC:    .ASCIZ  /APL====/
                                        02950           .EVEN
```



```
                                        03050
                                        03100   .LIST BEX
                                        03150   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        03200   ;
                                        03250   ;TEST1  SELECTIVE ADDRESSING OPTION
                                        03300   ;       OPERATOR MUST COMPARE TYPEOUT AND SWITCHES ON THE M7737
                                        03350   ;       TO VERIFY CORRECT OPERATION.
                                        03400   ;       IF A GROUP OR UNIT SELECT CODE OF LESS THAN 20(8)
                                        03450   ;       IS USED MODIFY LOCATION GSEL ACCORDINGLY.
                                        03500   ;
                                        03550   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        03600
010444                                  TEST1:
010444  012705  010722                 03700           MOV     #T01BLK,R5      ;SET UP POINTER TO MODULE BLOCK
010450  012700  010742                 03750           MOV     #T1,R0
010454  004737  007010                         JSR     PC,MTYPE
010460                                  03850   T11:    ;DESELECT ALL TERMINALS, THEN TRY TO
                                        03900           ;PRINT ERROR MESSAGES,,,,SHOULD NOT PRINT
                                        03950           ;TRANSMIT A BAD SELECT SEQUENCE, THEN TRY TO
                                        04000           ;PRINT ERROR MESSAGES,,,SHOULD NOT PRINT
                                        04050           ;SELECT ALL TERMINALS, PRINT GP MESSAGE.
                                        04100
010460  012765  010566  000010                 MOV     #T13,RPC(R5)
010466  013701  010734                         MOV     GSEL,R1
010472  012737  011176  010740                 MOV     #TABL1,T1TEMP+2
010500  012737  000001  010736                 MOV     #1,T1TEMP
(5) 010506  000402                         BR      5$$02$
(4) 010510                              5$$03$:
(7) 010510  005237  010736                         INC     T1TEMP
(5) 010514                              5$$02$:
(5) 010514  023727  010736  000010             CMP     T1TEMP,#8.
(7) 010522  003014                         BGT     5$$04$
010524  012700  017730                         MOV     #L1,R0
010530  004737  007010                         JSR     PC,MTYPE
010534  017700  000200                         MOV     @T1TEMP+2,R0
010540  004737  007010                         JSR     PC,MTYPE
010544  062737  000002  010740                 ADD     #2,T1TEMP+2
010552  000756                         BR      5$$03$
(3) 010554                              5$$04$:
                                        04650           ; TRANSMIT SELECT CODES TO ALL TERMINALS
                                        04700           ; FOLLOWED BY ASCII EQUIV OF CODE.
010554                                  04750   T12:
010554  012765  010460  000010                 MOV     #T11,RPC(R5)
010562  013701  010734                         MOV     GSEL,R1
010566                                  04850   T13:    ;OUTPUT ALL CODES AND ACCII EQUIVELANTS
010566                                  5$$05$:
010566  020127  000200                         CMP     R1,#200
(5) 010572  001420                         BEQ     5$$06$
010574  012700  020421                         MOV     #SCODE,R0
010600  110160  000003                         MOVB    R1,3(R0)
010604  004737  007010                         JSR     PC,MTYPE
010610  112702  000002                         MOVB    #STX,R2
010614  004737  006270                         JSR     PC,MECHO
                                        05250           ; NOW CONVERT SELECT CODE TO ASCII FOR OUTPUT
010620  004737  010662                         JSR     PC,CON
010624  004737  007010                         JSR     PC,MTYPE
```

```
2001  010630  005201                          INC     R1
2002  010632  000755                          BR      5$0005$
 (3)  010634                            5$0006$:
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                            5$0008$:
 (3)  010660                            5$0015$:
 (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                            5$0009$:
 (3)  010716                            5$0018$:
 (2)  010716  000207                          RTS     PC
2020                                  06300
2021  010720  000002                  06350           .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
```



```
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     5$0002$
2057  011262  042765  100000  000004          BIC     #MERR,MFLAGS(R5)
2058  011270  105011                          CLRB    (R1)
2059  011272  000403                          BR      5$0003$
 (3)  011274                            5$0002$:
2060  011274  105237  013212                  INCB    T2CNT1
2061  011300  000760                  08350   BR      1$
2062  011302                            5$0003$:
2063  011302                            5$0004$:
 (3)  011302                            5$0013$:
 (2)  011302  000207                          RTS     PC
2064  011304  000000                  08500   2$:     .WORD   0
2065                                  08550
2066                                  08600
2067                                  08650   ;************
2068                                  08700   ;TYPANS     THIS ROUTINE PRINTS THE ANSWERBACK MESSAGE
2069                                  08750   ;           IN OCTAL FORMATT , AND ASCII FORMATT.
2070                                  08800   ;************
2071                                  08850
2072                                  08900
2073  011306                          TYPANS:
2074                                  09000
2075  011306  012700  020421                  MOV     #SCODE,R0
2076  011312  004737  007110                  JSR     PC,TYPES
2077  011316  012702  000002                  MOV     #SIX,R2
2078  011322  004737  006654                  JSR     PC,SECHO
2079  011326  012700  011472                  MOV     #ANSHDR,R0
2080  011332  004737  007110                  JSR     PC,TYPES
2081  011336  013746  013212                  MOV     T2CNT1,-(SP)
2082  011342                            09337   1$:
 (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     5$0028
2091  011404  000756                  09700   BR      1$
2092  011406  000426                          BR      5$0038
 (3)  011410                            5$0028:
2093  011410  012700  017730                  MOV     #L1,R0
2094  011414  004737  007110                  JSR     PC,TYPES
2095  011420  012700  000023                  MOV     #19.,R0
2096  011424                            5$0048:
2097  011424  012702  000040                  MOV     #40,R2
2098  011430  004737  006654                  JSR     PC,SECHO
```

```
 2099  011434  005300                          10300          DEC     R0
 2100  011436  005700                          10350          TST     R0
  (5)  011440  001401                          10400          BEQ     50005$
 2101  011442  000770                          10450          BR      50004$
  (3)  011444                                  10500  50005$:
 2102  011444  012700  013220                  10550          MOV     #T2BUF,R0
 2103  011450  004737  007110                  10600          JSR     PC,TYPES
 2104  011454  012700  017730                  10650          MOV     #L1,R0
 2105  011460  004737  007110                  10700          JSR     PC,TYPES
 2106  011464                                  10750  50003$:
 2107  011464  012637  013212                  11000          MOV     (SP)+,T2CNT1
 2108  011470                                  11050  50000$:
  (3)  011470                                  11100  50001$:
  (2)  011470  000207                          11150          RTS     PC
 2109  011472  005015  047101  053523  10100  11200  ANSHDR: ,ASCIZ  <15><12>/ANSWERBACK RECVD = /
 2110  011520  030060  027460     000  10150  11250  OCTALC: ,ASCIZ  #000/#
 2111          011526                  10200  11300          ,EVEN
 2112                                  10250  11350
```



```
 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$:
```

```
                                                    500028$:
                                        12600
                                        12650   T22:    ;IF THE LINE HAS BEEN SIZED, BUT NO
                                        12700           ;SELECT CODE HAS BEEN MAPPED NOTIFY THE
                                        12750           ;OPERATOR .
                                        12800           ;
011726 123727 016134 000200                             CMPB    DLOTH,#200
 (9)   011734 001015                                    BNE     50007$
                                        12900           ; ERROR #0      NO ANSWERBACK FROM TERMINAL
                                        12950           ;**************
                                        13000           ;
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                           13250           RTS     PC
011766 000463                                           BR      50010$
 (3)   011770                                   50007$:
011770 012701 013220                                    MOV     #T2BUF,R1
                                        13400           ;GET THE SELECT CODE FROM THE LINE TABLE &
                                        13450           ;REQUEST AN ANSWERBACK.
                                        13500           ;
011774 113737 016134 020424                             MOVB    DLOTH,SCODE+3
012002 012700 020421                                    MOV     #SCODE,R0
012006 004737 007110                                    JSR     PC,TYPES
012012 012703 000310                                    MOV     #200.,R3
012016 105037 013212                                    CLRB    T2CNT1
012022 004737 011216                                    JSR     PC,GETANS
                                        13850           ;CHECK FOR ANY RESPONSE FROM TERMINAL
                                        13900           ;
012026 105737 013212                                    TSTB    T2CNT1
 (9)   012032 001015                                    BNE     50011$
                                        14000           ; ERROR #1      NO ANSWERBACK RECIEVED.
                                        14050           ;*************
                                        14100   ;
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$:
012066 012765 012140 000010                             MOV     #T23,RPC(R5)
                                        14450           ;TEST LENGTH OF ANSWERBACK SHOULD BE 20 MAX.
                                        14500           ;
012074 123727 013212 000024                             CMPB    T2CNT1,#20.
 (9)   012102 003411                                    BLE     50013$
                                        14600           ; ERROR #2      ANSWERBACK OVER 20 CHARS LONG.
                                        14650           ;*************
                                        14700           ;
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$:
012126 012701 013220                                    MOV     #T2BUF,R1
012132 004737 011306                                    JSR     PC,TYPANS
012136                                         50012$:
```



```
012136                                         50010$:
012136 000207                           15150           RTS     PC
012140                                  15200   T23:    ;SAVE COPIES OF THE ANSWERBACK AND IT'S LENGTH
                                        15250           ;THEN READ ANSWERBACKS 10 TIMES MORE,
                                        15300           ;VERIFY THEY ARE ALL THE SAME.
                                        15350           ;
012140 012765 012206 000010                             MOV     #T23A,RPC(R5)
012146 113737 013212 013213                             MOVB    T2CNT1,T2CNT2
012154 012701 013220                                    MOV     #T2BUF,R1
012160 012700 020574                                    MOV     #STACK3,R0
012164                                         50014$:
                                        15650           ;COPY ANSWERBACK TO STACK3 FOR COMPARISONS
012164 105737 013212                                    TSTB    T2CNT1
 (5)   012170 001404                                    BEQ     50015$
012172 112120                                           MOVB    (R1)+,(R0)+
012174 105337 013212                                    DECB    T2CNT1
012200 000771                                           BR      50014$
 (3)   012202                                   50015$:
012202 105037 013210                                    CLRB    T2SAV1
                                        15950
012206                                  16000   T23A:   ;RESET INPUT BUFFER POINTER AND ZERO COUNTER
                                        16050           ;
012206 012701 013220                                    MOV     #T2BUF,R1
012212 105037 013212                                    CLRB    T2CNT1
                                        16200   ;SEND SELECT SEQUENCE TO TERMINAL
                                        16250   ;THEN READ ANSWER
012216 012700 020421                                    MOV     #SCODE,R0
012222 012703 000310                                    MOV     #200.,R3
012226 004737 011216                                    JSR     PC,GETANS
012232 105237 013210                                    INCB    T2SAV1
                                        16500           ;IF NO ANSWER NOTIFY OPERATOR
                                        16550           ;IF OLD ANSWER DIFFERENT FROM NEW ANSWER
                                        16600           ;NOTIFY OPERATOR.
                                        16650   ;
012236 105737 013212                                    TSTB    T2CNT1
 (9)   012242 001012                                    BNE     50016$
                                        16750           ; ERROR #30     NO ANSWERBACK DURING TEN READ LOOP
                                        16800           ;*************
                                        16850           ;
012244 052765 100000 000004                             BIS     #MERR,MFLAGS(R5)
012252 012765 013356 000006                             MOV     #E14,POINT(R5)
012260 112765 000030 000004                             MOVB    #30,MFLAGS(R5)
012266 000500                                           BR      50017$
 (3)   012270                                   50016$:
012270 105011                                           CLRB    (R1)
                                        17150           ;COMPARE LENGTHS OF ANSWERS
012272 123737 013212 013213                             CMPB    T2CNT1,T2CNT2
 (9)   012300 001416                                    BEQ     50020$
012302 012701 013220                                    MOV     #T2BUF,R1
012306 004737 007110                                    JSR     PC,TYPES
                                        17350           ;ERROR #31      INCONSISTANT ANSWERBACKS
                                        17400           ;*************
                                        17450           ;
012312 052765 100000 000004                             BIS     #MERR,MFLAGS(R5)
012320 112765 000031 000004                             MOVB    #31,MFLAGS(R5)
012326 012765 013356 000006                             MOV     #E14,POINT(R5)
```

```
  2264  012334  000455                                    BR      500218
   (3)  012336                                    500208:
  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      500228
   (4)  012374                                    500238:
   (7)  012374  005237  013216                            INC     T2TEMP+2
   (5)  012400                                    500228:
   (5)  012400  023737  013216  013214                    CMP     T2TEMP+2,T2TEMP
   (7)  012406  003024                                    BGT     500248
  2273  012410  122021                                    CMPB    (R0)+,(R1)+
   (9)  012412  001421                                    BEQ     500258
  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                                 500258:
  2284  012456  000746                                    BR      500238
   (3)  012460                                    500248:
  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                                 500218:
  2290  012470                                 500178:
  2291  012470  032765  100000  000004                    BIT     #MERR,MFLAGS(R5)
   (9)  012476  001401                                    BEQ     500268
  2292  012500  000207                        19050       RTS     PC
  2293  012502                                 500268:
  2294                                  19150             ;CHECK FOR TEN ITERATIONS
  2295  012502  123727  013210  000010                    CMPB    T2SAV1,#10
   (9)  012510  001005                                    BNE     500278
  2296  012512  012755  012530  000010                    MOV     #T24,RPC(R5)
  2297  012520  000207                        19300       RTS     PC
  2298  012522  000402                                    BR      500308
   (3)  012524                                    500278:
  2299  012524  000137  012206                19400       JMP     T23A
  2300  012530                                 500308:
  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
```



```
  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     500318
  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                                 500318:
  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     500328
  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     500338
  2331  012670  042737  000400  001364                    BIC     #LDONE,PCFLAG
  2332  012676  052765  020000  000004                    BIS     #TDONE,MFLAGS(R5)
  2333  012704                                 500338:
  2334  012704  012765  011546  000010                    MOV     #T21,RPC(R5)
  2335  012712  000207                        21000       RTS     PC
  2336  012714  000512                                    BR      500348
   (3)  012716                                    500328:
  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     500358
  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)
```

```
 2358  013024  012765  013475  000006                  MOV     #E17,POINT(R5)
 2359  013032  000207                          22050   RTS     PC
 2360  013034                                  500358$:
 2361                                          22150
 2362  013034                                  22200   T26:    ;TEST CTL-E FUNCTION
 2363                                          22250
 2364                                          22300           ;SET UP TO TEST CTL-E FUNCTION
 2365                                          22350           ;
 2366  013034  012765  011726  000010                  MOV     #T22,RPC(R5)
 2367  013042  012701  013220                          MOV     #T2BUF,R1
 2368  013046  012700  013305                          MOV     #CE,R0
 2369  013052  012703  007640                          MOV     #4000.,R3
 2370  013056  105037  013212                          CLRB    T2CNT1
 2371  013062  004737  007110                          JSR     PC,TYPES
 2372  013066  004737  011216                          JSR     PC,GETANS
 2373  013072  105737  013212                          TSTB    T2CNT1
  (9)  013076  001013                                  BNE     500368$
 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      500378
  (3)  013126                                  500368$:
 2382  013126  052765  020000  000004                  BIS     #TDONE,MFLAGS(R5)
 2383  013134  012765  011726  000010                  MOV     #T22,RPC(R5)
 2384  013142                                  500378$:
 2385  013142                                  500348$:
 2386  013142  000207                          23400   RTS     PC
 2387                                          23450   ;***********
 2388                                          23500   ;THIS ROUTINE IS THE KEYBOARD INTERRUPT HANDLER
 2389                                          23550   ;FOR TESTS #1 AND #2
 2390                                          23600   ;***********
 2391                                          23650
 2392  013144  117721  002766                  23700   T220:   MOVB    @DVCRXB,(R1)+           ;STORE CHAR IN POINTER
 2393  013150  052737  004000  001364          23750           BIS     #DATAIN,PCFLAG          ;SET DATA-IN FLAG
 2394  013156  012777  000101  002744          23800           MOV     #101,@DLADR             ;REENABLE THE RECVR
 2395  013164  005037  007564                  23850           CLR     DELAYT          ;ABORT THE TIMEOUT
 2396  013170  000002                          23900           RTI
 2397                                          23950
 2398  013172                                  500008$:
  (3)  013172                                  500018$:
  (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   0,0,0,0,0,0,0,0,0,0,0,0,0,        ; 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 CNTL-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
```

```
 2428                                   25450
 2429                                   25500  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2430                                   25550  ;
 2431                                   25600  ;TEST3  TOP OF FORM OPTION
 2432                                   25650  ;       OPERATOR INTERVENTION REQUIRED IN SINGLE LINE MODE
 2433                                   25700  ;
 2434                                   25750  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2435                                   25800          .ENABL  LSB
 2436                                   25850
 2437  013700  012700  014376           25900  TEST3:  MOV     #T3,R0          ;SU FOR TEST HEADER
 2438  013704  004737  007010                          JSR     PC,@#TYPE
 2439  013710  012705  014442           26000          MOV     #T03BLK,R5      ;SET UP POINTER TO MODULE BLOCK
 2440  013714  032737  000040  001364   26050          BIT     #MULTI,@#PCFLAG ;CHECK FOR SINGLE LINE MODE
 2441  013722  001424                   26100          BEQ     3$              ;SINGLE MODE = BRANCH
 2442  013724  012701  000102           26150  1$:     MOV     #66.,R1         ;FILL COUNT FOR 11" FORMS
 2443  013730  113702  016167           26200          MOVB    @#FF,R2         ;MOVE TO TOP OF FORM
 2444  013734  004737  006270                          JSR     PC,@#ECHO
 2445  013740  012702  000006           26300  2$:     MOV     #ACK,R2
 2446  013744  004737  006270                          JSR     PC,@#ECHO
 2447  013750  005301                   26400          DEC     R1
 2448  013752  001372                   26450          BNE     2$
 2449  013754  012700  014427           26500          MOV     #DAS,R0
 2450  013760  004737  007010                          JSR     PC,@#TYPE
 2451  013764  052765  020000  000004   26600          BIS     #TDONE,@#FLAGS(R5)      ;SET ATTENTION & DONE FLAGS
 2452                                   26650
 2453  013772  000207                   26700          RTS     PC
 2454                                   26750  ;************
 2455                                   26800  ;THIS SECTION FOR SINGLE LINE MANUAL INTERVENTION
 2456                                   26850
 2457  013774  012765  013774  000010   26900  3$:     MOV     #3$,@#PC(R5)    ;SET RETURN PC TO HERE
 2458  014002  012737  014610  014356   26950          MOV     #HDR5,T3SAV1    ;GET LIST OF FORM LENGTHS
 2459  014010  012737  014362  014354   27000          MOV     #FILL3,T3SAV    ;GET FIL COUNT
 2460  014016  012700  014443           27050          MOV     #HDR3,R0
 2461  014022  004737  007110           27100          JSR     PC,@#TYPES
 2462  014026  012700  014646           27150          MOV     #HDR5A,R0       ;SET UP MESSAGE WITH
 2463  014032  112037  014564           27200          MOVB    (R0)+,HDR4+5    ;INSTRUCTIONS FOR 3"
 2464  014036  112037  014565           27250          MOVB    (R0)+,HDR4+6    ;FORMS.
 2465  014042  111037  014566           27300          MOVB    (R0),HDR4+7
 2466  014046  012700  014557           27350  A3$:    MOV     #HDR4,R0        ;SEND SU MSG
 2467  014052  004737  007110           27400          JSR     PC,@#TYPES
 2468  014056  013700  014356           27450          MOV     T3SAV1,R0
 2469  014062  112037  014564           27500          MOVB    (R0)+,HDR4+5    ;MODIFY INSTRUCTIONS FOR
 2470  014066  112037  014565           27550          MOVB    (R0)+,HDR4+6    ;NEXT LOOP
 2471  014072  112037  014566           27600          MOVB    (R0)+,HDR4+7
 2472  014076  010037  014356           27650          MOV     R0,T3SAV1       ;SAVE THE  LIST POINTER
 2473  014102  012702  014124           27700  5$:     MOV     #6$,R2                  ; PASS 6$ AS VECTOR TO READ ROUTINE
 2474  014106  004737  007124           27750          JSR     PC,READS                ; GO SET VECTORS
 2475  014112  012702  035230           27800          MOV     #15000.,R2              ;SET UP 15 SEC DELAY
 2476  014116  004737  007024           27850          JSR     PC,READIO
 2477  014122  000406                   27900          BR      9$
 2478  014124  005037  007564           27950  6$:     CLR     @#DELAYT        ;ABORT THE TIMEOUT
 2479  014130  052737  004000  001364   28000          BIS     #DATAIN,@#PCFLAG
 2480  014136  000002                   28050          RTI
 2481  014140  012700  017730           28100  9$:     MOV     #L1,R0
 2482  014144  004737  007110           28150          JSR     PC,@#TYPES              ;SEND CR/LF
 2483  014150  042737  004000  001364   28200          BIC     #DATAIN,@#PCFLAG ;IN CASE LINE 0
```



```
 2484  014156  042765  100000  000004   28250          BIC     #MERR,@#FLAGS(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,@#ECHO               ;DO FORM FEED
 2488  014202  012702  000006           28450  7$:     MOV     #ACK,R2
 2489  014206  004737  006654           28500          JSR     PC,@#ECHO               ;SEND FILL CHARS
 2490  014212  005337  014360           28550          DEC     T3SAV2
 2491  014216  001371                   28600          BNE     7$              ;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,@#ECHO
 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,@#ECHO
 2499  014256  012702  000006           29000  8$:     MOV     #ACK,R2         ;SEND ACK CHARS
 2500  014262  004737  006654           29050          JSR     PC,@#ECHO
 2501  014266  005337  014360           29100          DEC     T3SAV2
 2502  014272  001371                   29150          BNE     8$              ;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,@#ECHO
 2507                                   29400
 2508  014314  005237  014354           29450          INC     T3SAV           ;GET NEW FILL COUNT
 2509  014320  023727  014356  014651   29500          CMP     T3SAV1,#HDR5E           ;END OF INSTRUCTION LIST?
 2510  014326  001247                   29550          BNE     A3$             ;NO = DO NEXT
 2511  014330  052765  020000  000004   29600          BIS     #TDONE,@#FLAGS(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               ;CILCNT
 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  052017  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  /3,5/
```

```
 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 PAPER CHANGE LOC "WIDTH"
 2558                                   31950   ;       TO APPROPPRIATE VALUE, SEE WN COMMAND .
 2559                                   32000   ;
 2560                                   32050   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2561                                   32100
 2562  014652  012705  015246           32150   TEST4:   MOV     #T04BLK,R5      ;SET UP POINTER TO MODULE BLOCK
 2563  014656  012700  015320           32200            MOV     #T4,R0
 2564                                   32250   ; PRINT TEST HEADER
 2565  014662  004737  007010           32300            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           32600            JSR     PC,MECHO
 2572  014720  012702  000062           32650            MOV     #'2,R2
 2573  014724  004737  006270           32700            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           33050            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          34600          JSR     PC,MTYPE
 2612  015114  012702  000011          34650  8$:     MOV     #11,R2
 2613                                  34700  ; SEND A HORIZ-TAB
 2614  015120  004737  006270          34750          JSR     PC,MECHO
 2615  015124  117737  000134  015260  34800          MOVB    @T4SAV2,T4SAV   ;GET FILL COUNT TABS/2
 2616  015132  012702  000006          34850  9$:     MOV     #ACK,R2
 2617                                  34900  ; SEND FILL CHARACTERS
 2618  015136  004737  006270          34950          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          35200          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
```

```
                                                37350
                                                37400   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                37450   ;
                                                37500   ;TEST5  VERTICAL TAB OPTION
                                                37550   ;       SINGLE LINE TEST REQUIRES OPERATOR INTERVENTION
                                                37600   ;
                                                37650   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                                37700           .ENABL LSB
                                                37750
016354  012700  016040                          37800   TEST5:  MOV     #T5,R0          ;SU TEST HEADER
016360  012705  016014                          37850           MOV     #T05BLK,R5      ;SET UP POINTER TO MODULE BLOCK
016364  004737  007010                                          JSR     PC,MTYPE
016370  032737  000040  001364                  37950           BIT     #MULTI,PCFLAG   ;MULTI LINE MODE?
016376  001046                                  38000           BNE     4$              ;YES = BRANCH OVER INTERVENTION
016400  012700  014635                          38050           MOV     #HDR5B,R0       ;SET UP INSTRUCTIONS
016404  112037  014564                          38100           MOVB    (R0)+,HDR4+5
016410  112037  014565                          38150           MOVB    (R0)+,HDR4+6
016414  112037  014566                          38200           MOVB    (R0)+,HDR4+7
                                                38250   ; TYPE INSTRUCTIONS
016420  012700  014443                          38300   T51:    MOV     #HDR3,R0
016424  004737  007110                                          JSR     PC,TYPES
016430  012700  014557                          38400           MOV     #HDR4,R0
016434  004737  007110                                          JSR     PC,TYPES
016440  012702  015500                          38500           MOV     #3$,R2          ;SU FOR INTERRUPT TO 3$
016444  004737  007124                          38550           JSR     PC,READS        ;INITIALIZE VECTOR AREA
016450  012702  035230                          38600   2$:     MOV     #15000.,R2              ;ALLOW 15 SEC.
016454  004737  007024                          38650           JSR     PC,READ1Q
016460  032737  004000  001364                  38700           BIT     #DATAIN,PCFLAG
016466  001770                                  38750           BEQ     2$
016470  042737  004000  001364                  38800           BIC     #DATAIN,PCFLAG
016476  000406                                  38850           BR      4$
                                                38900   ;*************** THIS SECTION HANDLES RECVR INTERRUPTS**********
                                                38950   ;
015500  005037  007564                          39000   3$:     CLR     DELAYT          ;ABORT THE TIMEOUT
015504  052737  004000  001364                  39050           BIS     #DATAIN,PCFLAG  ; FLAG RECIEVED CHAR.
015512  000002                                  39100   10$:    RTI
                                                39150
                                                39200   ;***************
                                                39250
015514  012737  000002  015266                  39300   4$:     MOV     #2,COUNT
015522  012765  015514  000010                  39350           MOV     #4$,RPC(R5)     ;SET RETURN TO 4$
015530  012737  000001  016032                  39400           MOV     #1,LINES
015536  005037  016036                          39450           CLR     TABS
015542  012737  000014  016034                  39500           MOV     #12.,MAX
015550  012702  000033                          39550           MOV     #ESC,R2         ;RESET ALL TABS
                                                39600   ; ESC=4  RESETS THE TABS,
015554  004737  006270                                          JSR     PC,MECHO
015560  012702  000064                          39700           MOV     #'4,R2
015564  004737  006270                                          JSR     PC,MECHO
015570  013701  016032                          39800   5$:     MOV     LINES,R1        ;GET LINE COUNT
015574  012702  000012                          39850   6$:     MOV     #12,R2          ;
                                                39900   ; SEND LINE FEED,
015600  004737  006270                                          JSR     PC,MECHO
015604  005301                                  40000           DEC     R1
015606  001372                                  40050           BNE     6$
015610  012702  000033                          40100           MOV     #ESC,R2         ;SET TAB
```



```
015614  004737  006270                                  JSR     PC,MECHO
015620  012702  000063                          40200           MOV     #'3,R2
                                                40250   ; ESC=3  SETS A TAB LOCATION,
015624  004737  006270                                  JSR     PC,MECHO
015630  012700  014427                          40350           MOV     #DAS,R0
                                                40400
015634  004737  007010                                  JSR     PC,MTYPE
015640  005237  016032                          40500           INC     LINES
015644  023737  016032  016034                  40550           CMP     LINES,MAX       ;11 TABS YET?
015652  001346                                  40600           BNE     5$              ;NO = BRANCH
015654  012737  000001  016032                  40650   7$:     MOV     #1,LINES        ;RESET LINE COUNT
015662  012737  000001  016030                  40700           MOV     #1,T5SAV1               ;FILL COUNT
015670  012702  000013                          40750   8$:     MOV     #13,R2
                                                40800   ; SEND A VERT-TAB COMMAND,
015674  004737  006270                                  JSR     PC,MECHO
015700  012702  000006                          40900   9$:     MOV     #ACK,R2
                                                40950   ; SEND A FILL CHARACTER,
015704  004737  006270                                  JSR     PC,MECHO
015710  005337  016030                          41050           DEC     T5SAV1
015714  001371                                  41100           BNE     9$
                                                41150   ;
                                                41200   ; CONVERT NO. OF LINES FOR OUTPUT MSG.
                                                41250   ;
015716  013746  016032                          41300           MOV     LINES,-(SP)
015722  012746  016071                          41400           MOV     #T52,-(SP)
015726  004737  010006                          41450           JSR     PC,BIN2DA
015732  012700  016071                          41500           MOV     #T52,R0
015736  004737  007010                          41550           JSR     PC,MTYPE
015742  012700  014427                          41600           MOV     #DAS,R0         ;SU LINE OF DASHES
015746  004737  007010                                  JSR     PC,MTYPE
015752  005237  016032                          41700           INC     LINES           ;NEW LINE COUNT
015756  013737  016032  016030                  41750           MOV     LINES,T5SAV1    ;FILL COUNT =#LINES
015764  023737  016032  016034                  41800           CMP     LINES,MAX       ;11 TABS DONE?
015772  001336                                  41850           BNE     8$              ;NO = CONTINUE
015774  005337  015266                          41900           DEC     COUNT           ;DO 2 PAGES TOTAL
016000  001325                                  41950           BNE     7$              ;NO=DO PAGE
016002  052765  020000  000004                  42000           BIS     #TDONE,MFLAGS(R5)       ;SET ATTENTION & DONE FLAGS
                                                42050
016010  000207                                  42100           RTS     PC
                                                42150
                                                42200   ;.....................................
016012      000     002                         42250           .BYTE   0,2             ;ITERATION COUNTS
016014  000000                                  42300   T05BLK: .WORD   0               ;CTLCNT
016016  000000                                  42350           .WORD   0               ;PASS COUNT
016020  000000                                  42400           .WORD   0               ;STATUS FLAGS
016022  000000                                  42450           .WORD   0               ;POINTER
016024  015420                                  42500           .WORD   T51             ;RETURN PC
                                                42550
016026  000000                                  42600   T5SAV:  .WORD   0
016030  000000                                  42650   T5SAV1: .WORD   0
                                                42700
016032  000000                                  42750   LINES:  .WORD 0
016034  000000                                  42800   MAX:    .WORD 0
016036  000000                                  42850   TABS:   .WORD 0
016040  005015  052012  051505                  42900   T51:    .ASCIZ  <15><12><12>/TEST 5 VERTICAL TAB/<15><12>
        016046  020124  020065  042526
```

```
                016054  052122  041511  046101
                016062  052040  041101  005015
                016070     000
 2774           016071     060  030060  030060  42950   T52:    .ASCIZ  /00000/
                016076     000
 2775                  016100                   43000           .EVEN
 2776                                           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  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 WORD
 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
```

```
                                    44900   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                    44950   ;                    LINE INTERFACE TABLE
                                    45000   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                    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  177770  000000  46400   LIN31:  .WORD   0,177770,0,14400       ;BITS 13 THRU 8
```



```
      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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                                        47700   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        47750   ;       SYSTEM MESSAGES
                                        47800           .NLIST  BEX
                                        47850
 016772  005015  055103  040514  47900  PROGID: .ASCII  <15><12>/CZLAFA0   LA36 OPTIONS TESTS/
 017030  005015  042522  052123  47950          .ASCII  <15><12>/RESTART AT 1372/
 017051     015  005012  000012  48000  L3:     .ASCIZ  <15><12><12><12>
 017056  047503  046515  047101  48050  HEADR1: .ASCIZ  /COMMAND SUMMARY :/<15><12><12>
 017103     123  020040  020040  48100  COMSUM: .ASCII  /S       SINGLE LINE MODE/<15><12><1>
 017135     115  020040  020040  48150          .ASCII  /M       MULTI-LINE MODE/<15><12><1>
 017166  020121  020040  020040  48200          .ASCII  /Q       SEQUENCE TESTS/<15><12><1>
 017216  047122  020040  020040  48250          .ASCII  /RN      RUN TEST "N" /<15><12><1>
 017245     104  020116  020040  48300          .ASCII  /DN      DROP LINE "N" /<15><12><1>
 017275     101  020116  020040  48350          .ASCII  /AN      ADD LINE "N" /<15><12><1>
 017324  020124  020040  020040  48400          .ASCII  /T       TYPE LINE TABLE /<15><12><1>
 017356  047127  020040  020040  48450          .ASCII  /WN      CHANGE "WIDTH" TO N/<15><12><1>
 017413     114  020040  020040  48500          .ASCII  /L       LOOP ON ERROR /<15><12><1>
 017443     110  020040  020040  48550          .ASCII  /H       HALT ON ERROR /<15><12><1>
 017473     103  020040  020040  48600          .ASCII  /C       CLEAR ; RESETS H & L COMMANDS/<15><12><1>
 017542  020116  020040  020040  48650          .ASCII  /N       INHIBIT REPORTS /<15><12><1>
 017574  020120  020040  020040  48700          .ASCII  /P       PRINT ERROR REPORTS /<15><12><1>
 017632  051505  020103  020040  48750          .ASCIZ  /ESC     TO EXECUTE COMMAND STRING/<15><12><12>
 017676  005015  046012  047111  48800  HEADR2: .ASCII  <15><12><12>/LINE#  ADDR    VECTOR SEL/
 017730  005015     000         48850  L1:     .ASCIZ  <15><12>
 017733     060  020060  020040  48900  LIN:    .ASCII  /00    17/
 017743     060  030060  020060  48950  DLAD:   .ASCII  /0000   /
 017752  030060  020060  020040  49000  DLV:    .ASCII  /000   /
 017761     052  051105  047522  49050  ER0:    .ASCIZ  /*ERROR 000 TEST 00 LINE 00/<15><12><7>
 020017     040  020040  037477  49100  ER1:    .ASCIZ  /   ????/<15><12><7>
 020032  026455  046055  047111  49150  ER2:    .ASCIZ  /---LINE INVALID/<15><12><7>
 020055     116  020117  047111  49200  ER7:    .ASCIZ  /NO INTERRUPT ON TXMIT/<15><12>
 020105     104  047522  050120  49250  DR:     .ASCIZ  /DROPPED/<15><12>
 020117     052  005015     000  49300  S1:     .ASCIZ  /*/<15><12>
 020123     015  051012  040505  49350  RDY:    .ASCIZ  <15><12>/READY /<15><12>
 020136  005015  040520  051523  49400  EOPM:   .ASCIZ  <15><12>/PASS 00000  TEST 00/<15><12>
 020166  005015  025052  020052  49450  EOTM:   .ASCIZ  <15><12>/*** END OF TEST 00/<15><12>
                                        49500
 020215     015  050012  043103  49550  SW:     .ASCIZ  <15><12>/PCFLAG : 000000 /<15><12>
 020242  054105  042503  051523  49600  DR0:    .ASCII  /EXCESSIVE ERRORS,,LINE/
 020270  030060  042040  047522  49650  DR1:    .ASCIZ  /00 DROPPED/<15><12><7>
 020306  047516  046040  047111  49700  E19:    .ASCIZ  /NO LINES AVAILABLE FOR TEST/<15><12><7>
 020345     114  047111  020105  49750  E20:    .ASCIZ  /LINE RE-SELECTED/<15><12>
 020370  047503  051516  046117  49800  CTLM:   .ASCIZ  /CONSOLE CONTROL?/
                                        49850
 020411     004  003401  000002  49900  ALLON:  .ASCIZ  <4><1><7><2>    ;SELECT ALL ESCAPE SEQUENCE
 020416  000404     000         49950  ALLOFF: .ASCIZ  <4><1>          ;DESELECT ALL SEQUENCE
 020421     004  001401  000000  50000  SCODE:  .ASCIZ  <4><1><3><000>  ;SELECT UNIQUE SEQUENCE
 020426  000404  001003     000  50050  NSELC:  .ASCIZ  <4><1><3><2>    ;BAD SELECT SEQUENCE
                020434          50100          .EVEN
 020434  000060                  50150  STACK2: .BLKW   48.
 020574  000036                  50200  STACK3: .BLKW   30.
 020670  000000                  50250  ENDS:   .WORD   0
                001102          50300          .END    START
```



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ABO    = 000020          CTLBLK  001364          EHRVEC= 000004          ICNT   = 177776          LIN44  016630
ACK    = 000006          CTLC    = 000003          ER0     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   000240          ISP    = 005726          LIN53  016720
A2SAV  010004            CTLM    020370            E10     011137          ISP2   = 022626          LIN54  016730
A3B    014046            CTLN    = 000016          E12     011045          ITRAP  = 104004          LIN55  016740
BIN2DA 010006            CTLP    = 000020          E14     013356          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     017751
BIT06  = 000100          DECTBL  004656            E22     013632          LIN01  016200           MACHEK  000004
BIT07  = 000200          DEL     016166            E9      011005          LIN02  016210           MAJOR  = 003000
BIT08  = 000400          DELAYM  007530            FF      016167          LIN03  016220           MAX    016034
BIT09  = 001000          DELAYP= 104006            FILL3   014362          LIN04  016230           MECHO  000270
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  000646
BIT13  = 020000          DLFLAG  016126            GETSRC  003350          LIN11  016300           MTW    002432
BIT14  = 040000          DLOTH   016134            GETSWS  003130          LIN12  016310           MTW1   002452
BIT15  = 100000          DLP     = 100200          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          DP      020105            GN3     002612          LIN16  016350           NEWTST= 002000
BIT5   = 000040          DROPC   = 000010          GN4     002644          LIN17  016360           NEXT   016152
BIT6   = 000100          DR0     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            GVL     002332          LIN23  016420           NSELC  020426
BPTVEC= 000014           DVCRXB  016136            G1A     002340          LIN24  016430           NXILIN  016162
BUILD  005040            DVCTXB  016142            G1B     002344          LIN25  016440           OCTALC  011520
CATCH  006126            DVCTXS  016140            G1C     002356          LIN26  016450           ONLIN   016160
CE     013305            ECHO    005044            G1D     002370          LIN27  016460           O2ASC   007566
CFLAGS 002032            EMTABL  006230            HALTC  = 000200          LIN30  016470           PASCNT= 000002
CHARS  010310            EMTROS  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          HDR5A   014646          LIN35  016540           PRI    010424
CON    010662            EOP     = 020000          HDR5B   014635          LIN36  016550           PRINT  = 000020
CONSON 003332            EOPM    020136            HDR5E   014651          LIN37  016560           PRINTI= 010000
COUNT  015266            EOT     = 040000          HEADR1  017056          LIN40  016570           PRIO   = 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
```

```
PRTLTB  007212        SWR     016124        TKV   = 000060        T4SAV1  015262        $NSK0 = 000300
PRTTBL= 104002        SWRTST  000306        TKVEC = 000060        T4SAV2  015264        $NSK1 = 000110
PR0   = 000000        SWTEST  000172        TPB   = 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  = 100000
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        $F$DQ = 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        T02HLK  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        $SARGC= 000000
SECHO   006654        TAB     015316        T16     010634        $F$TRU= 000404        $SBYTE= 000402
SEL   = 000200        TABDA   010146        T2      013326        $F$UNT= 000130        $SCASE= 000000
SELERR  005100        TABEND  016770        T2BUF   013220        $F$WHI= 000120        $SDST = 000000
SEQ   = 000100        TABL1   011176        T2CNT1  013212        $F$YES= 000402        $SELOC= 000402
SETIO   005600        TABL4   015270        T2CNT2  013213        $HD   = 000003        $SERFL= 000000
SI    = 000017        TABS    016036        T2SAV1  013210        $IFLEV= 177777        $SFLAG= 000001
SO    = 000016        TBITVE= 000014        T2TEMP  013214        $ISK0 = 000001        $SFROM= 000000
SOH   = 000001        TDONE = 020000        T21     011546        $ISK1 = 000001        $SLOC = 013076
SSWR    000176        TEMP    016100        T22     011726        $ISK10= 000001        $SLOCN= 000000
STACK = 001100        TEMPF   005002        T220    013144        $ISK11= 000001        $SREG = 177777
STACK2  020434        TEMPT   005004        T23     012140        $ISK2 = 000001        $SRETU= 000000
STACK3  020574        TESTAD  016156        T23A    012206        $ISK3 = 000001        $SRTN1= 050000
START   001102        TESTNO  001366        T24     012530        $ISK4 = 000001        $SRTN2= 050001
START2  001172        TEST0   010164        T25     012636        $ISK5 = 000001        $SSNC = 000000
START3  001230        TEST1   010444        T25A    012734        $ISK6 = 000001        $STGSV= 000000
STKLMT= 177774        TEST2   011526        T26     013034        $ISK7 = 000001        $STGS1= 000000
STRAP   007510        TEST3   013700        T3      014376        $LOCTA= 177777        $STGS2= 000000
STX   = 000002        TEST4   014652        T3SAV   014354        $LSTCN= 177777        $ST0  = 000000
SUTEST  020056        TEST5   015354        T3SAV1  014356        $LSTIN= 000000        $SSTAG= 050000
SW      020215        TIMER   007562        T3SAV2  014360        $LSTST= 177777        .     = 020672
SWCTL = 000020        TKB   = 177562        T4      015320        $LSTIA= 000000
SWLINE  000174        TKS   = 177560        T4SAV   015260        $NESTL= 177777

. ABS.  020672     000
```



```
 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)
```