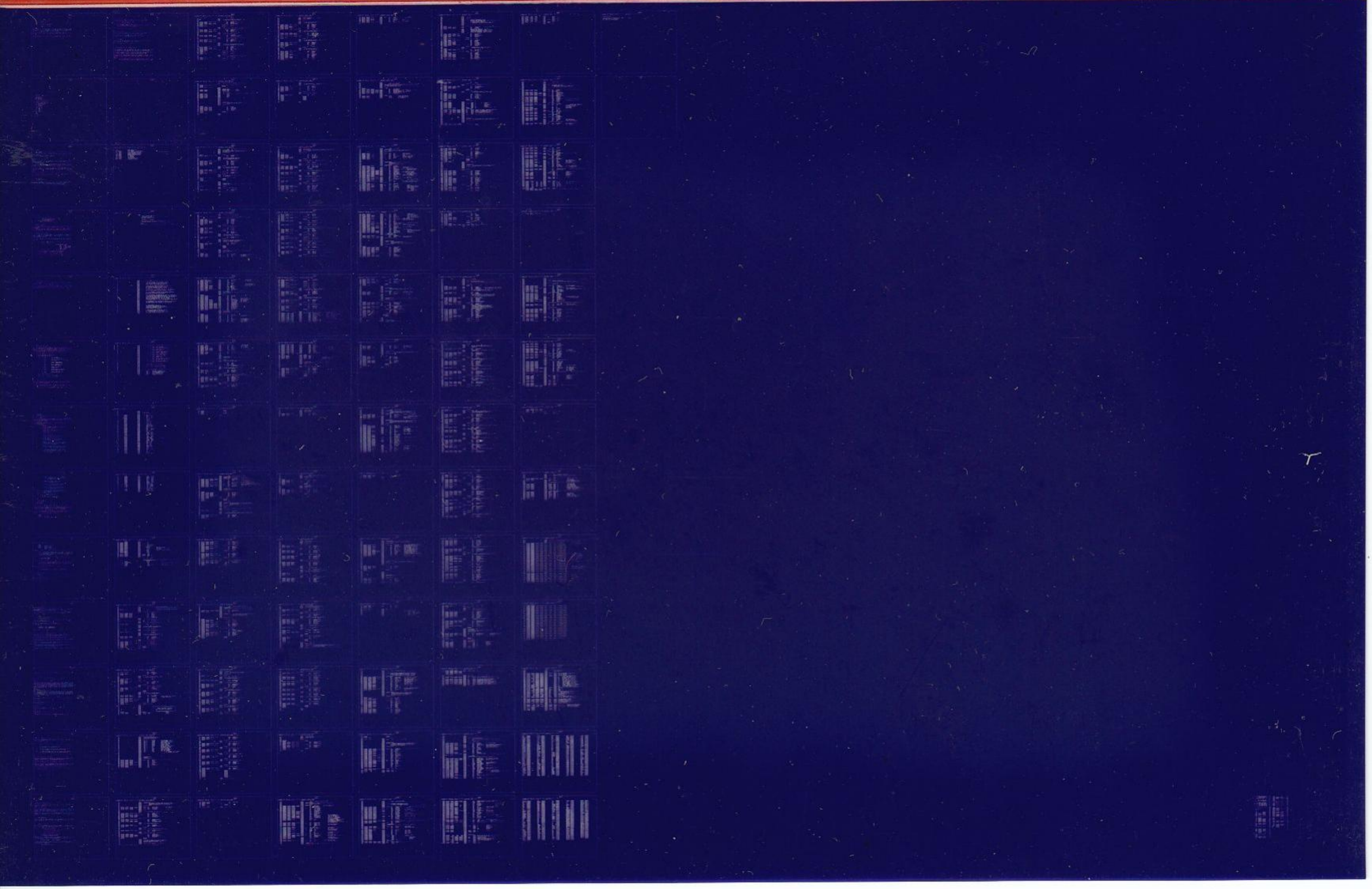
LA36

TERM TEST
CZLAFAO

AH-E100A-MC

FICHE 1 OF 1

APR 1978
digital
MADE IN USA



Product code: AC-E099A-MC

Product Name: CZLAFAD LA36 TERM TST

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Maintainer: DIAGNOSTIC ENGINEERING

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SEQ 02

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1.0 ABSTRACT

This diagnostic will functionally test the hardware options on the LA36 terminal.
Up to 48 terminals, including the console device, can be tested at a time. All terminals under test must be interfaced thru a DL11 type interface.
Control of this diagnostic may be thru a switch register, or via interactive console terminal commands.

1.1 Functional Description

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

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

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

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

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

2.0 REQUIREMENTS

2.1 EQUIPMENT

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

A hardware switch register is supported, but not required.

2.2 OPTIONS

The following options are tested by this diagnostic:

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

2.3 RELATED PROGRAMS

Although some error checking is done, this diagnostic does not functionally test the basic LA36 terminal, nor the terminals interface.
Therefore the basic LA36 terminal diagnostic, MDEC-11-DZLAC-*, and the DL11-*/DLV-11 interface test should be sucessfully run prior to this diagnostic. Also any other applicable processor/memory tests.

3.0 LOADING & INITIALIZATION

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

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

1. the location 'TIMER' which is a CPU dependent TIME constant. 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.
Pr	(STATIC) Run test N.
Dn	(STATIC) Deselect or Drop from testing interface line N. (see T command)
An	(STATIC) Add line N. Clear out the error count for line N, and reselect the line for testing. In single line mode sets N as current line to test.
T	(STATIC) Type out a listing of the interface lines present on the system, the vector address at which the device interrupts, and weather or not the line is selected.
Wn	(STATIC) Changes location 'Width' to N. Used to control output of terminal tests. Enter N as an Octal number 32 to 204. (132 decimal)
CTL-L	(interactive) Loop on error. If an error is detected the program will start looping or the test section which caused the error, and continue to loop until a Klear command is issued. In command mode type an L.

CTL-H (interactive) 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. 06, with Halt on error set.

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

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

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

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

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

EXAMPLE 5. How do I loop on error.

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

If in command mode type L (CR).

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

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

5.0 SCOPE OF TESTS.

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

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

5. Horizontal and Vertical tabluation option.

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

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

Description Of Tests

5.1 Test 0 Secondary Character Set.

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

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

Output of characters per line will consist of char codes 40 thru 176 urless 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 trarsmitted 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 corresponding 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.

5.3 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.

5.4 System Sizer

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

ex: 'NO INTERRUPT ON TXMIT LINE 27'

7.C PROCEDURES FOR NON-STANDARD DEVICES.

This diagnostic can be modified for use on devices that have non-standard interface addresses by replacing n 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.

```
CZLAFAO LA36 TERM TST  MAC:11 30A 1052   03-JAN-77  00:01  PAGE 1
CZLAFA.P11    03-JAN-78 11:20                                        SEQ 0017

                                00200
                                        .TITLE  CZLAFAO LA36 TERM TST
                                        ;*COPYRIGHT (C) 1977
                                        ;*DIGITAL EQUIPMENT CORP.
                                        ;*MAYNARD, MASS. 01754
                                        ;*
                                        ;*PROGRAM BY R.SCHAUBER
                                        ;*
                                        ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSTEM
                                        ;*PACKAGE (MAINDEC-11-D2GAC-D), JAN 19, 1977.
                                        ;*
                                        $TN=1
                                        $SWR=160000     ;;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYPEOUT
```

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

```
                        01160   ;* **** SWITCH REGISTER BIT DEFINITIONS **************************
                        01180
                        01200   ;       BIT15   =1 (UP)   HALT ON ERROR
                        01220   ;               =0 (DOWN) CONTINUE AFTER REPORT
                        01240
                        01260   ;       BIT14   =1 (UP)   LOOP AFTER ERROR IS DETECTED
                        01280   ;               =0 (DOWN) DON'T LOOP
                        01300
                        01320   ;       BIT13   =1 (UP)   INHIBIT ERROR REPORTS
                        01340   ;               =0 (DOWN) PRINT   ERROR REPORTS
                        01360
                        01380   ;       BIT12   =1 (UP)   PRINT INTERFACE TABLE
                        01400   ;               =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
```

```
                                02160           ABO = BIT4              ;LINE ABORT FLAG
                                02180           ACK = 6
                                02200           ADDC    = BIT2
                                02220           ATTN    = BIT7
                                02240           CR = 15
                                02260           CTLC = 3
                                02280           CTLCNT = 3
                                02300           CTLG = 7
                                02301           CTLH = 10
                                02302           CTLK = 13
                                02303           CTLL = 14
                                02304           CTLN = 16
                                02305           CTLP = 20
                                02320           DATAIN = BIT11
                                02340           DLP = BIT15             ;LINE PRESENT FLAG
                                02360           DROPC   = BIT3
                                02380           ENQ = 5
                                02400           EOL     = BIT11
                                02420           EOP     = BIT13
                                02440           EOT     = BIT14
                                02460           ESC = 33
                                02480           ETX = 3
                                02500           FLAG1   = BIT0
                                02520           FLAG2 = BIT1
                                02540           HALTOE = BIT15
                                02560           HALTC   = BIT7
                                02580           ICNT    = -2
                                02600           INHR    = BIT5
                                02620           INHRPT = BIT13
                                02640           ISP = 5726              ;INC SP 2
                                02660           ISP2 = 22626            ;INC SP 4
                                02680           LDONE   = BIT8
                                02700           LOOPC   = BIT6
                                02720           LOOPOE = BIT14
                                02740           PRI4 = 200              ;PRIORITY 4
                                02760           PRI7 = 340              ;   "    7
                                02780           PRI0 = 0                ;   "    0
                                02800           SEL = BIT7              ;LINE SELECT FLAG
                                02820           NOP = 240
                                02840           NOOP = 240
                                02860           MAJOR = 3000
                                02880           POINT   = 6
                                02900           PASCNT = 2
                                02920           RPC     = 10
                                02940           NREG    = 340
                                02960           SI = 17
                                02980           SO = 16
                                03000           SOH = 1
                                03020           STX = 2
                                03040           PRINTT  = BIT12
                                03060           TDONE   = BIT13
```

```
159             100000          03080           MERR    = BIT15
160             002000          03120           NEWTS*  = BIT10
161             001000          03140           NEWMOD  = BIT9
162             000200          03160           READY   = BIT7
163             000100          03180           SEQ     = BIT6
164             000040          03200           MULTI   = BIT5
165             000020          03220           SWCIL   = BIT4
166             000020          03240           PRINT   = BIT4
167             100377          03260           MERRN   = 100377
168             000004          03280           MFLAGS  = 4
169             177564          03281           TPS = 177564
[illegible]             177566          03282           TPB = 177566
[illegible]             177560          03283           TKS = 177560
[illegible]             177562          03284           TKB = 177562
[illegible]             000060          03285           TKV = 60
                                        03300   ;****** EMT CALL EQUATES
[illegible]             104000          03320           TYPE = EMT
[illegible]             104002          03340           PRTTBL = EMT+2
[illegible]             104004          03360           ITRAP = EMT+4
[illegible]             104006          03380           DELAYR = EMT+6
                                        03460
```

```
                    030000                  03500           .=0                             ;TRAP CATCHER
                    000002                  03520           .+2
                    000000                  03540           HALT
                    000006                  03560   MACHER: .+2
                    000000                  03580           HALT
                    000012                  03600           .+2
                    000000                  03620           HAL
                    007162                  03640           INTRAP          ;BREAKPOINT TRAP
                    000200                  03660           PRI4            ;USED DURING SYSTEM SIZER
                    007416                  03680           TXTRAP          ;IOT TRAP
                    000200                  03700           PRI4            ;USED BY TXMIT I/O DRIVER
                    001372                  03720           RESTRT          ;POWER FAIL TRAPS TO RESTART
                    000000                  03740           PRI0
                    006162                  03760           EMTBOS
                    000000                  03780           PRI0
                    000172                  04000           .=172
000172  000000                            04020   SWTEST: .WORD   0
000174  000000                            04040   SWLINE: .WORD   0
000176  000000                            04060   SSWR:   .WORD   0
000200  000137  001102                    04080           JMP     START
                                          04100
                                          .SBTTL  ACT11 HOOKS

                                          ;;**************************************************************************
                                          ;HOOKS REQUIRED BY ACT11
                    000204                            $SVPC=.                         ;SAVE PC
                    000046                            .=46
000046  001102                            START                           ;;1)SET LOC.46 TO ADDRESS OF START
                    000052                            .=52
000052  020000                            .WORD   20000                   ;;2)SET LCC.52 TO 20000
                    000204                            .=$SVPC                         ;; RESTORE PC
                    001100                  04140     .=1100
001100  000240                            04160     NOP
```

```
                                                04200           .SBTTL  TEST CONTROL & INITIALIZATION
                                                04300                   ;****************************************
                                                04320                   ;
                                                04340   START:          ;************ TEST MONITOR ************
                                                04380           RESET   ;****************************************
                                                04400   ;
                                                04420   ; PROGRAM INITIALIZATION SECTION
                                                04440   ;
001104  012706  001100                                          MOV     #STACK,SP
001110  005037  016152                                          CLR     NEXT
001114  005037  016154                                          CLR     INTEST
001120  005037  016162                                          CLR     NXTLIN
001124  005037  016160                                          CLR     ONLIN
001130  012737  016114  016164                                  MOV     #INBUF,PTR
001136  012705  010352                                          MOV     #TOOBLK,R5
                                                04580   ;
                                                04600   ; SEE IF SYSTEM HAS A SWITCH REGISTER
                                                04620   ;
001142  004737  003006                                          JSR     PC,SWRTST
                                                04660   ;
                                                04680   ; PRINT TEST IDENTIFICATION MESSAGE
                                                04700   ;
001146  012700  016772                                          MOV     #PROGID,R0
001152  104000                                    04740           TYPE
                                                04760   ;
                                                04780   ; DETERMIN SYSTEM CONFIGURATION ++
                                                04800   ; BUILD A TABLE OF INTERFACE LINES.
                                                04820   ;
001154  004737  005640                                          JSR     PC,BUILD
                                                04860   ;
                                                04880   ; RESTORE TRAP CATCHER FROM 100 TO 1000
                                                04900   ;
001160  004737  006126                                          JSR     PC,CATCH
001164  104002                                    04930           PRTTBL
                                                04940   ;
                                                04960   ; FIND OUT IF OPERATOR WANTS TO USE
                                                04980   ; CONSOLE OR SWITCHS FOR CONTROL
                                                05000   ;
001166  004737  003350                                          JSR     PC,GETSRC
001172  004737  003332                          05030   START2: JSR     PC,CONSON
001176  032737  000020  001364                              BIT     #SWCTL,PCFLAG
(9) 001204  001011                                          BNE     50001$
                                                05060   ;
                                                05080   ; PRINT A MENUE OF AVAILABLE COMMANDS
                                                05100   ;
001206  012700  017051                                          MOV     #L3,R0
001212  104000                                    05115           TYPE
001214  012700  017056                                          MOV     #HEADR1,R0
001220  104000                                    05140           TYPE
001222  012700  017103                                          MOV     #COMSUM,R0
001226  104000                                    05180           TYPE
001230                                          50001$:
001230  004737  003332                          05220   START3: JSR     PC,CONSON
001234                                          50002$:
                                                05260   ;
001234  032737  000020  001364                              BIT     #SWCTL,PCFLAG
```

```
(9)  001242  001403                              BEQ     50004$
276                                 05340   ; IF IN SWITCH CONTROL GET CONTENTS OF SW REG.
277  001244  004737  003130                     JSR     PC,GETSWS
278  001250  000421                             BR      50005$
(3)  001252                                 50004$:
279                                 05420   ;
280                                 05440   ; IN CONSOLE CONTROL SIGNIFY   READY
281                                 05460   ; AND READ COMMANDS FROM THE CONSOLE.
282                                 05480   ;
283  001252  012700  020123                     MOV     #RDY,R0
284  001256  104000                 05520               TYPE
285  001260                                      50006$:
286  001260  000001                 05560                   WAIT
287  001262  032737  000200  001364             BIT     #ATTN,PCFLAG
(5)  001270  001001                             BNE     50007$
288  001272  000772                             BR      50006$
(3)  001274                                 50007$:
289                                 05620   ;
290                                 05640   ; PRINT THE LINE TABLE IF REQUESTED.
291                                 05660   ;
292  001274  032737  010000  001364             BIT     #PRINTT,PCFLAG
(9)  001302  001404                             BEQ     50010$
293  001304  104002                 05700               PRTTBL
294  001306  042737  010000  001364             BIC     #PRINTT,PCFLAG
295  001314                                      50010$:
296  001314                                      50005$:
297                                 05780   ;
298                                 05800   ; SET UP THE I/O DRIVER AREAS
299                                 05820   ; SET UP & EXECUTE REQUESTED TESTS.
300                                 05840   ;
301  001314  004737  002110                     JSR     PC,LINMON
302  001320  012700  020411         05870       MOV     #ALLON,R0       ;ISSUE A SELECT ALL COMMAND
303  001324  004737  007010         05872       JSR     PC,MTYPE        ;IN CASE THERE ARE SELECTIVE
304                                 05874                               ;TERMINALS ON LINE.
305  001330  004737  001446                     JSR     PC,TSTCTL
306  001334  032737  004000  002032             BIT     #EOL,CFLAGS
(5)  001342  001406                             BEQ     50003$
307  001344  042737  004000  002032             BIC     #EOL,CFLAGS
308  001352  004737  001372                     JSR     PC,RESTRT
309  001356  000726                             BR      50002$
(3)  001360                                 50003$:
310  001360  000137  001172         05990       JMP     START2
311  001364                                      50000$:
312                                 06020
313                                 06040   ;       ********************************************
314                                 06060   ;       *                                          *
315                                 06080   ;       * NOTE...TYPING CTL-G WHILE IN CONSOLE    *
316                                 06100   ;       *         CONTROL MODE WILL CAUSE THE      *
317                                 06120   ;       *         PCFLAG WORD TO BE PRINTED.       *
318                                 06140   ;       *                                          *
319                                 06160   ;       ********************************************
320  001364                         06180   CTLBLK:         ;PROGRAM CONTROL BLOCK
321  001364  000001                 06200   PCFLAG: .WORD   1               ;PROGRAM CONTROL FLAGS
322  001366  000000                 06220   TESTNO: .WORD   0               ;TESTNO
323  001370  000000                 06240   LINENO: .WORD   0               ;LINENO
324                                 06260
```

```
                                        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
  354  001372  012706  001100          06380   RESTRT: MOV     #STACK,SP       ;REINITIALIZE EVERYTING
  355  001376  005037  016152          06400           CLR     NEXT
  356  001402  005037  016154          06420           CLR     INTEST
  357  001406  012737  000001  001364  06440           MOV     #1,PCFLAG
  358  001414  005037  016162          06460           CLR     NXTLIN
  359  001420  005037  016160          06480           CLR     ONLIN
  360  001424  012737  016114  016164  06500           MOV     #INBUF,PTR
  361  001432  004737  006126          06520           JSR     PC,CATCH
  362  001436  000240                  06540           NOP
  363  001440  000005                  06560           RESET
  364  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     50011$
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                                          50011$:
                                                06953
001532  032765  100000  000004                          BIT     #MERR,MFLAGS(R5)
(9) 001540  001414                                      BEQ     50012$
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                                          BR      50013$
(3) 001572                                      50012$:
                                                07062   ;
                                                07064   ; SEE IF TEST IS REPORTING DONE CONDITION
                                                07066   ;
001572  032765  020000  000004                          BIT     #TDONE,MFLAGS(R5)
(9) 001600  001415                                      BEQ     50014$
                                                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                                          50014$:
001634                                          50013$:
                                                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     50015$
421                                             07242   ;
422                                             07244   ; IF THE LOOP OR ERROR IS TURNED OFF THEN
423                                             07246   ; CONTINUE TEST AT THE NEXT SUBTEST.
424                                             07248   ;
425  001644  032737  040000  001364                     BIT     #LOOPOE,PCFLAG
(9)  001652  001006                                    BNE     50016$
426  001654  042765  000001  000010                     BIC     #BIT0,RPC(R5)
427  001662  016537  000010  016156                     MOV     RPC(R5),TESTAD
428  001670                                      50016$:
429  001670  000456                                    BR      50017$
(3)  001672                                     50015$:
430                                             07342   ;
431                                             07344   ; CHECK TO SEE IF THE ITERATION COUNT IS COMPLETED
432                                             07346   ;
433  001672  026565  000002  000000                     CMP     PASCNT(R5),CTLCNT(R5)
(9)  001700  003447                                    BLE     50020$
434  001702  052737  040000  002032                     BIS     #EOT,CFLAGS
435  001710  005037  002036                           CLR     TSCCNT
436                                             07402   ;
437                                             07404   ; REPORT END OF TEST CONDITION
438                                             07406   ;
439  001714  004737  005436                           JSR     PC,REPORT
440  001720  016565  000002  000000                     MOV     PASCNT(R5),CTLCNT(R5)
(6)  001726  066565  177776  000000                     ADD     ICNT(R5),CTLCNT(R5)
441                                             07442   ;
442                                             07444   ; IF IN SEQUENCE TESTS MODE SET UP NEXT TEST
443                                             07446   ;
444  001734  032737  000100  001364                     BIT     #SEQ,PCFLAG
(9)  001742  001423                                    BEQ     50021$
445  001744  013737  016152  016154                     MOV     NEXT,INTEST
446  001752  005237  016152                           INC     NEXT
447                                             07520
448                                             07522   ;
449                                             07524   ; IF NEXT IS A NON EXISTANT TEST SET EOL
450                                             07526   ; AND RETURN TO MONITOR FOR NEW COMMANDS
451                                             07528   ;
452  001756  023727  016154  000005                     CMP     INTEST,#5
(9)  001764  003407                                    BEQ     50022$
453  001766  005037  016152                           CLR     NEXT
454  001772  052737  004000  002032                     BIS     #EOL,CFLAGS
455  002000  000207                             07600          RTS     PC
456  002002  000402                                    BR      50023$
(3)  002004                                     50022$:
457  002004  004737  002056                           JSR     PC,SUTEST
458  002010                                      50023$:
459  002010  000402                                    BR      50024$
(3)  002012                                     50021$:
460                                             07682   ;
461                                             07684   ;  SET UP TEST ADDRESS FOR THE SAME TEST AGAIN.
462                                             07686   ;
463  002012  004737  002056                           JSR     PC,SUTEST
464  002016                                      50024$:
465  002016  000403                                    BR      50025$
(3)  002020                                     50020$:
466                                             07742   ;
```

```
                                                07744   ; RETURN TO TEST VIA ADDRESS SUPPLIED BY TEST
                                                07746   ;
 002020  016537  000010  016156                         MOV     RPC(R5),TESTAD
 002026                                         50025$:
 002026                                         50017$:
 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
 002066  063700  016154                                 ADD     INTEST,R0
 002072  011037  016156                                 MOV     (R0),TESTAD
 002076  006237  016154                                 ASR     INTEST
 002102  005065  000004                                 CLR     MFLAGS(R5)
 002106                                         50000$:
 002106                                         50001$:
 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
002116  001425                                            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
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$
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$
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   ;
                                                                MOV     NXTLIN,ONLIN
                                                09540   ;
                                                09560   ; RESET EVERYTHING IF AT THE END OF OUR DEVICE LIST.
                                                09580   ;
                                                                CMP     ONLIN,#-1
                                                                BNE     50003$
                                                                BIS     #LDONE,PCFLAG
                                                                JSR     PC,GVL
                                                                JSR     PC,MTW
                                                                JSR     PC,GNL
                                                                BR      50004$
                                                50003$:
                                                09720   ;
                                                09750   ; SET UP POINTER AREA FOR LINE = 'ONLIN'.
                                                09780   ;
                                                                JSR     PC,MTW
                                                                JSR     PC,GNL
                                                50004$:
                                                                BR      50005$
                                                50002$:
                                                                JSR     PC,MTW
                                                                BIT     #SEL,DLFLAG
                                                                BEQ     50006$
                                                09920   ;
                                                09940   ; CHECK TO SEE IF ALL DEVICES
                                                09960   ; HAVE BEEN TESTED YET. SET LDONE FLAG.
                                                09980   ;
                                                                BIS     #LDONE,PCFLAG
                                                                BR      50007$
                                                50006$:
                                                10040   ;
                                                10060   ; MAKE SHURE THAT WHEN TESTING A SINGLE
                                                10080   ; DEVICE , IT DOESN'T GET DROPPED
                                                10100   ; BECAUSE OF EXCESSIVE ERRORS
                                                10120   ;
                                                                BIS     #SEL,DLFLAG
                                                                MOV     #E20,R0
                                                10180           TYPE
                                                50007$:
                                                50005$:
                                                50000$:
                                                50001$:
                                                                RTS     PC
                                                10260
                                                10280   ;*************
                                                10300   ; GVL   THIS ROUTINE FINDS A VALID LINE FOR TESTING
                                                10320   ;*************
                                                10340
                                                10360   GVL:
                                                                MOV     R3,-(SP)
                                                10380           MOV     #LINOO,R3       ;GET ADDR OF LINE TABLE
                                                10400   G1A:    TST     (R3)            ;LIN PRESENT?
                                                10420           BMI     G1D             ;YES BRANCH
                                                10440   G1B:    ADD     #10,R3          ;POINT TO OTHER WORD
```

```
   604  002350  020027  016770          10460          CMP     R0,#TABEND              ;END OF TABLE ?
   605  002354  001371                  10480          BNE     G1A                     ;NO BRANCH
   606  002356  012700  020306          10500  G1C:    MOV     #E19,R0                 ;NOTIFY OPERATOR - NO LINES
   607  002362  104000                  10520          TYPE
   608  002364  000137  001372          10540          JMP     RESTRT
   609  002370  105713                  10560  G1D:    TSTB    (R3)                    ;LINE SELECTED?
   610  002372  100364                  10580          BPL     G1B                     ;NO TRY ANOTHER LINE
   611  002374  062703  000006          10600          ADD     #6,R3                   ;POINT TO OTHER WORD
   612  002400  011337  016160          10620          MOV     (R3),ONLIN      ;GET DATA FROM TABLE
   613  002404  000337  016160          10640          SWAB    ONLIN           ;
   614  002410  105037  016161          10660          CLRB    ONLIN+1
   615  002414  005037  000174          10680          CLR     SWLINE
   616  002420  113737  016160  000174  10700          MOVB    ONLIN,SWLINE
   617  002426  012603                  10720          MOV     (SP)+,R3
   618  002430  000207                  10740          RTS     PC              ;EXIT
   619                                  10760  ;************
   620                                  10780  ; MTW   THIS ROUTINE TRANSFERS TABLE DATA TO THE WORK AREA
   621                                  10800  ;************
   622                                  10820
   623  002432                          10840  MTW:
   (4)  002432  010346                          MOV     R3,-(SP)
   624  002434  013703  016160          10860          MOV     ONLIN,R3        ;GET LINE NO.
   625  002440  006303                  10880          ASL     R3
   626  002442  006303                  10900          ASL     R3
   627  002444  006303                  10920          ASL     R3              ;X8 FOR OFFSET
   628  002446  062703  016170          10940          ADD     #LINOO,R3       ;ADD IN BASE ADDR
   629  002452  012337  016126          10960  MTW1:   MOV     (R3)+,DLFLAG    ;GET FLAG WORD
   630  002456  012337  016130          10980          MOV     (R3)+,DLADR     ;GET ADDRESS
   631  002462  012337  016132          11000          MOV     (R3)+,DLVEC     ;GET VECTOR
   632  002466  011337  016134          11020          MOV     (R3),DLOTH      ;GET "OTHER WORD"
   633  002472  013737  016130  016136  11040          MOV     DLADR,DVCRXB
   634  002500  062737  000002  016136  11060          ADD     #2,DVCRXB
   635  002506  013737  016136  016140  11080          MOV     DVCRXB,DVCTXS
   636  002514  062737  000002  016140  11100          ADD     #2,DVCTXS
   637  002522  013737  016140  016142  11120          MOV     DVCTXS,DVCTXB
   638  002530  013737  016132  016144  11140          MOV     DLVEC,TXVEC
   639  002536  062737  000004  016144  11160          ADD     #4,TXVEC
   640  002544  062737  000002  016142  11180          ADD     #2,DVCTXB
   641  002552  012603                  11200          MOV     (SP)+,R3
   642  002554  000207                  11220          RTS     PC
   643                                  11240  ;************
   644                                  11260  ; GNL   THIS ROUTINE FINDS THE NEXT VALID LINE TO TEST
   645                                  11280  ;************
   646                                  11300
   647  002556                          11320  GNL:
   4)   002556  010346                          MOV     R3,-(SP
   648  002560  013703  016160          11340          MOV     ONLIN,R3        ;GET CURRENT LINE
   649  002564  005203                  11360          INC     R3              ;CURRENT +1
   650  002566  006303                  11380          ASL     R3
   651  002570  006303                  11400          ASL     R3
   652  002572  006303                  11420          ASL     R3              ;X8 FOR OFFSET
   653  002574  062703  016170          11440          ADD     #LINOO,R3       ;ADD IN BASE ADDR OF TABLE
   654  002600  005713                  11460  GN1:    TST     (R3)            ;LINE PRESENT?
   655  002602  100403                  11480          BMI     GN3             ;YES - BRANCH
   656  002604  062703  000010          11500  GN2:    ADD     #10,R3          ;POINT TO NEXT LINE ENTR
   657  002610  000773                  11520          BR      GN1             ;CHECK NEXT
```

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                                11540   GN3:    TSTB    (R3)            ;LINE SELECTED?
                                11560           BPL     GN2             ;NO TRY ANOTHER
                                11580           CMP     (R3),#-1        ;END OF TABLE?
                                11600           BEQ     GN5             ;YES - BRANCH
                                11620           ADD     #6,R3           ;GET "OTHER WORD
                                11640           MOV     (R3),NXTLIN
                                11660           SWAB    NXTLIN          ; = NEXT AVAILABLE LINE
                                11680           CLRB    NXTLIN+1
                                11700   GN4:
                                                MOV     (SP)+,R3
                                11720           RTS     PC              ;EXIT
                                11740   GN5:    MOV     #-1,NXTLIN      ;SET NXTLIN TO -1 - NO SELECT
                                11760           BR      GN4
                                11780
                                11800
                                11820   ;************
                                11840   ;UPDATE  ROUTINE TO UPDATE INTERFACE TABLE FROM COMMANDS
                                11860   ;************
                                11880
002660                          11900   UPDATE:
                                11902   ; SHIFT THE CONVERTED LINE NO. FOR AN
                                11904   ; OFFSET TO THE LINE TABLE.
                                11906   ;
002660  006337  004776                          ASL     DATA
002664  006337  004776                          ASL     DATA
002670  006337  004776                          ASL     DATA
                                11930   ; ADD IN THE BASE ADDRESS OF THE TABLE.
002674  062737  016170  004776                  ADD     #LINOO,DATA
                                11960   ;
                                11980   ; IF THE LINE SELECTED DOESN'T EXIST -
                                12000   ; SEND AN ERROR MESSAGE.
                                12020   ;
002702  032777  100000  002066                  BIT     #DLP,@DATA
002710  001003                          BNE     50002$
002712  004737  005100                  JSR     PC,SELERR
002716  000430                          BR      50003$
002720                          50002$:
                                12100   ;
                                12120   ; ADDING A LINE  SETS IT'S "SELECTED" FLAG
                                12140   ; AND CLEARS OUT THE ERROR COUNT FOR THAT LINE
                                12160   ;
002720  032737  000004  005002                  BIT     #ADDC,TEMPF
002726  001415                          BEQ     50004$
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                          BR      50005$
002762                          50004$:
                                12300   ;
                                12320   ; DROPPING A LINE JUST RESETS IT'S "SELECTED" FLAG
                                12340   ;
002762  032737  000010  005002                  BIT     #DROPC,TEMPF
002770  001403                          BEQ     50006$
002772  042777  000200  001776                  BIC     #SEL,@DATA
003000                          50006$:
```

```
706  003000                                        50005$:
707  003000                                        50003$:
708  003000  005037  004776                              CLR     DATA
709  003004                                        50000$:
710  003004                                        50001$:
711  003004  000207                                      RTS     PC
712                                  12480
713                                  12500
```

```
                                        12540           .SBTTL  SWITCH REGISTER ROUTINES          ;
                                        12560   ;*************
                                        12580   ;SWRTST TESTS FOR HARDWARE SWITCH REGISTER
                                        12600   ;*************
003006  012737  003040  000004          12620   $WRTST: MOV     #4$,MACHER      ;SU NXM TRAP TO 4$
003014  012737  000340  000006          12640           MOV     #PR7,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,O2ASC
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   ; TO 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
```

```
                                                14840           .SBTTL  CONSOLE TERMINAL ROUTINES
                                                14860   ;************
                                                14880   ;CONSON-- ROUTINE TO INITIALIZE CONSOLE VECTOR AREA
                                                14900   ;************
                                                14920
 796  003332  012737  003466  000060            14940   CONSON: MOV     #READKB,@#TKV   ;INTERRUPT TO "READKB"
 797  003340  012737  000101  177560            14960           MOV     #101,@#TKS
 798  003346  000207                            14980           RTS     PC
 799                                            15000
 800                                            15020   ;************
 801                                            15040   ; GETSRC        THIS ROUTINE ASKS THE OPERATOR IF HE/SHE
 802                                            15060   ;               WANTS TO USE CONSOLE CONTROL. THEN SETS
 803                                            15080   ;               A CONTROL FLAG ACCORDINGLY.
 804                                            15100   ;
 805                                            15120   ;************
 806                                            15140
 807  003350                                            GETSRC:
 808  003350  005077  012610                            CLR     @PTR
 809  003354  012700  020370                            MOV     #CTLM,R0
 810  003360  104000                            15220       TYPE
 811  003362  012737  000001  177560                    MOV     #1,@#TKS
 812  003370                                    50002$:
 813  003370  032737  000200  177560                    BIT     #READY,@#TKS
 (9)  003376  001410                                    BEQ     50004$
 814  003400  113777  177562  012556                    MOVB    @#TKB,@PTR
 815  003406  004737  005044                            JSR     PC,ECHO
 816  003412  012700  017730                            MOV     #L1,R0
 817  003416  104000                            15360       TYPE
 818  003420                                    50004$:
 819  003420  005777  012540                            TST     @PTR
 (5)  003424  001001                                    BNE     50003$
 820  003426  000760                                    BR      50002$
 (3)  003430                                    50003$:
 821  003430  142777  000200  012526                    BICB    #200,@PTR
 822  003436  027727  012522  000116                    CMP     @PTR,#'N
 (9)  003444  001007                                    BNE     50005$
 (6)  003446  023727  016124  000176                    CMP     SWR,#SSWR
 (9)  003454  001403                                    BEQ     50005$
 823  003456  052737  000020  001364                    BIS     #SWCTL,PCFLAG
 824  003464                                    50005$:
 825  003464                                    50000$:
 (3)  003464                                    50001$:
 (2)  003464  000207                                    RTS     PC
```

```
                                        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     50002$
003514  004737  005062                                  JSR     PC,CMDERR
003520  005037  177560                                  CLR     @#TKS
003524  000516                                          BR      50003$
(3)     003526                                  50002$:
                                        15715   ;
                                        15720   ; IF CMD CHAR WAS A CTL-G  DO THE CTLGX ROUTINE.
                                        15725   ; PRINT OUT PCFLAGS ON CONSOLE.
                                        15730   ;
003526  123727  003776  000007                           CMPB    RDSAV,#CTLG
(9)     003534  001006                                  BNE     50004$
003536  004737  003064                                  JSR     PC,CTLGX
003542  012700  017730                                  MOV     #L1,R0
003546  104000                          15750             TYPE
003550  000504                                          BR      50005$
(3)     003552                                  50004$:
                                        15756   ;
                                        15757   ; IF IN I/O MODE PUT DATA IN I/O BUFFER
                                        15758   ;
003552  032737  000002  001364                           BIT     #FLAG2,PCFLAG
(9)     003560  001410                                  BEQ     50006$
003562  113711  003776                                  MOVB    RDSAV,(R1)
003566  052737  004000  001364                           BIS     #DATAIN,PCFLAG
003574  005037  007564                                  CLR     DELAYT
003600  000470                                          BR      50007$
(3)     003602                                  50006$:
                                        15776   ;
                                        15777   ;IF IN COMMAND MODE PUT DATA IN INBUF
                                        15778   ;AND CALL INTERPRITER
                                        15779   ;
003602  032737  000001  001364                           BIT     #FLAG1,PCFLAG
(9)     003610  001406                                  BEQ     50010$
003612  113777  003776  012344                           MOVB    RDSAV,@PTR
003620  004737  004000                                  JSR     PC,CSI
003624  000456                                          BR      50011$
(3)     003626                                  50010$:
                                        15796   ;
                                        15797   ; CLEAR AND GO TO READY STATE.
                                        15798   ;
```

```
875  003626  123727  003776  000003                 CMPB    RDSAV,#CTLC
(9)  003634  001003                                 BNE     50012$
876  003636  004737  001372                         JSR     PC,RESTRT
877  003642  000447                                 BR      50013$
(3)  003644                                      50012$:
878                                      15811   ;
879                                      15812   ; CHECK FOR PRINT REPORTS COMMAND
880                                      15813   ;
881  003644  123727  003776  000020                 CMPB    RDSAV,#CTLP
(9)  003652  001004                                 BNE     50014$
882  003654  042737  020000  001364                 BIC     #INHRPT,PCFLAG
883  003662  000437                                 BR      50015$
(3)  003664                                      50014$:
884                                      15826   ;
885                                      15827   ; CHECK FOR NO REPORTS COMMAND
886                                      15828   ;
887  003664  123727  003776  000016                 CMPB    RDSAV,#CTLN
(9)  003672  001004                                 BNE     50016$
888  003674  052737  020000  001364                 BIS     #INHRPT,PCFLAG
889  003702  000427                                 BR      50017$
(3)  003704                                      50016$:
890                                      15841   ;
891                                      15842   ; CHECK FOR HALT ON ERROR COMMAND
892                                      15843   ;
893  003704  123727  003776  000010                 CMPB    RDSAV,#CTLH
(9)  003712  001004                                 BNE     50020$
894  003714  052737  100000  001364                 BIS     #HALTOE,PCFLAG
895  003722  000417                                 BR      50021$
(3)  003724                                      50020$:
896                                      15856   ;
897                                      15857   ; CHECK FOR LOOP ON ERROR COMMAND
898                                      15858   ;
899  003724  123727  003776  000014                 CMPB    RDSAV,#CTLL
(9)  003732  001004                                 BNE     50022$
900  003734  052737  040000  001364                 BIS     #LOOPOE,PCFLAG
901  003742  000407                                 BR      50023$
(3)  003744                                      50022$:
902                                      15871   ;
903                                      15872   ; CHECK FOR CLEAR COMMAND
904                                      15873   ;
905  003744  123727  003776  000013                 CMPB    RDSAV,#CTLK
(9)  003752  001003                                 BNE     50024$
906  003754  042737  140000  001364                 BIC     #HALTOE!#LOOPOE,PCFLAG
907  003762                                      50024$:
908  003762                                      50023$:
909  003762                                      50021$:
910  003762                                      50017$:
911  003762                                      50015$:
912  003762                                      50013$:
913  003762                                      50011$:
914  003762                                      50007$:
915  003762                                      50005$:
916  003762                                      50003$:
917                                      15935   ;
918                                      15940   ; TURN CONSOLE BACK ON & EXIT.
919                                      15945   ;
```

```
   920  003762  012737  000101  177560                    MOV     #101,@#TKS
   921  003770  012600                                    MOV     (SP)+,R0
   922  003772  000002                    15960           RTI
   923  003774                                  50000$:
   (3)  003774                                  50001$:
   (2)  003774  000207                                    RTS     PC
   924                                 16580
   925  003776  000000                 16600   RDSAV:  .WORD   0
```

```
                                        16640   ;***************
                                        16660   ; CSI   COMMAND STRING INTERPPETER
                                        16680   ;***************
                                        16700
                                        CSI:
                                        16740   ;
                                        16760   ; IF CMD CHAR IS AN ESCAPE  ECHO A '$'
                                        16780   ; AND SET MODE BACK TO 0.
                                        16800   ;
004000  123727  003776  000033                          CMPB    RDSAV,#ESC
(9)     004006  001030                                  BNE     50002$
004010  112777  000044  012146                         MOVB    #'$,@PTR
004016  004737  005044                                  JSR     PC,ECHO
004022  012700  017051                                  MOV     #L3,R0
                                        16900           TYPE
004030  042737  000001  005002                         BIC     #FLAG1,TEMPF
                                        17100   ;
                                        17120   ; MOVE NEW CONTROL FLAGS TO THE PCFLAG WORD.
                                        17140   ; RESET THE BUFFER POINTER.
                                        17160   ;
004036  013737  005002  001364                          MOV     TEMPF,PCFLAG
004044  013737  005004  001366                          MOV     TEMPT,TESTNO
004052  012737  016114  016164                          MOV     #INBUF,PTR
                                        17235           ; CLEAR ATTENTION FLAGS FROM TEMPF
004060  042737  017603  005002                         BIC     #17603,TEMPF
                                        17260
004066  000457                                          BR      50003$
004070                                  50002$:
                                        17300   ;
                                        17320   ; IF CMD CHAR WAS A DELETE   RESET THE BUFFER
                                        17340   ; POINTER AND ECHO A CR/LF.
                                        17360   ;
004070  123737  003776  016166                          CMPB    RDSAV,DEL
(9)     004076  001007                                  BNE     50004$
004100  012737  016114  016164                          MOV     #INBUF,PTR
004106  012700  017730                                  MOV     #L1,R0
                                        17440           TYPE
004114  000444                                          BR      50005$
004116                                  50004$:
                                        17480   ;
                                        17500   ; IF CMD CHAR WAS A RETURN ECHO A CR LF
                                        17520   ; AND CALL THE DECODER.
                                        17540   ;
004116  123727  003776  000015                          CMPB    RDSAV,#CR
(9)     004124  001021                                  BNE     50006$
004126  012700  017730                                  MOV     #L1,R0
                                        17600           TYPE
004134  004737  004230                                  JSR     PC,DECODE
004140  123727  016114  000121                         CMPB    INBUF,#'Q
(9)     004146  001007                                  BNE     50007$
004150  005037  001356                                  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   ;
 980  004170  123727  003776  000077            CMPB    RDSAV,#'?
(9)   004176  001007                            BNE     50011$
 981  004200  012700  017103                    MOV     #COMSUM,R0
 982  004204  104000                  17920     TYPE
 983  004206  012700  020123                    MOV     #RDY,R0
 984  004212  104000                  17960     TYPE
 985  004214  000404                            BR      50012$
(3)   004216                          50011$:
 986                                    18000   ;
 987                                    18020   ; ECHO THE INPUT CHARACTER.
 988                                    18040   ;
 989  004216  004737  005044                    JSR     PC,ECHO
 990  004222  005237  016164                    INC     PTR
 991  004226                          50012$:
 992  004226                          50010$:
 993  004226                          50005$:
 994  004226                          50003$:
 995  004226                          50000$:
(3)   004226                          50001$:
(2)   004226  000207                            RTS     PC
 996                                    18220
 997                                    18240
```

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

```
                        BNE     50012$
(9)  004410  001003      MOV     #2,-(SP
1049 004412  012746  000002 BR      50013$
1050 004416  000405  50012$:
(3)  004420              MOVB    3(R1),DATA2
1051 004420  116137  000003 005000 MOV     #3,-(SP)
1052 004426  012746  000003 50013$:
1053 004432              50011$:
1054 004432              MOV     #DATA,-(SP)
1055 004432  012746  004776 JSR     PC,A2BIN
1056 004436  004737  007676
1057                    19440   ;
1058                    19460   ; IF R COMMAND USE DATA AS A TEST NO.
1059                    19480   ;
1060 004442  121027  000122        CMPB    (R0),#'R
(9)  004446  001020        BNE     50014$
1061                    19520   ;
1062                    19540   ; CHECK THE LIMITS FOR VALID TEST NO.
1063                    19560   ;
1064                    19580   ;********** #5 BELOW IS HIGHEST TEST NO THIS DIAGNOSTIC **********
1065 004450  005737  004776        TST     DATA
(8)  004454  002404        BLT     50015$
(6)  004456  023727  004776 000005 CMP     DATA,#5
(9)  004464  003403        BLE     50016$
(6)  004466              50015$:
1066 004466  004737  005100        JSR     PC,SELERR
1067                    19640   ;
1068                    19660   ; OUT OF RANGE    ERROR.
1069                    19680   ;
1070 004472  000403        BR      50017$
(3)  004474              50016$:
1071 004474  013737  004776 0E5004 MOV     DATA,TEMPT
1072 004502              50017$:
1073 004502  052737  100000 005000 BIS     #MERR,DATA2
1074 004510              50014$.
1075                    19800   ;
1076                    19820   ; IF W COMMAND USE DATA AS   WIDTH
1077                    19840   ;
1076 004510  121027  000127        CMPB    (R0),#'W
(9)  004514  001005        BNE     50020$
1079                    19880   ;
1080                    19900   ; GO CHECK FOR VALID LIMITS ON WIDTH ENTRY.
1081                    19920   ;
1082 004516  004737  005006        JSR     PC,CHKW
1083 004522  052737  100000 005000 BIS     #MERR,DATA2
1084 004530              50020$:
1085                    20000   ;
1086                    20020   ; IF ADDING OR DROPING A LINE  CALL UPDATE ROUTINE
1087                    20040   ;
1088 004530  121027  000101        CMPB    (R0),#'A
(8)  004534  001403        BEQ     50021$
(6)  004536  121027  000104        CMPB    (R0),#'D
(9)  004542  001005        BNE     50022$
(6)  004544              50021$:
1089                    20080   ;
1090                    20100   ; TAKE LINE NO. AND UPDATE  INTERFACE TABLE
1091                    20120   ;
```

```
1092  004544  004737  002660                        JSR     PC,UPDATE
1093  004550  052737  100000  005000                BIS     #MERR,DATA2
1094  004556                                50022$:
1095  004556                                50007$:
1096  004556  000403                        BR      50023$
(3)   004560                                50005$:
1097  004560  052737  100000  005000                BIS     #MERR,DATA2
1098  004566                                50023$:
1099  004566  000415                        BR      50024$
(3)   004570                                50004$:
1100  004570  062700  000006                ADD     #6,R0
1101                                20320   ;
1102                                20340   ; IF THE CHAR IN  DOESN'T COMPARE TO ANY
1103                                20360   ; TABLE ENTRY THE COMMAND IS INVALID
1104                                20380   ;
1105  004574  020027  004774                CMP     R0,#DTEND
(9)   004600  001010                        BNE     50025$
1106  004602  004737  005062                JSR     PC,CMDERR
1107  004606  012737  016114  016164        MOV     #INBUF,PTR
1108  004614  052737  100000  005000        BIS     #MERR,DATA2
1109  004622                                50025$:
1110  004622                                50024$:
1111                                20520   ;
1112                                20540   ; KEEP LOOKING AT CHAR UNTIL IT'S
1113                                20560   ; DECODED, OR END OF TABLE (ERROR).
1114                                20580   ;
1115  004622  032737  100000  005000        BIT     #MERR,DATA2
(5)   004630  001001                        BNE     50003$
1116  004632  000607                        BR      50002$
(3)   004634                                50003$:
1117  004634  005037  005000                CLR     DATA2
1118                                20660   ;
1119                                20680   ; RESET THE INPUT BUFFER POINTER
1120                                20700   ;
1121  004640  012737  016114  016164        MOV     #INBUF,PTR
1122  004646  012602                        MOV     (SP)+,R2
1123  004650  012601                        MOV     (SP)+,R1
1124  004652  012600                        MOV     (SP)+,R0
1125  004654                                50000$:
(3)   004654                                50001$:
(2)   004654  000207                        RTS     PC
1126                                20820
1127                                20840   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1128  004656     123     000         20860   DECTBL: .BYTE   'S,0                    ;DECODE TABLE
1129  004660  001200  000040         20880           .WORD   ATTN!NEWMOD,MULTI
1130  004664     115     000         20900           .BYTE   'M,0                    ;FIRST - CHAR TO BE DECODED
1131  004666  001240  000000         20920           .WORD   ATTN!MULTI!NEWMOD,0
1132  004672     121     000         20940           .BYTE   'Q,0                    ;SECOND - CONTROL BITS
1133  004674  000300  000000         20960           .WORD   ATTN!SEQ,0
1134  004700     122     200         20980           .BYTE   'R,200                  ;THIRD - SET MASK
1135  004702  000200  000100         21000           .WORD   ATTN,SEQ
1136  004706     104     100         21020           .BYTE   'D,100                  ;FOURTH - CLEAR MASK
1137  004710  002010  000004         21040           .WORD   DROPC!NEWTST,ADDC
1138  004714     101     100         21060           .BYTE   'A,100
1139  004716  002004  000010         21080           .WORD   ADDC!NEWTST,DROPC
1140  004722     124     000         21100           .BYTE   'T,0                    ;CONTROL BITS:
```

```
1141  004724  010000  000000          21120            .WORD   PRINTT,0
1142  004730     114     000          21140            .BYTE   'L,0
1143  004732  040000  000000          21160            .WORD   LOOPOE,0
1144  004736     110     000          21180            .BYTE   'H,0                    ;5 = GET WIDTH
1145  004740  100000  000000          21200            .WORD   HALTOE,0
1146  004744     116     000          21220            .BYTE   'N,0                    ;6 = GET LINE #
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                          21620    CHKW:
1167                                  21621    ;
1168                                  21622    ; RANGE OF 26 THRU 132 CHARACTERS IS VALID
1169                                  21623    ;
1170  005006  023727  004776  000032           CMP     DATA,#32
 (8)  005014  002404                             BLT     50002$
 (6)  005016  023727  004776  000204           CMP     DATA,#132.
 (9)  005024  003403                             BLE     50003$
 (6)  005026                          50002$:
1171  005026  004737  005100                   JSR     PC,SELERR
1172  005032  000403                             BR      50004$
 (3)  005034                          50003$:
1173  005034  013737  004776  016146           MOV     DATA,WIDTH
1174  005042                          50004$:
1175  005042                          50000$:
   3  005042                          50001$:
   2  005042  000207                           RTS     PC
1176                                  21760
1177                                  21780
```

H04


```
 1179                                          21820   ;************
 1180                                          21840   ;ECHO   CONSOLE KEYBOARD ECHO ROUTINE; PTR 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    @PTR,@#TPB
 1186  005060  000207                         21960           RTS     PC
 1187                                          21980
```

```
 1189                                                 22020          .SBTTL  ERROR & REPORT ROUTINES
 1190                                                 22040  ;*************
 1191                                                 22060  ;CMDERR   ROUTINE TO HANDLE INVALID COMMANDS
 1192                                                 22080  ;*************
 1193                                                 22100
 1194  005062                                                CMDERR:
 1195  005062  012700  0200.7                                       MOV     #ER1,R0
 1196  005066  104000                                22160      TYPE
 1197  005070  012700  020123                                      MOV     #RDY,R0
 1198  005074  104000                                22200      TYPE
 1199  005076                                                50000$:
  (3)  005076                                                50001$:
  (2)  005076  000207                                           RTS     PC
 1200                                                 22240  ;*************
 1201                                                 22260  ;SELERR  ROUTINE TO HANDLE SELECTION ERRORS
 1202                                                 22280  ;*************
 1203                                                 22300
 1204  005100                                                SELERR:
 1205  005100  012700  020032                                      MOV     #ER2,R0
 1206  005104  104000                                22360      TYPE
 1207  005106  012700  020123                                      MOV     #RDY,R0
 1208  005112  104000                                22400      TYPE
 1209  005114  012737  016114  016164                            MOV     #INBUF,PTR
 1210  005122                                                50000$:
  (3)  005122                                                50001$:
  (2   005122  000207                                           RTS     PC
 1211                                                 22460
```

```
                                                22500   ;*************
                                                22520   ;ERRORS ERROR LOGGER AND TYPEOUT ROUTINE
                                                22540   ;
                                                22560   ;*************
                                                22580
1218  005124                                            ERROR:
1219  005124  005037  005434                             CLR     ERRSAV
122C  005130  032737  020000  001364                      BIT     #INHRPT,PCFLAG
 (9)  005136  001044                                      BNE     50002$
1221                                            22642   ;
1222                                            22644   ;CONVERT TEST NO. FOR OUTPUT
1223                                            22646   ;
1224  005140  013746  016154                             MOV     INTEST,-(SP)
1225  005144  012746  000002                             MOV     #2,-(SP)
1226  005150  012746  020001                             MOV     #ERO+16.,-(SP)
1227  005154  004737  007566                             JSR     PC,O2ASC
1228                                            22722   ;
1229                                            22724   ;CONVERT ERROR NO. FOR OUTPUT
1230                                            22726   ;
1231  005160  113737  002032  005434                      MOVB    CFLAGS,ERRSAV
1232  005166  013746  005434                             MOV     ERRSAV,-(SP)
1233  005172  012746  000003                             MOV     #3,-(SP)
1234  005176  012746  017770                             MOV     #ERO+7,-(SP)
1235  005202  004737  007566                             JSR     PC,O2ASC
1236                                            22822   ;
1237                                            22824   ;CONVERT LINE NO. FOR OUTPUT
1238                                            22826   ;
1239  005206  013746  016160                             MOV     ONLIN,-(SP)
1240  005212  012746  000002                             MOV     #2,-(SP)
1241  005216  012746  020011                             MOV     #ERO+24.,-(SP)
1242  005222  004737  007566                             JSR     PC,O2ASC
1243  005226  012700  017761                             MOV     #ERO,R0
1244  005232  104000                        22940        TYPE
1245                                            22960   ;
1246                                            22980   ; CLEAR THE ERROR FLAG
1247                                            23000   ;
1248  005234  042737  100377  002032                      BIC     #MERRN,CFLAGS
1249                                            23040   ;
1250                                            23060   ; GET THE POINTER SUPPLIED BY THE PROGRAM
1251                                            23080   ; AND PRINT THE ERROR DESCRIPTION MSG.
1252                                            23100   ;
1253  005242  013700  002034                             MOV     TSCPTR,R0
1254  005246  104000                        23140        TYPE
1255  005250                                          50002$:
1256  005250  005037  005434                             CLR     ERRSAV
1257                                            23200   ;
1258                                            23220   ; UPDATE THE ERROR COUNT FOR THE FAILING LINE
1259                                            23240   ;
1260  005254  013737  016160  005434                      MOV     ONLIN,ERRSAV
1261  005262  006337  005434                             ASL     ERRSAV
 (7)  005266  006337  005434                             ASL     ERRSAV
 (7)  005272  006337  005434                             ASL     ERRSAV
1262  005276  062737  016170  005434                      ADD     #LIN00,ERRSAV
1263  005304  005277  000124                             INC     @ERRSAV
1264                                            23340   ;
1265                                            23360   ;IF LOOP ON ERROR IS SET , MAKE THE
```

```
                                                23380   ; RETURN ADDRESS OF THE TEST  ODD.
                                                23400   ; THE TEST CONTROLLER WILL USE THE OLD
                                                23420   ; RPC TO RE-DO THE SUBTEST.
                                                23440   ;
1270  005310  032737  040000  001364                        BIT     #LOOPOE,PCFLAG
 (9)  005316  001403                                        BEQ     50003$
1271  005320  052765  000001  000010                        BIS     #BIT0,RPC(R5)
1272  005326                                    50003$:
1273                                            23520   ;
1274                                            23540   ; SEE IF LINE ABORT FLAG IS SET
1275                                            23560   ;
1276  005326  032777  000020  000100                        BIT     #ABO,@ERRSAV
 (9)  005334  001431                                        BEQ     50004$
1277                                            23600   ;
1278                                            23620   ; IF ABORT IS SET DESELECT THE LINE
1279                                            23640   ; UNLESS IT'S THE ONLY ONE BEING TESTED
1280                                            23660   ;
1281  005336  032737  000040  001364                        BIT     #MULTI,PCFLAG
 (9)  005344  001417                                        BEQ     50005$
1282  005346  042777  000377  000060                        BIC     #SEL!#177,@ERRSAV
1283  005354  013746  016160                              MOV     ONLIN,-(SP)
1284  005360  012746  000002                              MOV     #2,-(SP)
1285  005364  012746  020270                              MOV     #DR1,-(SP)
1286  005370  004737  007566                              JSR     PC,O2ASC
1287                                            23800   ;
1288                                            23820   ; NOTIFY OPERATOR THAT LINE WAS DROPPED
1289                                            23840   ;
1290  005374  012700  020242                              MOV     #DRO,R0
1291  005400  104000                                        TYPE
1292                                            23880
1293                                            23900   ;
1294  005402  000406                            23920   ; IF TESTING ONLY ONE LINE DONOT ALLOW IT TO BE DESELECTED
 (3)  005404                                            BR      50006$
1295  005404  052777  000200  000022           50005$:
1296  005412  042777  000020  000014                        BIS     #SEL,@ERRSAV
1297  005420                                              BIC     #ABO,@ERRSAV
1298  005420                                    50006$:
1299                                            50004$:
1300                                            24040   ;
1301                                            24060   ; HALT HERE IF HALT ON ERROR IS SET
1302  005420  032737  100000  001364            24080   ;
 (9)  005426  001401                                        BIT     #HALTOE,PCFLAG
1303  005430  000000                                        BEQ     50007$
1304  005432                                    24120       HALT
1305  005432                                    50007$:
 (3)  005432                                    50000$:
 (2)  005432  000207                            50001$:
1306                                                        RTS     PC
1307  005434  000000                            24180
1308                                            24200   ERRSAV: .WORD   0
1309                                            24220
1310                                            24240   ;*****************************************************************
1311                                            24260   ; REPORT        THIS ROUTINE HANDLES END OF TEST AND
1312                                            24280   ;               END OF PASS  REPORTS.
1313                                            24300   ;*****************************************************************
1314  005436                                    24320
                                                        REPORT.
```

```
1315                                                    24345   ; CHECK FOR END OF TEST CONDITION
1316                                                    24350   ;
1317  005436  032737  040000  002032                            BIT     #EOT,CFLAGS
 (9)  005444  001423                                            BEQ     50002$
1318                                                    24365   ;
1319                                                    24370   ; CONVERT TEST NO. FOR OUTPUT
1320                                                    24375   ;
1321  005446  013746  016154                                    MOV     INTEST,-(SP)
1322  005452  012746  000002                                    MOV     #2,-(SP)
1323  005456  012746  020210                                    MOV     #EOTM+18.,-(SP)
1324  005462  004737  007566                                    JSR     PC,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                                                  50002$:
005600  032737  000001  001364                           BIT     #FLAG1,PCFLAG
(9)     005606  001003                                  BNE     50003$
005610  052737  000003  001364                           BIS     #FLAG1!#FLAG2,PCFLAG
005616                                                  50003$:
005616  032737  000001  001364                           BIT     #FLAG1,PCFLAG
(7)     005624  001765                                  BEQ     50002$
(4)     005626  032737  000002  001364                   BIT     #FLAG2,PCFLAG
(7)     005634  001761                                  BEQ     50002$
005636                                                  50000$:
(3)     005636                                          50001$:
(2)     005636  000207                                  RTS     PC
                                                00320
                                                00340
```

```
1378                                    00700           .SBTTL  INTERFACE SIZER ROUTINES
1379                                    00900   ;************
1380                                    00950   ;BUILD  SUBROUTINE TO BUILD THE DEVICE TABLE USED
1381                                    01000   ;       IN MULTI LINE MODE.
1382                                    01050   ;************
1383  005640  012737  000003  000066   01100   BUILD:  MOV     #BPT,66         ;SET UP CONSOLE TRAP
1384  005646  012737  006120  000004   01150           MOV     #4$,MACHER      ;SET UP NXM TRAP
1385  005654  012701  016170           01200           MOV     #LINOO,R1
1386  005660  012137  016126           01220   1$:     MOV     (R1)+,DLFLAG
1387  005664  012137  016130           01240           MOV     (R1)+,DLADR
1388  005670  012137  016132           01260           MOV     (R1)+,DLVEC
1389  005674  012137  016134           01280           MOV     (R1)+,DLOTH
1390  005700  013737  016130  016140   01400           MOV     DLADR,DVCTXS
1391  005706  062737  000004  016140   01430           ADD     #4,DVCTXS
1392  005714  013737  016140  016142   01440           MOV     DVCTXS,DVCTXB
1393  005722  062737  000002  016142   01450           ADD     #2,DVCTXB
1394  005730  113737  016135  016160   01500           MOVB    DLOTH+1,ONLIN
1395  005736  005777  010166           01750           TST     @DLADR                  ;TRY TO ACCESS DVC.
1396  005742  052737  100000  016126   01850           BIS     #DLP,DLFLAG             ;SET DVC PRESENT FLAG
1397  005750  012737  000300  007564   01900           MOV     #300,DELAYT             ; SET UP FOR DELAY
1398  005756  112777  000076  010156   01925           MOVB    #'>,@DVCTXB             ;TXMIT A ">" CHARACTER
1399  005764  052777  000100  010146   01950           BIS     #100,@DVCTXS            ;SET DVC TX INTR ENABLE
1400  005772  104006                   02050           DELAYR                          ;WAIT FOR INTERRUPT
1401  005774  005737  016132           02100           TST     DLVEC                   ;IF ZERO NO INTERRUPT OCCURED
1402  006000  001433                   02125           BEQ     2$                      ;NO INTERRUPT - BRANCH
1403                                    02150                                           ;OTHERWISE DLVEC=ADDR THAT
1404                                    02200                                           ;DVC INTERRUPTED TO VIA INTRAP'
1405  006002  052737  000200  016126   02300           BIS     #SEL,DLFLAG             ;SET SELECTED FLAG
1406  006010  013741  016134           02350   3$:     MOV     DLOTH,-(R1)
1407  006014  013741  016132           02400           MOV     DLVEC,-(R1)             ;PUT NEW INFORMATION
1408  006020  013741  016130           02450           MOV     DLADR,-(R1)             ;INTO LINE TABLE
1409  006024  013741  016126           02500           MOV     DLFLAG,-(R1)
1410                                    02550
1411  006030  062701  000010           02600           ADD     #10,R1                  ;JUMP POINTER TO NEXT LINE
1412  006034  020127  016770           02650   5$:     CMP     R1,#TABEND              ;ALL DONE ?
1413  006040  001307                   02700           BNE     1$                      ;NO - DO NEXT LINE
1414  006042  162701  000010           02750   6$:     SUB     #10,R1                  ;CKECH LAST ENTRY
1415  006046  005711                   02800           TST     (R1)                    ;FOR LINE PRESENT
1416  006050  100403                   02850           BMI     7$
1417  006052  012711  177777           02900           MOV     #-1,(R1)                ;IF NOT SET IT TO END
1418  006056  000771                   02950           BR      6$                      ;OF TABLE
1419  006060  012737  000006  000004   03100   7$:     MOV     #6,MACHER               ;RESET TRAP CATCHER
1420  006066  000207                   03150           RTS     PC
1421  006070  052737  000020  016126   03200   2$:     BIS     #ABO,DLFLAG             ;SET ABORT FLAG
1422  006076  042737  000200  016126   03250           BIC     #SEL,DLFLAG             ;MAKE SURE LINE IS DESELECTED
1423  006104  004737  005124                           JSR     PC,ERROR
1424  006110  012700  020055           03350           MOV     #ER7,R0                 ;SU ERROR MSG
1425  006114  104000                   03400           TYPE                            ;TYPE MSG ON CONSOLE
1426  006116  000734                   03450           BR      3$                      ;FIX TABLE ENTRIES
1427                                    03500
1428  006120  062706  000004           03550   4$:     ADD     #4,SP           ;ERASE INTR FROM STACK
1429  006124  000743                   03600           BR      5$                      ;GET NEXT LINE ENTRY
1430                                    03650
1431                                    03700   ;************
1432                                    03750   ; CATCH     REPLACES TRAP CATCHER FROM 100 TO 1000 .
1433                                    03800   ;************
```

```
 1434  006126  012700  001000          03850  CATCH:  MOV     #1000,R0                ;;START AT 1000
 1435  006132  005040                  03900  1$:     CLR     -(R0)           ;PUT HALT IN PC+2
 1436  006134  010037  016100          03950          MOV     R0,TEMP
 1437  006140  013740  016100          04000          MOV     TEMP,-(R0)      ;PUT PC+2 IN PC
 1438  006144  020027  000100          04050          CMP     R0,#100         ;FIN?
 1439  006150  002370                  04100          BGE     1$              ;NO - DO MORE
 1440  006152  012737  003466  000060  04200          MOV     #READKB,@#TKV   ;SU CONSOLE
 1441  006160  000207                  04250          RTS     PC
 1442                                  04300
 1446                                  04500
```

```
                                        05400
                                        05450          .SBTTL  EMT HANDLER
                                        05500  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        05550  ;THIS SECTION CONTAINS THE HANDLER AND MOST ROUTINES ACCESSED
                                        05600  ;BY TRAPS THROUGH LOCATION 30.
                                        05650  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
                                        05700
006162                                  05750  EMTBOS:
 (4) 006162  011637  016112                            MOV     (SP),TEMP+12
006166  162737  000002  016112          05800          SUB     #2,TEMP+12          ;GET REAL PC
006174  017737  007712  016110          05850          MOV     @TEMP+12,TEMP+10            ;GET EMT INSTRUCTION
006202  042737  104400  016110          05950          BIC     #104400,TEMP+10 ;MASK INSTR BITS
006210  062737  006230  016110          06000          ADD     #EMTABL,TEMP+10 ;ADD TABLE ADDR
006216  017737  007666  016112          06050          MOV     @TEMP+10,TEMP+12
006224  000177  007662                  06100          JMP     @TEMP+12
                                        06150
                                        06200  .EVEN
006230  006240                          06250  EMTABL: ETYPE           ;NSOLE TYPE ROUTINE
006232  007212                          06300          PRTLTB          ;LINE TABLE PRINTER
006234  007162                          06350          INTRAP          ;DL INTERRUPT CATCHER
006236  007530                          06400          DELAYM          ;DELAY ROUTINE
```

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

```
1527  006472  005012                  09300  5$:     CLR     (R2)                    ;ERASE VECT OUT
1528  006474  005044                  09350          CLR     -(R4)                   ;ERASE VECT IN
1529  006476  062702  000002          09400  6$:     ADD     #2,R2                   ;MOVE STACK POINTER
1530  006502  020237  006650          09450          CMP     R2,MSAVE+2              ;END OF OUT STACK ?
1531  006506  001403                  09500          BEQ     7$                      ;YES - GO GET ODD VECTOR
1532  006510  012704  020574          09550          MOV     #STACK3,R4              ;RESET STACK3 POINTER
1533  006514  000760                  09600          BR      4$              ;KEEP SORTING
1534  006516  012702  020434          09650  7$:     MOV     #STACK2,R2      ;RESET STACK2 POINTER
1535  006522  005712                  09700  8$:     TST     (R2             ;CHECK FOR NON ZERO
1536  006524  001003                  09750          BNE     9$
1537  006526  062702  000002          09800          ADD     #2,R2
1538  006532  000773                  09850          BR      8$
1539  006534  012737  016174  006652  09900  9$:     MOV     #LINOO+4,MSAVE+4        ;GET VECT FROM TABLE
1540  006542  027712  000104          09950  10$:    CMP     @MSAVE+4,(R2)   ;MATCH ?
1541  006546  001404                  10000          BEQ     11$             ;YES THIS LINE IS N.G.
1542  006550  062737  000010  006652  10050          ADD     #10,MSAVE+4             ;MOVE POINTER TO NEXT
1543  006556  000771                  10100          BR      10$
1544  006560  062737  000002  006652  10150  11$:    ADD     #2,MSAVE+4      ;GET LINE NUMBER
1545  006566  017737  000060  016160  10200          MOV     @MSAVE+4,ONLIN
1546  006574  105037  016160          10250          CLRB    ONLIN
1547  006600  000337  016160          10300          SWAB    ONLIN           ;ERASE JUNK BITS
1548  006604  004737  002432          10350          JSR     PC,MTW                  ;MOVE TABLE TO WORK AREAS
1549  006610  012737  020055  002034  10400          MOV     #ER7,TSCPTR             ;POINT TO ERROR MESSAGE
1550  006616  112737  000377  002032  10450          MOVB    #377,CFLAGS             ;ERROR NO.
1551  006624  052737  100000  002032  10500          BIS     #MERR,CFLAGS            ;SET ERROR FLAG
1552                                  10551  ;********************
1553                                  10600  ;    ERROR 377      *
1554                                  10650  ;********************
1555  006632  004737  005124          10700          JSR     PC,ERROR
1556  006636  042737  100377  002032  10750          BIC     #MERRN,CFLAGS   ;ERASE ERROR DATA
1557  006644  000672                  10800          BR      12$             ;CLEAN HOUSE & EXIT
1558  006646  000000  000000  000000  10850  MSAVE:  .WORD   0,0,0
1559                                  10855
1560                                  10856
1561                                  10857
1562                                  10860  ;****************
1563                                  10861  ; SECHO    SINGLE LINE ECHO ROUTINE
1564                                  10862  ;          ENTER WITH CHAR IN R2
1565                                  10863  ;          TRANSMITTS TO DVC VIA I/O DRIVER WORK AREA
1566                                  10864  ;****************
1567                                  10865
1568                                  10866
1569  006654                          10900  SECHO:
1570  006654  013737  016144  016150  10950          MOV     TXVEC,SAVE
1571  006662  062737  000002  016150  11000          ADD     #2,SAVE
1572  006670  012777  007510  007246  11050          MOV     #STRAP,@TXVEC
1573  006676  012777  000200  007244  11100          MOV     #PRI4,@SAVE
1574  006704  012737  000144  007564  11150          MOV     #100.,DELAYT
1575  006712  110277  007224          11200          MOVB    R2,@DVCTXB
1576  006716  012777  000100  007214  11250          MOV     #100,@DVCTXS
1577  006724  005237  020670          11300          INC     ENDS
1578  006730  104006                  11377      DELAYR
1579  006732  005737  020670          11400          TST     ENDS
 (9,  006736  001413                  11450          BEQ     50002$
1580  006740  012737  020055  002034  11500          MOV     #ER7,TSCPTR
1581  006746  052737  100376  002032  11550          BIS     #376!#MERR,CFLAGS
```

```
1582  006754  004737  005124                        JSR     PC,ERROR
1583  006760  042737  100377  002032                BIC     #MERRN,CFLAGS
1584  006766                                50002$:
1585  006766  013777  016150  007150                MOV     SAVE,@TXVEC
1586  006774  005077  007150                        CLR     @SAVE
1587  007000  013737  016160  016150                MOV     ONLIN,SAVE
1588  007006                                50000$:
 (3)  007006                                50001$:
 (2)  007006  000207                                RTS     PC
1589                                  10900
1590                                  10950
1591                                  11000 ;*************
1592                                  11050 ;MTYPE  TERMINAL OUTPUT ROUTINE - LINE TABLE VERSION
1593                                  11100 ;       ENTER WITH ADDR OF MSG IN R0
1594                                  11150
1595                                  11200 ;*************
1596  007010  112002                     11250 MTYPE:  MOVB    (R0)+,R2        ;GET CHAR TO PRINT
1597  007012  001403                     11300         BEQ     1$              ;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$:     RTS     PC              ;EXIT
 1638                                                 11526
 1639                                                 11528
 1640                                                 11530  ;***************
 1641                                                 11532  ; READS         THIS ROUTINE SETS UP DVC RECVR VECTOR AREAS
 1642                                                 11533  ;               IF THE CURRENT LINE IS NOT LINE-00
 1643                                                 11534  ;***************
 1644                                                 11536
 1645                                                 11538
 1646  007124                                         11540  READS:
 1647  007124  105737  016160                         11542          TSTB    ONLIN
  (9)  007130  001003                                 11544          BNE     50002$
 1648  007132  004737  005600                         11546          JSR     PC,SETIO
 1649  007136  000410                                 11548          BR      50003$
  (3)  007140                                        11550  50002$:
 1650  007140  010277  006766                         11552          MOV     R2,@DLVEC
 1651  007144  013702  016132                         11554          MOV     DLVEC,R2
 1652  007150  062702  000002                         11556          ADD     #2,R2
 1653  007154  012712  000200                         11558          MOV     #PRI4,(R2)
 1654  007160                                         11560  50003$:
 1655  007160                                         11562  50000$:
  (3)  007160                                        11564  50001$:
  (2)  007160  000207                                11566          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     #LINOO,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 ENTR
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
:714     007402  012637  016100                        MOV     (SP)+,TEMP
:715     007406  012700  017051          14400         MOV     #L3,R0
:716     007412  104000                   14450         TYPE
:717     007414  000002                   14500         RTI
:718                                      14550
```

```
1720                                                    14600   ;*************
1721                                                    14650   ;TXTRAP THIS ROUTINE CATCHES THE INTERRUPTS FROM
1722                                                    14700   ;       DL11'S  IN USE BY THE MECHO ROUTINE .
1723                                                    14750   ;*************
1727                                                    14950
1728  007416  162716  000010                          15000   TXTRAP: SUB     #10,(SP)        ;SUB 10 FROM UPDATED PC ON STACK
1729  007422  011614                                   15020           MOV     (SP),(R4)       ;PUT BASE VECTOR INTO STACK3
1730  007424  012746  016174                          15040           MOV     #LIN00+4,-(SP)  ;GET POINTER TO LINE TABLE VECTORS
1731  007430  027614  000000                          15060   1$:     CMP     @0(SP),(R4)     ;COMPARE TABLE TO STACK3
1732  007434  001403                                   15080           BEQ     2$              ;SAME - BRANCH
1733  007436  062716  000010                          15100           ADD     #10,(SP)        ;POINT TO NEXT TABLE ENTRY
1734  007442  000772                                   15120           BR      1$              ;KEEP LOOKING FOR A MATCH
1735  007444  162716  000002                          15130   2$:     SUB     #2,(SP)         ;ADDR OF DLADR NOW ON STACK
1736  007450  017637  000000  016100                  15140           MOV     @0(SP),TEMP     ;GET DLADR FROM TABLE
1737  007456  062737  000004  016100                  15160           ADD     #4,TEMP         ;POINT TO DVCTXS REGISTER
1738  007464  005077  006410                          15180           CLR     @TEMP           ;DISABLE INTERRUPTS
1739  007470  062706  000006                          15200           ADD     #6,SP           ;SET STACK POINTER TO DRIVER PC
1740  007474  005337  020670                          15220           DEC     ENDS            ;DECRIMENT INTERRUPT PENDING COUNT
1741  007500  003002                                   15240           BGT     3$
1742  007502  005037  007564                          15260           CLR     DELAYT          ;ABORT TIMEOUT IF ALL ACCOUNTED FOR
1743  007506  000002                                   15280   3$:     RTI                     ;RETURN TO I/O DRIVER
1744                                                    15300
1745                                                    15500
1746                                                    15501
1747                                                    15502
1748                                                    15503
1749                                                    15504   ;***************
1750                                                    15505   ; STRAP         SINGLE LINE TRANSMIT INTERRUPT CATCHER
1751                                                    15506   ;               USED IN CONJUNCTION WITH SECHO ROUTINE.
1752                                                    15507   ;***************
1753                                                    15508
1754                                                    15509
1755  007510                                            15510   STRAP:
1756  007510  005077  006424                          15511           CLR     @DVCTXS
1757  007514  005337  020670                          15512           DEC     ENDS
1758  007520  005037  007564                          15513           CLR     DELAYT
1759  007524  000002                                   15515           RTI
1760  007526                                            15516   50000$:
 (3)  007526                                            15517   50001$:
 (2)  007526  000207                                   15518           RTS     PC
1761                                                    15517
1762                                                    15518
1763                                                    15519
1764                                                    15550
1768                                                    15750   ;*************
1769                                                    15800   ;DELAYM DELAYS FOR X MILLI SECONDS, X STORED IN - DELAYT
1770                                                    15850   ;
1771                                                    15900   ;*************
1772                                                    15950
1773  007530  005737  007564                          15955   DELAYM: TST     DELAYT
1774  007534  001411                                   15960           BEQ     3$
1775  007536  010346                                   15970           MOV     R3,-(SP)
 (2)                                                    16000           .MEXIT
1776  007540  013703  007562                          16050   1$:     MOV     TIMER,R3        ;1MS LOOP TIME
1777  007544  005303                                   16100   2$:     DEC     R3
1778  007546  001376                                   16150           BNE     2$
```

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

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

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

```
1898                                    00250           .SBTTL  LA36 OPTION TESTS
1899                                    00300   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1900                                    00350   ;
1901                                    00400   ;TEST0  SECONDARY CHARACTER SET OPTION
1902                                    00450   ;       NO MANUAL INTERVENTION REQUIRED
1903                                    00500   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1904                                    00550
1905  010164  012705  010352            00600   TEST0:  MOV     #TOOBLK,R5              ;SET UP POINTER TO MODULE BLOCK
1906  010170  012700  010366            00650           MOV     #T0,R0          ;SU TEST ID
1907  010174  004737  007010                            JSR     PC,MTYPE
1908  010200  012700  010424            00750   T01:    MOV     #PRI,R0         ;SU PRIMARY MSG
1909  010204  004737  007010                            JSR     PC,MTYPE
1910  010210  004737  010310            00850           JSR     PC,CHARS        ;SEND ALL CHARACTERS
1911  010214  012700  017730            00900           MOV     #L1,R0
1912  010220  004737  007010                            JSR     PC,MTYPE
1913  010224  012700  010434            01000           MOV     #SEC,R0         ;SU SECONDARY MSG.
1914  010230  004737  007010                            JSR     PC,MTYPE
1915  010234  012702  000016            01100           MOV     #S0,R2          ;SEND SO - SELECT APL SET
1916  010240  004737  006270                            JSR     PC,MECHO
1917  010244  004737  010310            01200           JSR     PC,CHARS        ;SEND ALL CHARS AGAIN
1918  010250  012700  017730            01250           MOV     #L.,R0
1919  010254  004737  007010                            JSR     PC,MTYPE
1920  010260  012702  000017            01350           MOV     #SI,R2          ;SEND SI-SELECT ASCII
1921  010264  004737  006270                            JSR     PC,MECHO
1922                                    01450
1923  010270  052765  020000  000004    01500           BIS     #TDONE,MFLAGS(R5)       ;SET DONE AND ATTENTION FLAGS
1924  010276  012702  000012            01550           MOV     #12,R2          ;SU FOR LF
1925  010302  004737  006270                            JSR     PC,MECHO
1926  010306  000207                    01650           RTS     PC
1927                                    01700   ;************
1928                                    01750   ; SUBROUTINE TO FILL OUTPUT LINE WITH ALL CHARACTERS
1929                                    01800   ;
1930  010310  013701  016146            01850   CHARS:  MOV     WIDTH,R1        ;SAVE WIDTH
1931  010314  012702  000040            01900           MOV     #40,R2          ;SAVE ;START CHAR
1932  010320  162701  000007            01950           SUB     #7,R1           ;ADJUST WIDTH FOR PRI/SEC MSG
1933  010324                            02000   2$:
 (3)  010324  004737  006270                            JSR     PC,MECHO
1934  010330  005202                    02050           INC     R2              ;NEXT CHAR
1935  010332  020237  010364            02100           CMP     R2,RUB          ;LAST CHAR?
1936  010336  001403                    02150           BEQ     3$              ;YES - EXIT
1937  010340  005301                    02200           DEC     R1              ;END OF PAPER?
1938  010342  001401                    02250           BEQ     3$              ;YES - EXIT
1939  010344  000767                    02300           BR      2$              ;SEND NEXT
1940  010346  000207                    02350   3$:     RTS     PC
1941  010350  000006                    02400           .WORD   6               ;ITERATION COUNT
1942  010352  000000                    02450   TOOBLK: .WORD   0               ;CTLCNT
1943  010354  000000                    02500           .WORD   0                       ;PASS COUNT
1944  010356  000000                    02550           .WORD   0                       ;STATUS FLAGS
1945  010360  000000                    02600           .WORD   0                       ;POINTER
1946  010362  010200                    02650           .WORD   T01                     ;RETURN PC
1947  010364  000177                    02700   RUB:    .WORD   177
1948                                    02750   .NLIST BEX
1949  010366  042524  052123  030040    02800   T0:      ASCIZ  *TEST 0  APL/ASCII CHAR SET*<15><12><12>
1950  010424  051501  044503  026511    02850   PRI:    .ASCIZ  /ASCII--/
1951  010434  050101  026514  026455    02900   SEC:    .ASCIZ  /APL----/
1952                                    02950           .EVEN
```

```
 1954                                                  03050
 1955                                                  03100   .LIST BEX
 1956                                                  03150   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1957                                                  03200   ;
 1958                                                  03250   ;TEST1  SELECTIVE ADDRESSING OPTION
 1959                                                  03300   ;       OPERATOR MUST COMPARE TYPEOUT AND SWITCHES ON THE M7737
 1960                                                  03350   ;       TO VERIFY CORRECT OPERATION.
 1961                                                  03400   ;       IF A GROUP OR UNIT SELECT CODE OF LESS THAN 20(8)
 1962                                                  03450   ;       IS USED MODIFY LOCATION GSEL ACCORDINGLY.
 1963                                                  03500   ;
 1964                                                  03550   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 1965                                                  03600
 1966  010444                                                  TEST1:
 1967  010444  012705  010722                         03700           MOV     #T01BLK,R5      ;SET UP POINTER TO MODULE BLOCK
 1968  010450  012700  010742                         03750           MOV     #T1,R0
 1969  010454  004737  007010                                 JSR     PC,MTYPE
 1970  010460                                        03850   T11:    ;DESELECT ALL TERMINALS, THEN TRY TO
 1971                                                  03900           ;PRINT ERROR MESSAGES....SHOULD NOT PRINT
 1972                                                  03950           ;TRANSMIT A BAD SELECT SEQUENCE, THEN TRY TO
 1973                                                  04000           ;PRINT ERROR MESSAGES...SHOULD NOT PRINT
 1974                                                  04050           ;SELECT ALL TERMINALS, PRINT GP MESSAGE.
 1975                                                  04100
 1976  010460  012765  010566  000010                          MOV     #T13,RPC(R5)
 1977  010466  013701  010734                                 MOV     GSEL,R1
 1978  010472  012737  011176  010740                         MOV     #TABL1,T1TEMP+2
 1979  010500  012737  000001  010736                         MOV     #1,T1TEMP
   (5) 010506  000402                                        BR      50002$
   (4) 010510                                      50003$:
   (7) 010510  005237  010736                                INC     T1TEMP
   (5) 010514                                      50002$:
   (5) 010514  023727  010736  000010                        CMP     T1TEMP,#8.
   (7) 010522  003014                                        BGT     50004$
 1980  010524  012700  017730                               MOV     #L1,R0
 1981  010530  004737  007010                               JSR     PC,MTYPE
 1982  010534  017700  000200                               MOV     @T1TEMP+2,R0
 1983  010540  004737  007010                               JSR     PC,MTYPE
 1984  010544  062737  000002  010740                       ADD     #2,T1TEMP+2
 1985  010552  000756                                       BR      50003$
   (3) 010554                                      50004$:
 1986                                            04650           ; TRANSMIT SELECT CODES TO ALL TERMINALS
 1987                                            04700           ; FOLLOWED BY ASCII EQUIV OF CODE.
 1988  010554                                    04750   T12:
   (4) 010554  012765  010460  000010                          MOV     #T11,RPC(R5)
 1989  010562  013701  010734                                 MOV     GSEL,R1
 1990  010566                                    04850   T13:    ;OUTPUT ALL CODES AND ACCII EQUIVELANTS
 1991  010566                                          50005$:
 1992  010566  020127  000200                               CMP     R1,#200
   (5) 010572  001420                                        BEQ     50006$
 1993  010574  012700  020421                               MOV     #SCODE,R0
 1994  010600  110160  000003                               MOVB    R1,3(R0)
 1995  010604  004737  007010                               JSR     PC,MTYPE
 1996  010610  112702  000002                               MOVB    #STX,R2
 1997  010614  004737  006270                               JSR     PC,MECHO
 1998                                            05250           ; NOW CONVERT SELECT CODE TO ASCII FOR OUTPUT
 1999  010620  004737  010662                               JSR     PC,CON
 2000  010624  004737  007010                               JSR     PC,MTYPE
```

```
2001  010630  005201                                          INC     R1
2002  010632  000755                                          BR      50005$
 (3)  010634                                            50006$:
2003                                          05500           ; TURN ALL TERMINALS ON AND EXIT TEST
2004  010634                                  05550   T16:
 (4)  010634  012765  010460  000010                         MOV     #T11,RPC(R5)
2005  010642  052765  020000  000004                         BIS     #TDONE,MFLAGS(R5)
2006  010650  012700  020411                                 MOV     #ALLON,R0
2007  010654  004737  007010                                 JSR     PC,MTYPE
2008  010660                                           50000$:
 3)   010660                                           50001$:
 (2)  010660  000207                                         RTS     PC
2009                                          05750           ; THIS ROUTINE CONVERTS THE SELECT CODE
2010                                          05800           ; TO ASCII FOR OUTPUT IN OCTALC MESSAGE.
2011  010662                                            CON:
2012  010662  005037  010736                                 CLR     TITEMP
2013  010666  110137  010736                                 MOVB    R1,TITEMP
2014  010672  013746  010736                                 MOV     TITEMP,-(SP)
2015  010676  012746  000003                                 MOV     #3,-(SP)
2016  010702  012746  011520                                 MOV     #OCTALC,-(SP)
2017  010706  004737  007566                                 JSR     PC,G2ASC
2018  010712  012700  011520                                 MOV     #OCTALC,R0
2019  010716                                           50000$:
 (3)  010716                                           50001$:
 (2)  010716  000207                                         RTS     PC
2020                                          06300
2021  010720  000002                          06350           .WORD   2               ;ITERATION COUNT
2022  010722  000000                          06400   TC1BLK: .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   TITEMP: .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     50002$
 2057  011262  042765  100000  000004                  BIC     #MERR,MFLAGS(R5
 2058  011270  105011                                  CLRB    (R1)
 2059  011272  000403                                  BR      50003$
  (3)  011274                          50002$:
 2060  011274  105237  013212                        INCB    T2CNT1
 2061  011300  000760                          08350   BR      1$
 2062  011302                          50003$:
 2063  011302                          50000$:
  (3)  011302                          50001$:
  (2)  011302  000207                                  RTS     PC
 2064  011304  000000                          08500   2$:     .WORD   0
 2065                                          08550
 2066                                          08600
 2067                                          08650   ;************
 2068                                          08700   ;TYPANS    THIS ROUTINE PRINTS THE ANSWERBACK MESSAGE
 2069                                          08750   ;          IN OCTAL FORMAT, AND ASCII FORMAT.
 2070                                          08800   ;************
 2071                                          08850
 2072                                          08900
 2073  011306                                  TYPANS:
 2074                                          09000
 2075  011306  012700  020421                          MOV     #SCODE,R0
 2076  011312  004737  007110                          JSR     PC,TYPES
 2077  011316  012702  000002                          MOV     #STX,R2
 2078  011322  004737  006654                          JSR     PC,SECHO
 2079  011326  012700  011472                          MOV     #ANSHDR,R0
 2080  011332  004737  007110                          JSR     PC,TYPES
 2081  011336  013746  013212                          MOV     T2CNT1,-(SP)
 2082  011342                          08337   1$:
  (4)  011342  005046                                  CLR     -(SP)
 2083  011344  112116                                  MOVB    (R1)+,(SP)
 2084  011346  012746  000003                          MOV     #3,-(SP)
 2085  011352  012746  011520                          MOV     #OCTALC,-(SP
 2086  011356  004737  007566                          JSR     PC,O2ASC
 2087  011362  012700  011520                          MOV     #OCTALC,R0
 2088  011366  004737  007110                          JSR     PC,TYPES
 2089  011372  105337  013212                        DECB    T2CNT1
 2090  011376  105737  013212                        TSTB    T2CNT1
  (9)  011402  003402                                  BLE     50002$
 2091  011404  000756                          09700   BR      1$
 2092  011406  000426                                  BR      50003$
  3)   011410                          50002$:
 2093  011410  012700  017730                          MOV     #L1,R0
 2094  011414  004737  007110                          JSR     PC,TYPES
 2095  011420  012700  000023                          MOV     #19.,R0
 2096  011424                          50004$:
 2097  011424  012702  000040                          MOV     #40,R2
 2098  011430  004737  006654                          JSR     PC,SECHO
```

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

```
2114                                                    10350                   .LIST BEX
2115                                                    10400   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2116                                                    10450   ;
2117                                                    10500   ;TEST2  AUTO ANSWER BACK OPTION
2118                                                    10550   ;       SINGLE LINE TESTS REQUIRE MANUAL INTERVENTION
2119                                                    10600   ;
2120                                                    10650   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2121                                                    10700
2122                                                    10750   .ENABL LSB
2123  011526                                            10800   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$:
```

```
2162  011726                                    12600
2163                                            12650  T22:    ;IF THE LINE HAS BEEN SIZED, BUT NO
2164  011726                                    12700          ;SELECT CODE HAS BEEN MAPPED NOTIFY THE
2165                                            12750          ;OPERATOR .
2166                                            12800          ;
2167  011726  123727  016134  000200                          CMPB    DLOTH,#200
2168  011734  001015                                         BNE     50007$
  (9)                                           12900          ; ERROR #0      NO ANSWERBACK FROM TERMINAL
2169                                            12950          ;**************
2170                                            13000          ;
2171  011736  012765  012530  000010                          MOV     #T24,RPC(R5)
2172  011744  052765  100000  000004                          BIS     #MERR,MFLAGS(R5)
2173  011752  105065  000004                                 CLRB    MFLAGS(R5)
2174  011756  012765  013356  000006                          MOV     #E14,POINT(R5)
2175  011764  000207                                 13250   RTS     PC
2176  011766  000463                                         BR      50010$
  (3)  011770                                   50007$:
2177  011770  012701  013220                                 MOV     #T2BUF,R1
2178                                          13400          ;GET THE SELECT CODE FROM THE LINE TABLE &
2179                                          13450          ;REQUEST AN ANSWERBACK.
2180                                          13500          ;
2181  011774  113737  016134  020424                          MOVB    DLOTH,SCODE+3
2182  012002  012700  020421                                 MOV     #SCODE,R0
2183  012006  004737  007110                                 JSR     PC,TYPES
2184  012012  012703  000310                                 MOV     #200.,R3
2185  012016  105037  013212                                 CLRB    T2CNT1
2186  012022  004737  011216                                 JSR     PC,GETANS
2187                                          13850          ;CHECK FOR ANY RESPONSE FROM TERMINAL
2188                                          13900          ;
2189  012026  105737  013212                                 TSTB    T2CNT1
2190  012032  001015                                         BNE     50011$
  (9)                                           14000          ; ERROR #1      NO ANSWERBACK RECIEVED.
2191                                            14050          ;*************
2192                                            14100  ;
2193  012034  012765  012530  000010                          MOV     #T24,RPC(R5)
2194  012042  052765  100000  000004                          BIS     #MERR,MFLAGS(R5)
2195  012050  112765  000001  000004                          MOVB    #1,MFLAGS(R5)
2196  012056  012765  013356  000006                          MOV     #E14,POINT(R5)
2197  012064  000424                                         BR      50012$
2198  012066                                        50011$:
  3)                                                        MOV     #T23,RPC(R5)
2199  012066  012765  012140  000010                          ;TEST LENGTH OF ANSWERBACK SHOULD BE 20 MAX.
2200                                          14450          ;
2201                                          14500          CMPB    T2CNT1,#20.
2202  012074  123727  013212  000024                          BLE     50013$
  (9)  012102  003411                                       ; ERROR #2      ANSWERBACK OVER 20 CHARS LONG.
2203                                          14600          ;*************
2204                                          14650          ;
2205                                          14700          BIS     #MERR,MFLAGS(R5)
2206  012104  052765  100000  000004                          MOVB    #2,MFLAGS(R5)
2207  012112  112765  000002  000004                          MOV     #E15,POINT(R5)
2208  012120  012765  013404  000006                 50013$:
2209  012126                                                  MOV     #T2BUF,R1
2210  012126  012701  013220                                 JSR     PC,TYPANS
2211  012132  004737  011306                         50012$:
2212  012136
```

```
2213  012136                                    50010$:
2214  012136  000207                  15150             RTS     PC
2215  012140                          15200     T23:    ;SAVE COPIES OF THE ANSWERBACK AND IT'S LENGTH
2216                                  15250             ;THEN READ ANSWERBACKS 10 TIMES MORE.
2217                                  15300             ;VERIFY THEY ARE ALL THE SAME.
2218                                  15350             ;
2219  012140  012765  012206  000010                    MOV     #T23A,RPC(R5)
2220  012146  113737  013212  013213                    MOVB    T2CNT1,T2CNT2
2221  012154  012701  013220                           MOV     #T2BUF,R1
2222  012160  012700  020574                           MOV     #STACK3,R0
2223  012164                                    50014$:
2224                                  15650             ;COPY ANSWERBACK TO STACK3 FOR COMPARISONS
2225  012164  105737  013212                          TSTB    T2CNT1
 (5)  012170  001404                                   BEQ     50015$
2226  012172  112120                                   MOVB    (R1)+,(R0)+
2227  012174  105337  013212                          DECB    T2CNT1
2228  012200  000771                                   BR      50014$
 (3)  012202                                    50015$:
2229  012202  105037  013210                          CLRB    T2SAV1
2230                                  15950
2231  012206                          16000     T23A:   ;RESET INPUT BUFFER POINTER AND ZERO COUNTER
2232                                  16050             ;
2233  012206  012701  013220                           MOV     #T2BUF,R1
2234  012212  105037  013212                          CLRB    T2CNT1
2235                                  16200     ;SEND SELECT SEQUENCE TO TERMINAL
2236                                  16250     ;THEN READ ANSWER
2237  012216  012700  020421                           MOV     #SCODE,R0
2238  012222  012703  000310                           MOV     #200.,R3
2239  012226  004737  011216                           JSR     PC,GETANS
2240  012232  105237  013210                          INCB    T2SAV1
2241                                  16500             ;IF NO ANSWER NOTIFY OPERATOR
2242                                  16550             ;IF OLD ANSWER DIFFERENT FROM NEW ANSWER
2243                                  16600             ;NOTIFY OPERATOR.
2244                                  16650     ;
2245  012236  105737  013212                          TSTB    T2CNT1
 (9)  012242  001012                                   BNE     50016$
2246                                  16750             ; ERROR #30     NO ANSWERBACK DURING TEN READ LOOP
2247                                  16800             ;*************
2248                                  16850             ;
2249  012244  052765  100000  000004                    BIS     #MERR,MFLAGS(R5)
2250  012252  012765  013356  000006                    MOV     #E14,POINT(R5)
2251  012260  112765  000030  000004                    MOVB    #30,MFLAGS(R5)
2252  012266  000500                                   BR      50017$
 (3)  012270                                    50016$:
2253  012270  105011                                   CLRB    (R1)
2254                                  17150             ;COMPARE LENGTHS OF ANSWERS
2255  012272  123737  013212  013213                    CMPB    T2CNT1,T2CNT2
 (9)  012300  001416                                   BEQ     50020$
2256  012302  012701  013220                           MOV     #T2BUF,R1
2257  012306  004737  007110                          JSR     PC,TYPES
2258                                  17350             ;ERROR #31     INCONSISTANT ANSWERBACKS
2259                                  17400             ;*************
2260                                  17450             ;
2261  012312  052765  100000  000004                    BIS     #MERR,MFLAGS(R5)
2262  012320  112765  000031  000004                    MOVB    #31,MFLAGS(R5)
2263  012326  012765  013356  000006                    MOV     #E14,POINT(R5)
```

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

```
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     50031$
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                                  50031$:
2324  012636                                    20500 T25:    ;IF IN MULTI LINE MODE SETUP NEXT LINE POINTERS
2325                                    20550         ;IF SINGLE LINE MODE TEST KEYBOARD STUFF.
2326                                    20600         ;
2327  012636  032737  000040  001364                  BIT     #MULTI,PCFLAG
 (9)  012644  001424                                  BEQ     50032$
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     50033$
2331  012670  042737  000400  001364                  BIC     #LDONE,PCFLAG
2332  012676  052765  020000  000004                  BIS     #TDONE,MFLAGS(R5)
2333  012704                                  50033$:
2334  012704  012765  011546  000010                  MOV     #T21,RPC(R5)
2335  012712  000207                    21000         RTS     PC
2336  012714  000512                                  BR      50034$
 (3)  012716                                  50032$:
2337  012716  113737  016134  020424                  MOVB    DLOTH,SCODE+3
2338  012724  012700  020421                          MOV     #SCODE,R0
2339  012730  004737  007110                          JSR     PC,TYPES
2340  012734                                    21100 T25A:
 (4)  012734  012765  013034  000010                  MOV     #T26,RPC(R5)
2341  012742  012701  013220                          MOV     #T2BUF,R1
2342  012746  012702  000002                          MOV     #STX,R2
2343  012752  004737  006654                          JSR     PC,SECHO
2344                                    21300         ;SET UP TO TEST HERE-IS KEY  SINGLE LINE ONLY
2345                                    21350         ;
2346  012756  012700  013252                          MOV     #HI,R0
2347  012762  004737  007110                          JSR     PC,TYPES
2348  012766  105037  013212                          CLRB    T2CNT1
2349  012772  012703  007640                          MOV     #4000.,R3
2350                                    21600         ;READ ANSWERBACK
2351  012776  004737  011216                          JSR     PC,GETANS
2352  013002  105737  013212                          TSTB    T2CNT1
 (9)  013006  001012                                  BNE     50035$
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                                          50035$:
2361                                          22150
2362  013034                                  22200   T26:    ;TEST CTL-E FUNCTION
2363                                          22250
2364                                          22300           ;SET UP TO TEST CTL-E FUNCTION
2365                                          22350           ;
2366  013034  012765  011726  000010                          MOV     #T22,RPC(R5)
2367  013042  012701  013220                                  MOV     #T2BUF,R1
2368  013046  012700  013305                                  MOV     #CE,R0
2369  013052  012703  007640                                  MOV     #4000.,R3
2370  013056  105037  013212                                  CLRB    T2CNT1
2371  013062  004737  007110                                  JSR     PC,TYPES
2372  013066  004737  011216                                  JSR     PC,GETANS
2373  013072  105737  013212                                  TSTB    T2CNT1
  (9) 013076  001013                                          BNE     50036$
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      50037$
  (3) 013126                                      50036$:
2382  013126  052765  020000  000004                          BIS     #TDONE,MFLAGS(R5)
2383  013134  012765  011726  000010                          MOV     #T22,RPC(R5)
2384  013142                                          50037$:
2385  013142                                          50034$:
2386  013142  000207                          23400           RTS     PC
2387                                          23450   ;*************
2388                                          23500   ;THIS ROUTINE IS THE KEYBOARD INTERRUPT HANDLER
2389                                          23550   ;FOR TESTS #1 AND #2
2390                                          23600   ;*************
2391                                          23650
2392  013144  117721  002766                  23700   T220:   MOVB    @DVCRXB.(R1)+           ;STORE CHAR IN POINTER
2393  013150  052737  004000  001364          23750           BIS     #DATAIN,PCFLAG          ;SET DATA-IN FLAG
2394  013156  012777  000101  002744          23800           MOV     #101,@DLADR             ;REENABLE THE RECVR
2395  013164  005037  007564                  23850           CLR     DELAYT          ;ABORT THE TIMEOUT
2396  013170  000002                          23900           RTI
2397                                          23950
2398  013172                                          50000$:
  (3) 013172                                      50001$:
  (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          29600  T2TEMP: .WORD   0,0
2411  013220  000000  000000  000000  29605  T2BUF:  .WORD   0,0,0,0,0,0,0,0,0,0,0,0,        ; BUFFER FOR ANSWERBACK
      013226  000000  000000  000000
      013234  000000  000000  000000
      013242  000000  000000  000000
      013250  000000
2412                                  24650
2413                                  24700  .NLIST BEX
2414  013252  005015  042504  051120  24750  HI:     .ASCIZ  <15><12>/DEPRESS HERE IS -- KEY/<15><12>
2415  013305     015  052012  050131  24800  CE:     .ASCIZ  <15><12>/TYPE CONTL-E/<15><12>
2416                                  24850
2417  013326  005015  052012  051505  24900  T2:     .ASCIZ  <15><12><12>/TEST 2 AUTO ANSWER/<15><12>
2418  013356  047516  040440  051516  24950  E14:    .ASCIZ  /NO ANSWERBACK RECVD/<15><12>
2419  013404  047101  041123  041501  25000  E15:    .ASCIZ  /ANSBACK MSG OVER 20 CHARS/<15><12>
2420  013440  047101  041123  041501  25050  E16:    .ASCIZ  /ANSBACK MSG CONTAINED NULL/<15><12>
2421  013475     110  051105  020105  25100  E17:    .ASCIZ  /HERE IS KEY DIDN'T TXMIT ANSBACK <15><12>
2422  013540  052103  026514  020105  25150  E18:    .ASCIZ  /CTL-E DIDN'T TXMIT ANSBACK/<15><12>
2423  013575     101  051516  042527  25200  E21:    .ASCIZ  /ANSWERBACKS DIDN'T COMPARE/<15><12>
2424  013632  047101  041123  041501  25250  E22:    .ASCIZ  /ANSBACK RECVD FROM BROADCAST SELECT/<15><12>
2425                                  25300          .EVEN
2426                                  25350  .LIST BEX
```

```
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,MTYPE
2439  013710  012705  014342                        26000           MOV     #TQ3BLK,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$:     MOV     #66.,R1         ;FILL COUNT FOR 11" FORMS
2443  013730  113702  016167                        26200           MOVB    FF,R2           ;MOVE TO TOP OF FORM
2444  013734  004737  006270                                        JSR     PC,MECHO
2445  013740  012702  000006                        26300   2$:     MOV     #ACK,R2
2446  013744  004737  006270                                        JSR     PC,MECHO
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,MTYPE
2451  013764  052765  020000  000004                26600           BIS     #TDONE,MFLAGS(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,READ10
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,MFLAGS(R5);IN CASE OF READ ERROR
2485  014164  117737  000164  014360  28300          MOVB    @T3SAV,T3SAV2   ;GET FILL COUNT
2486  014172  113702  016167          28350          MOVB    FF,R2
2487  014176  004737  006654          28400          JSR     PC,SECHO                        ;DO FORM FEED
2488  014202  012702  000006          28450  7$:     MOV     #ACK,R2
2489  014206  004737  006654          28500          JSR     PC,SECHO                        ;SEND FILL CHARS
2490  014212  005337  014360          28550          DEC     T3SAV2
2491  014216  001371                  28600          BNE     7$              ;COUNT NOT DONE - BRANCH
2492  014220  012700  014427          28650          MOV     #DAS,R0         ;LINE OF DASHES
2493  014224  004737  007110          28700          JSR     PC,TYPES
2494  014230  012702  000012          28750          MOV     #LF,R2          ;SEND CR/LF
2495  014234  004737  006654          28800          JSR     PC,SECHO
2496  014240  117737  000110  014360  28850          MOVB    @T3SAV,T3SAV2   ;GET FILL COUNT
2497  014246  113702  016167          28900          MOVB    FF,R2           ;DO FORM FEED
2498  014252  004737  006654          28950          JSR     PC,SECHO
2499  014256  012702  000006          29000  8$:     MOV     #ACK,R2         ;SEND ACK CHARS
2500  014262  004737  006654          29050          JSR     PC,SECHO
2501  014266  005337  014360          29100          DEC     T3SAV2
2502  014272  001371                  29150          BNE     8$              ;COUNT NOT DONE - BRANCH
2503  014274  012700  014427          29200          MOV     #DAS,R0
2504  014300  004737  007110          29250          JSR     PC,TYPES                        ;LINE OF DASHES
2505  014304  012702  000012          29300          MOV     #LF,R2
2506  014310  004737  006654          29350          JSR     PC,SECHO
2507                                  29400
2508  014314  005237  014354          29450          INC     T3SAV           ;GET NEW FILL COUNT
2509  014320  023727  014356  014651  29500          CMP     T3SAV1,#HDR5E           ;END OF INSTRUCTION LIST?
2510  014326  001247                  29550          BNE     A3$             ;NO - DO NEXT
2511  014330  052765  020000  000004  29600          BIS     #TDONE,MFLAGS(R5)       ;SET ATTENTION & DONE FLAGS
2512                                  29650
2513  014336  000207                  29700          RTS     PC
2514                                  29750
2515  014340     000     003          29800          .BYTE   0,3             ;ITERATION COUNT
2516  014342  000000                  29850  T03BLK: .WORD   0               ;CTLCNT
2517  014344  000000                  29900          .WORD   0               ;PASS COUNT
2518  014346  000000                  29950          .WORD   0               ;STATUS FLAGS
2519  014350  000000                  30000          .WORD   0               ;POINTER
2520  014352  013724                  30050          .WORD   1$              ;RETURN PC
2521                                  30100
2522  014354  000000                  30150  T3SAV:  .WORD   0               ;STORAGE
2523  014356  000000                  30200  T3SAV1: .WORD   0
2524  014360  000000                  30250  T3SAV2: .WORD   0
2525                                  30300
2526                                  30350
2527                                  30400  .NLIST BEX
2528  014362     022     025     030  30450  FILL3:  .BYTE   18.,21.,24.,33.,36.,42. ;FILL COUNTS FOR TEST 3
2529  014370     060     063     102  30500          .BYTE   48.,51.,66.,72.,84.,18.
2530  014376  005015  052012  051505  30550  T3:     .ASCIZ  <15><12><12>/TEST 3 TOP OF FORMS/<15><12>
2531  014427     075  036475  036475  30600  DAS:    .ASCIZ  /==========/<15>
2532  014443     120  042522  051523  30650  HDR3:   .ASCII  /PRESS TOF RESET SWITCH/<15><12>
2533  014473     101  052106  051105  30700          .ASCII  /AFTER EACH SWITCH SETTING/<15><12>
2534  014526  054524  042520  042040  30750          .ASCIZ  /TYPE DELETE WHEN READY/<15><12>
2535  014557     055  042523  020124  30800  HDR4:   .ASCIZ  /-SET   3 INCH FORM FEED/
2536        014610                     30850          .EVEN
2537  014610  027063     065          30900  HDR5:   .ASCII  /3.5/
2538  014613     040  032040          30950          .ASCII  /  4/
2539  014616  027065     065          31000          .ASCII  /5.5/
```

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 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
```

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

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

E07


```
        015342  046101  052040  041101
        015350  005015     000
266:            015354                  37250           .EVEN
```

```
 2663                                   37350
 2664                                   37400  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2665                                   37450  ;
 2666                                   37500  ;TEST5  VERTICAL TAB OPTION
 2667                                   37550  ;       SINGLE LINE TEST REQUIRES OPERATOR INTERVENTION
 2668                                   37600  ;
 2669                                   37650  ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 2670                                   37700          .ENABL LSB
 2671                                   37750
 2672  015354  012700  016040          37800  TEST5:  MOV     #T5,R0          ;SU TEST HEADER
 2673  015360  012705  016014          37850          MOV     #TOSBLK,R5      ;SET UP POINTER TO MODULE BLOCK
 2674  015364  004737  007010                         JSR     PC,MTYPE
 2675  015370  032737  000040  001364  37950          BIT     #MULTI,PCFLAG   ;MULTI LINE MODE?
 2676  015376  001046                  38000          BNE     4$              ;YES - BRANCH OVER INTERVENTION
 2677  015400  012700  014635          38050          MOV     #HDR5B,R0       ;SET UP INSTRUCTIONS
 2678  015404  112037  014564          38100          MOVB    (R0)+,HDR4+5
 2679  015410  112037  014565          38150          MOVB    (R0)+,HDR4+6
 2680  015414  112037  014566          38200          MOVB    (R0)+,HDR4+7
 2681                                   38250  ; TYPE INSTRUCTIONS
 2682  015420  012700  014443          38300  T51:    MOV     #HDR3,R0
 2683  015424  004737  007110                         JSR     PC,TYPES
 2684  015430  012700  014557          38400          MOV     #HDR4,R0
 2685  015434  004737  007110                         JSR     PC,TYPES
 2686  015440  012702  015500          38500          MOV     #3$,R2          ;SU FOR INTERRUPT TO 3$
 2687  015444  004737  007124          38550          JSR     PC,READS        ;INITIALIZE VECTOR AREA
 2688  015450  012702  035230          38600  2$:     MOV     #15000.,R2              ;ALLOW 15 SEC.
 2689  015454  004737  007024          38650          JSR     PC,READIO
 2690  015460  032737  004000  001364  38700          BIT     #DATAIN,PCFLAG
 2691  015466  001770                  38750          BEQ     2$
 2692  015470  042737  004000  001364  38800          BIC     #DATAIN,PCFLAG
 2693  015476  000406                  38850          BR      4$
 2694                                   38900  ;*************** THIS SECTION HANDLES RECVR INTERRUPTS**********
 2695                                   38950  ;
 2696  015500  005037  007564          39000  3$:     CLR     DELAYT          ;ABORT THE TIMEOUT
 2697  015504  052737  004000  001364  39050          BIS     #DATAIN,PCFLAG  ; FLAG RECIEVED CHAR.
 2698  015512  000002                  39100  10$:    RTI
 2699                                   39150
 2700                                   39200  ;***************
 2701                                   39250
 2702  015514  012737  000002  015266  39300  4$:     MOV     #2,COUNT
 2703  015522  012765  015514  000010  39350          MOV     #4$,RPC(R5)     ;SET RETURN TO 4$
 2704  015530  012737  000001  016032  39400          MOV     #1,LINES
 2705  015536  005037  016036          39450          CLR     TABS
 2706  015542  012737  000014  016034  39500          MOV     #12.,MAX
 2707  015550  012702  000033          39550          MOV     #ESC,R2         ;RESET ALL TABS
 2708                                   39600  ; ESC-4  RESETS THE TABS.
 2709  015554  004737  006270                         JSR     PC,MECHO
 2710  015560  012702  000064          39700          MOV     #'4,R2
 2711  015564  004737  006270                         JSR     PC,MECHO
 2712  015570  013701  016032          39800  5$:     MOV     LINES,R1        ;GET LINE COUNT
 2713  015574  012702  000012          39850  6$:     MOV     #12,R2          ;
 2714                                   39900  ; SEND LINE FEED.
 2715  015600  004737  006270                         JSR     PC,MECHO
 2716  015604  005301                  40000          DEC     R1
 2717  015606  001372                  40050          BNE     6$
 2718  015610  012702  000033          40100          MOV     #ESC,R2         ;SET TAB
```

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

```
        016054  052122  041511  046101
        016062  052040  041101  005015
        016070      000
2774    016071      060  030060  030060  42950   TS2:    .ASCIZ  /00000/
        016076      000
2775            016100                  43000           .EVEN
2776                                    43050           .DSWBL LSB
```

```
                                                43150           .SBTTL  STORAGE & CONSTANTS
                                                43200 ;*********************************************
                                                43250 ;       PROGRAM STORAGE, CONSTANTS, AND VARIABLES
                                                43300
                                                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 WORL
2793   016136  000000                          43900 DVCRXB: .WORD   0                ;RECIEVER DATA BUFFER
2794   016140  000000                          43950 DVCTXS: .WORD   0                ;TRANSMI STATUS  REGISTER
2795   016142  000000                          44000 DVCTXB: .WORD   0                ;TRANSMIT DATA BUFFER
2796   016144  000000                          44050 TXVEC:  .WORD   0                ;TRANSMIT INTERRUPT VECTOR
2797                                           44100
2798                                           44150 ;************ GENERAL USE *********************************
2799   016146  000204                          44200 WIDTH:  .WORD 132.
2800   016150  000000                          44250 SAVE:   .WORD 0
2801   016152  000000                          44300 NEXT:   .WORD   0                ;NEXT TEST NO.
2802   016154  000000                          44350 INTEST: .WORD   0                ;CURRENT TEST
2803   016156  000000                          44400 TESTAD: .WORD   0                ;CERRENT TEST PC.
2804   016160  000000                          44450 ONLIN:  .WORD   0                ;CURRENT LINE UNDER TEST
2805   016162  000000                          44500 NXTLIN: .WORD   0                ;NEXT LINE TO TEST
2806   016164  016114                          44550 PTR:    INBUF                    ;INPUT BUFFER POINTER
2807   016166     177                          44600 DEL:    .BYTE   177
2808   016167      14                          44650 FF:     .BYTE   14
2809                                           44750           .EVEN
2810                                           44800
```

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

```
                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
```

```
2868                                        47700   ;* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
2869                                        47750   ;       SYSTEM MESSAGES
2870                                        47800           .NLIST  BEX
2871                                        47850
2872  016772  005015  055103  040514        47900   PROGID: .ASCII  <15><12>/CZLAFA0   LA36 OPTIONS TESTS/
2873  017030  005015  042522  052123        47950           .ASCII  <15><12>/RESTART AT 1372/
2874  017051     015  005012  000012        48000   L3:     .ASCIZ  <15><12><12><12>
2875  017056  047503  046515  047101        48050   HEADR1: .ASCIZ  /COMMAND SUMMARY :/<15><12><12>
2876  017103     123  020040  020040        48100   COMSUM: .ASCII  /S      SINGLE LINE MODE/<15><12><1>
2877  017135     115  020040  020040        48150           .ASCII  /M      MULTI-LINE MODE/<15><12><1>
2878  017166  020121  020040  020040        48200           .ASCII  /Q      SEQUENCE TESTS/<15><12><1>
2879  017216  047122  020040  020040        48250           .ASCII  /RN     RUN TEST "N" /<15><12><1>
2880  017245     104  020116  020040        48300           .ASCII  /DN     DROP LINE "N" /<15><12><1>
2881  017275     101  020116  020040        48350           .ASCII  /AN     ADD LINE "N" /<15><12><1>
2882  017324  020124  020040  020040        48400           .ASCII  /T      TYPE LINE TABLE /<15><12><1>
2883  017356  047127  020040  020040        48450           .ASCII  /WN     CHANGE "WIDTH" TO N/<15><12><1>
2884  017413     114  020040  020040        48500           .ASCII  /L      LOOP ON ERROR /<15><12><1>
2885  017443     110  020040  020040        48550           .ASCII  /H      HALT ON ERROR /<15><12><1>
2886  017473     103  020040  020040        48600           .ASCII  /C      CLEAR ; RESETS H & L COMMANDS/<15><12><1>
2887  017542  020116  020040  020040        48650           .ASCII  /N      INHIBIT REPORTS /<15><12><1>
2888  017574  020120  020040  020040        48700           .ASCII  /P      PRINT ERROR REPORTS /<15><12><1>
2889  017632  051505  020103  020040        48750           .ASCIZ  /ESC    TO EXECUTE COMMAND STRING/<15><12><12
2890  017676  005015  046012  047111        48800   HEADR2: .ASCII  <15><12><12>/LINE# ADDR   VECTOR SEL/
2891  017730  005015     000                48850   L1:     .ASCIZ  <15><12>
2892  017733     060  020060  020040        48900   LIN:    .ASCII  /00    17/
2893  017743     060  030060  020060        48950   DLAD:   .ASCII  /0000   /
2894  017752  030060  020060  020040        49000   DLV:    .ASCIZ  /000   /
2895  017761     052  051105  047522        49050   ER0:    .ASCIZ  /*ERROR 000 TEST 00 LINE 00/<15><12><7>
2896  020017     040  020040  037477        49100   ER1:    .ASCIZ  /   ????/<15><12><7>
2897  020032  026455  046055  047111        49150   ER2:    .ASCIZ  /---LINE INVALID/<15><12><7>
2898  020055     116  020117  047111        49200   ER7:    .ASCIZ  /NO INTERRUPT ON TXMIT/<15><12>
2899  020105     104  047522  050120        49250   DR:     .ASCIZ  /DROPPED/<15><12>
2900  020117     052  005015     000        49300   S1:     .ASCIZ  /*/<15><12>
2901  020123     015  051012  040505        49350   RDY:    .ASCIZ  <15><12>/READY /<15><12>
2902  020136  005015  040520  051523        49400   EOPM:   .ASCIZ  <15><12>/PASS 00000  TEST 00/<15><12>
2903  020166  005015  025052  020052        49450   EOTM:   .ASCIZ  <15><12>/*** END OF TEST 00/<15><12>
2904                                        49500
2905  020215     015  050012  043103        49550   SW:     .ASCIZ  <15><12>/PCFLAG : 000000 /<15><12>
2906  020242  054105  042503  051523        49600   DR0:    .ASCII  /EXCESSIVE ERRORS..LINE/
2907  020270  030060  042040  047522        49650   DR1:    .ASCIZ  /00 DROPPED/<15><12><7>
2908  020306  047516  046040  047111        49700   E19:    .ASCIZ  /NO LINES AVAILABLE FOR TEST/<15><12><7>
2909  020345     114  047111  020105        49750   E20:    .ASCIZ  /LINE RE-SELECTED/<15><12>
2910  020370  047503  051516  046117        49800   CTLM:   .ASCIZ  /CONSOLE CONTROL?/
2911                                        49850
2912  020411     004  003401  000002        49900   ALLON:  .ASCIZ  <4><1><7><2>     ;SELECT ALL ESCAPE SEQUENCE
2913  020416  000404     000                49950   ALLOFF: .ASCIZ  <4><1>           ;DESELECT ALL SEQUENCE
2914  020421     004  001401  000000        50000   SCODE:  .ASCIZ  <4><1><3><000>   ;SELECT UNIQUE SEQUENCE
2915  020426  000404  001003     000        50050   NSELC:  .ASCIZ  <4><1><3><2>     ;BAD SELECT SEQUENCE
2916          020434                        50100           .EVEN
2917  020434  000060                        50150   STACK2: .BLKW   48.
2918  020574  000036                        50200   STACK3: .BLKW   30.
2919  020670  000000                        50250   ENDS:   .WORD   0
2920          001102                        50300           .END    START
```

```
AB0    = 000020
ACK    = 000006
ADDC   = 000004
ALLOFF  020416
ALLON   020411
ANSHDR  011472
ATTN   = 000200
A2BIN   007676
A2SAV   010004
A3$     014046
BIN2DA  010006
BIT0   = 000001
BIT00  = 000001
BIT01  = 000002
BIT02  = 000004
BIT03  = 000010
BIT04  = 000020
BIT05  = 000040
BIT06  = 000100
BIT07  = 000200
BIT08  = 000400
BIT09  = 001000
BIT1   = 000002
BIT10  = 002000
BIT11  = 004000
BIT12  = 010000
BIT13  = 020000
BIT14  = 040000
BIT15  = 100000
BIT2   = 000004
BIT3   = 000010
BIT4   = 000020
BIT5   = 000040
BIT6   = 000100
BIT7   = 000200
BIT8   = 000400
BIT9   = 001000
BPTVEC= 000014
BUILD   005640
CATCH   006126
CE      013305
CFLAGS  002032
CHARS   010310
CHKW    005006
CMDERR  005062
CNTDA   010160
COMSUM  017103
CON     010662
CONSON  003332
COUNT   015266
CR     = 000015
CRLF   = 000200
CSI     004000
CTLBLK  001364
CTLC   = 000003
CTLCNT= 000000
CTLG   = 000007
CTLGX   003064
CTLH   = 000010
CTLK   = 000013
CTLL   = 000014
CTLM    020370
CTLN   = 000016
CTLP   = 000020
DAS     014427
DATA    004776
DATAIN= 004000
DATA2   005000
DDISP  = 177570
DECODE  004230
DECSAV  004774
DECTBL  004656
DEL     016166
DELAYM  007530
DELAYR= 104006
DELAYT  007564
DIGITS  010162
DLAD    017743
DLADR   016130
DLFLAG  016126
DLOTH   016134
DLP    = 100000
DLV     017752
DLVEC   016132
DR      020105
DROPC  = 000010
DRO     020242
DR1     020270
DSWR   = 177570
DTEND   004774
DVCRXB  016136
DVCTXB  016142
DVCTXS  016140
ECHO    005044
EMTABL  006230
EMTBOS  006162
EMTVEC= 000030
ENDS    020670
ENQ    = 000005
EOL    = 004000
EOP    = 020000
EOPM    020136
EOT    = 040000
EOTM    020166
ERROR   005124
ERRSAV  005434
ERRVEC= 000004
ER0     017761
ER1     020C17
ER2     020032
ER7     020055
ESC    = 000033
ETX    = 000003
ETYPE   006240
E10     011137
E12     011045
E14     013356
E15     013404
E16     013440
E17     013475
E18     013540
E19     020306
E20     020345
E21     013575
E22     013632
E9      011005
FF      016167
FILL3   014362
FLAGDA  010161
FLAG1  = 000001
FLAG2  = 000002
GETANS  011216
GETSRC  003350
GETSWS  003130
GNL     002556
GN1     002600
GN2     002604
GN3     002612
GN4     002644
GN5     002650
GP      011100
GSEL    010734
GVL     002332
G1A     002340
G1B     002344
G1C     002356
G1D     002370
HALTC  = 000200
HALTOE= 100000
HDR3    014443
HDR4    014557
HDR5    014610
HDR5A   014646
HDR5B   014635
HDR5E   014651
HEADR1  017056
HEADR2  017676
HI      013252
HT     = 000011
ICNT   = 177776
INBUF   016114
INHR   = 000040
INHRPT= 020000
INTEST  016154
INTRAP  007162
IOTVEC= 000020
ISP    = 005726
ISP2   = 022626
ITRAP  = 104004
LOONE  = 000400
LF     = 000012
LIN     017733
LINENO  001370
LINES   016032
LINESE  002204
LINMON  002110
LIN00   016170
LIN01   016200
LIN02   016210
LIN03   016220
LIN04   016230
LIN05   016240
LIN06   016250
LIN07   016260
LIN10   016270
LIN11   016300
LIN12   016310
LIN13   016320
LIN14   016330
LIN15   016340
LIN16   016350
LIN17   016360
LIN20   016370
LIN21   016400
LIN22   016410
LIN23   016420
LIN24   016430
LIN25   016440
LIN26   016450
LIN27   016460
LIN30   016470
LIN31   016500
LIN32   016510
LIN33   016520
LIN34   016530
LIN35   016540
LIN36   016550
LIN37   016560
LIN40   016570
LIN41   016600
LIN42   016610
LIN43   016620
LIN44   016630
LIN45   016640
LIN46   016650
LIN47   016660
LIN50   016670
LIN51   016700
LIN52   016710
LIN53   016720
LIN54   016730
LIN55   016740
LIN56   016750
LIN57   016760
LOOPC  = 000100
LOOPOE= 040000
LOOP1   001454
LOOP2   001466
L1      017730
L3      017051
MACHER  000004
MAJOR  = 003000
MAX     016034
MECHO   006270
MERR   = 100000
MERRN  = 100377
MFLAGS= 000004
MSAVE   006646
MTW     002432
MTW1    002452
MTYPE   007010
MULTI  = 000040
NEWMOD= 001000
NEWTST= 002000
NEXT    016152
NOOP   = 000240
NOP    = 000240
NREQ   = 000340
NSELC   020426
NXTLIN  016162
OCTALC  011520
ONLIN   016160
O2ASC   007566
PASCNT= 000002
PCFLAG  001364
PIRQ   = 177772
PIRQVE= 000240
POINT  = 000006
PRI     010424
PRINT  = 000020
PRINTT= 010000
PRIO   = 000000
PRI4   = 000200
PRI7   = 000340
PROGID  016772
```

```
PRTLTB  007212
PRTTBL= 104002
PR0    = 000000
PR1    = 000040
PR2    = 000100
PR3    = 000140
PR4    = 000200
PR5    = 000240
PR6    = 000300
PR7    = 000340
PS     = 177776
PSW    = 177776
PTR     016164
PWRVEC= 000024
RDSAV   003776
RDY     020123
READIO  007024
READKB  003466
READS   007124
READY  = 000200
REPORT  005436
RESTRT  001372
RESVEC= 000010
RPC    = 000010
RUB     010364
R6     =%000006
R7     =%000007
SAVE    016150
SCODE   020421
SEC     010434
SECHO   006654
SEL    = 000200
SELERR  005100
SEQ    = 000100
SETIO   005600
SI     = 000017
SO     = 000016
SOH    = 000001
SSWR    000176
STACK  = 001100
STACK2  020434
STACK3  020574
START   001102
START2  001172
START3  001230
STKLMT= 177774
STRAP   007510
STX    = 000002
SUTEST  002056
SW      020215
SWCTL  = 000020
SWLINE  000174
SWR     016124
SWRTST  003006
SWTEST  000172
SW0    = 000001
SW00   = 000001
SW01   = 000002
SW02   = 000004
SW03   = 000010
SW04   = 000020
SW05   = 000040
SW06   = 000100
SW07   = 000200
SW08   = 000400
SW09   = 001000
SW1    = 000002
SW10   = 002000
SW11   = 004000
SW12   = 010000
SW13   = 020000
SW14   = 040000
SW15   = 100000
SW2    = 000004
SW3    = 000010
SW4    = 000020
SW5    = 000040
SW6    = 000100
SW7    = 000200
SW8    = 000400
SW9    = 001000
S1      020117
TAB     015316
TABDA   010146
TABEND  016770
TABL1   011176
TABL4   015270
TABS    016036
TBITVE= 000014
TDONE  = 020000
TEMP    016100
TEMPF   005002
TEMPT   005004
TESTAD  016156
TESTNO  001366
TESTO   010164
TEST1   010444
TEST2   011526
TEST3   013700
TEST4   014652
TEST5   015354
TIMER   007562
TKB    = 177562
TKS    = 177560
TKV    = 000060
TKVEC  = 000060
TPB    = 177566
TPS    = 177564
TPVEC  = 000064
TRAPVE= 000034
TRTVEC= 000014
TSCCNT  002036
TSCPTR  002034
TSTBL   002040
TSTCTL  001446
TSTMON= 050000
TXTRAP  007416
TXVEC   016144
TYPANS  011306
TYPE   = 104000
TYPES   007110
T0      010366
T00BLK  010352
T01     010200
T01BLK  010722
T02BLK  013176
T03BLK  014342
T04BLK  015246
T05BLK  016014
T1      010742
T1TEMP  010736
T11     010460
T12     010554
T13     010566
T16     010634
T2      013326
T2BUF   013220
T2CNT1  013212
T2CNT2  013213
T2SAV1  013210
T2TEMP  013214
T21     011546
T22     011726
T220    013144
T23     012140
T23A    012206
T24     012530
T25     012636
T25A    012734
T26     013034
T3      014376
T3SAV   014354
T3SAV1  014356
T3SAV2  014360
T4      015320
T4SAV   015260
T4SAV1  015262
T4SAV2  015264
T41     014666
T42     014702
T5      016040
T5SAV   016026
T5SAV1  016030
T51     015420
T52     016071
UPDATE  002660
WIDTH   016146
$BGNLE= 177777
$ERFLG= 000400
$FSAND= 000310
$FSBAD= 000401
$FSBLA= 000170
$FSCAS= 000150
$FSDEC= 000220
$FSDO  = 000340
$FSFAL= 000405
$FSGOO= 000400
$FSIF  = 000110
$FSINC= 000210
$FSLOO= 000200
$FSNAM= 000160
$FSNO  = 000403
$FSOR  = 000320
$FSRTN= 000300
$FSSEL= 000140
$FSTHE= 000330
$FSTRU= 000404
$FSUNT= 000130
$FSWHI= 000120
$FSYES= 000402
$HD    = 000003
$IFLEV= 177777
$ISK0  = 000001
$ISK1  = 000001
$ISK10= 000001
$ISK11= 000001
$ISK2  = 000001
$ISK3  = 000001
$ISK4  = 000001
$ISK5  = 000001
$ISK6  = 000001
$ISK7  = 000001
$LOCTA= 177777
$LSTCN= 177777
$LSTIN= 000000
$LSTST= 177777
$LSTTA= 000000
$NESTL= 177777
$NSK0  = 000300
$NSK1  = 000110
$NSK10= 000110
$NSK11= 000110
$NSK12= 000110
$NSK2  = 000110
$NSK3  = 000[illegible]0
$NSK4  = 000110
$NSK5  = 000110
$NSK6  = 000110
$NSK7  = 000110
$SAVLE= 177777
$SSK0  = 050023
$SVPC  = 000204
$SWR   = 160000
$TAGLE= 177777
$TAGNU= 050040
$TEMP  = 000300
$TN    = 000001
$TSK0  = 050034
$TSK1  = 050037
$TSK10= 050023
$TSK11= 050024
$TSK2  = 050024
$TSK3  = 050023
$TSK4  = 050025
$TSK5  = 050022
$TSK6  = 050017
$TSK7  = 050021
$$ARGC= 000000
$$BYTE= 000402
$$CASE= 000000
$$DST  = 000000
$$ELOC= 000402
$$ERFL= 000000
$$FLAG= 000001
$$FROM= 000000
$$LOC  = 013076
$$LOCN= 000000
$$REG  = 177777
$$RETU= 000000
$$RTN1= 050002
$$RTN2= 050001
$$SRC  = 000000
$$TGSV= 000000
$$TGS1= 000000
$$TGS2= 000000
$$TO   = 000000
$$$TAG= 050000
.      = 020672

. ABS.  020672      000
```

```
CZLAFA0 LA36 TERM TST   MACY11 30A(1052)  03-JAN-77  00:01  PAGE 4-2
CZLAFA.P11    03-JAN-78 11:20            SYMBOL TABLE                    SEQ 0092

 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)
```