DMC11

FREE RUNNING TESTS

MD-11-DZDMH-B

EP-DZDMH-B-DL-A

FICHE 1 OF 1

AUG 1977

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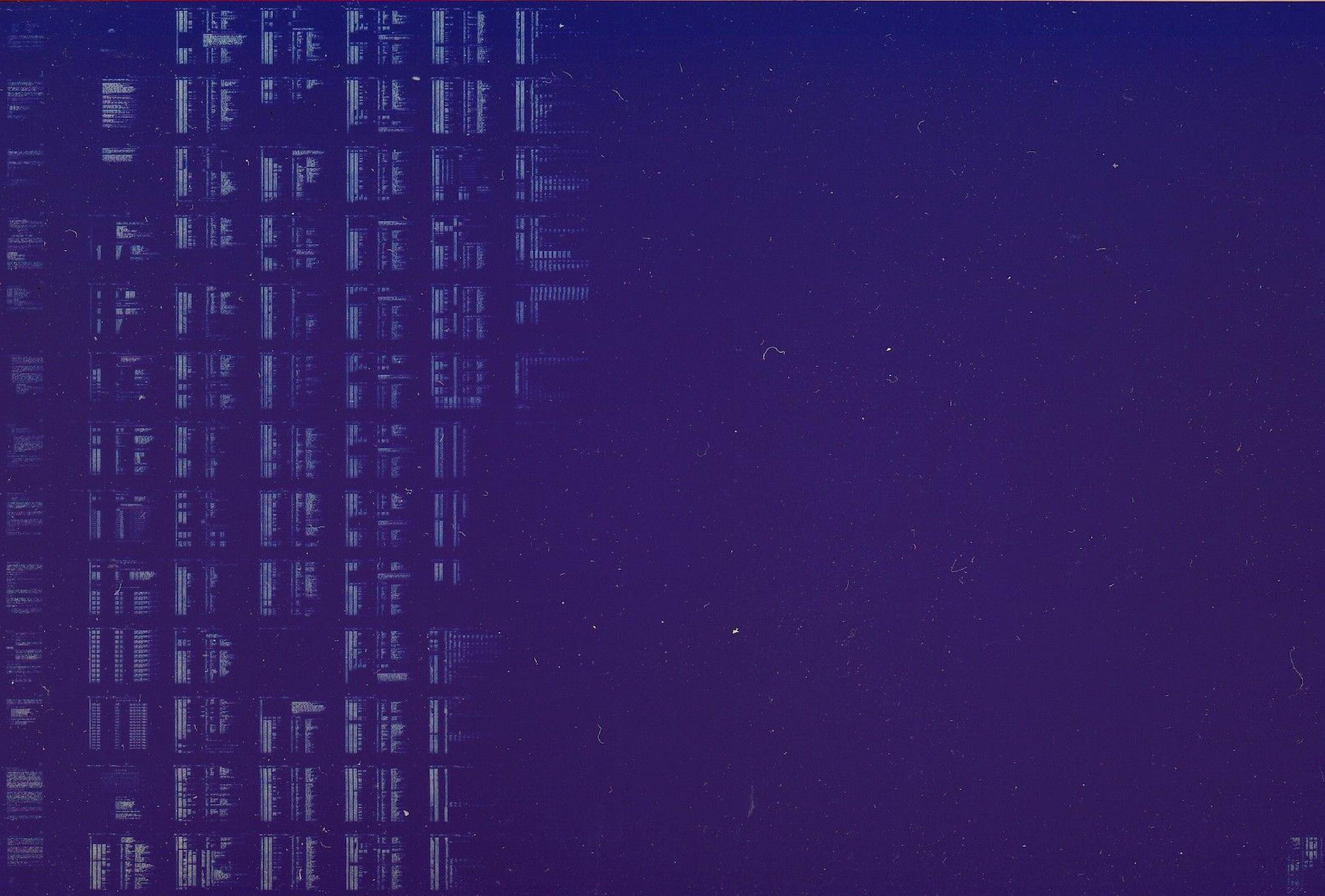
MADE IN USA



IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DZDMH-B-D
PRODUCT NAME:	DMC11 FREE RUNNING TESTS
DATE:	MAY 1977
MAINTAINER:	DIAGNOSTICS
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1. ABSTRACT

The function of the DMC11 diagnostics is to verify that the option operates according to specifications. The diagnostics verfiy that there are no malfunctions and the all operations of the DMC11 are correct in its environment.

Parameters must be set up to alert the diagnostics to the DMC11 configuration. These parameters are contained in the STATUS TABLE and are generated in two ways: 1) Manual Input - the operator answers questions. 2) Autosizing - the program determines the parameters automatically.

DZDMH tests the DMC11-AR and DMC11-AL micro-processors (M8200-YA and M8200-YB), or the KMC11 micro-processor (M8204). Free running tests are performed. A line unit (M8201 or M8202) must be installed. DZDMH can be used as a heat test diagnostic by manufacturing.

Currently there are five off line diagnostics that are to be run in sequence to insure that if an error should occur it will be detected at an early stage.

NOTE: Additional diagnostics may be added in the future.

The five diagnostics are:

1. DZDMC [REV] Basic W/R and Micro-processor tests
2. DZDME [REV] DDCMP Line unit tests
3. DZDMF [REV] BITSTUFF Line unit tests
4. DZDMG [REV] CROM and Jump tests
5. DZDMH [REV] Free-running tests (Heat test tape)

2. REQUIREMENTS

2.1 EQUIPMENT

Any PDP11 family CPU (except an LSI-11) with minimum 8k memory
ASR 33 (or equilivalent)
DMC11-AR with DMC11-DA or DMC11-FA or
DMC11-AL with DMC11-MA or DMC11-MD

2.2 STORAGE

Program will use all 8K of memory except where ABL and BOOTSTRAP LOADER reside. Locations 1500 thru 1640; contain the "STATUS TABLE" information which is generated at start of diagnostics by manual input (questions) or automatically (auto-sizing). This area is an overlay area and should not be altered by the operator.

3. LOADING PROCEEDURE

3.1 METHOD

All programs are in absolute format and are loaded using the ABSOLUTE LOADER. NOTE: if the diagnostics are on a media such as DISK ,MAGTAPE,DECTAPE, or CASSETTE; follow instructions for the monitor which has been provided on that specific media.

ABSOLUTE LOADER starting address *500

MEMORY	* SIZE
4k	17
8k	37
12k	57
16k	77
20k	117
24k	137
28k	157

3.1.1 Place address of ABS loader into switch register.
(also place 'HALT' SW up)

3.1.2 Depress 'LOAD ADDRESS' key on console and release.

3.1.3 Depress 'START KEY' on console and release (program should now be loading into CPU)

4. STARTING PROCEEDURE

a. Set switch register to 000200
b. Depress 'LOAD ADDRESS' key and release
c. Set SWR to zero for 'AUTO SIZING' or SWR bit0=1 for manual input (questions) or SWR bit7=1 to use existing parameters set up by a previous start or a previously run DMC11 diagnostic.
d. Depress 'START KEY' and release. The program will type Maindec Name and program name (if this was the first start up of the program) and also the following:

```
                  MAP OF DMC11 STATUS
                  -------------------

            PC    CSR    STAT1    STAT2    STAT3
            --    ---    -----    -----    -----


         001500 160010 145310   177777   000000
         001510 160020 145320   177777   000000
```

The program will type 'R' and proceed to run the diagnostic. The above is only an example. This would indicate the status table starting at add. 1500 in the program. In this example the table contains the information and status of two DMC11'S. THE STATUS TABLE MUST BE VERIFIED BY THE USER IF AUTO SIZING IS DONE. For information of status table see section 8.4 for help.

If the diagnostic was started with SW00=1 indicating manual parameter input then the following shows an example of the questions asked and some example answers:

```
HOW MANY DMC11'S TO BE TESTED?1

01
CSR ADDRESS?160010
VECTOR ADDRESS?310
BR PRIORITY LEVEL?  (4,5,6,7)?5
DOES MICRO-PROCESSOR HAVE CRAM?  (Y OR N)N
WHICH LINE UNIT?  IF NONE TYPE "N",  IF  M8201  TYPE  "1",  IF
M8202 TYPE "2"?1
IS THE LOOP BACK CONNECTOR ON?Y
SWITCH PAC#1 (DDCMP LINE#)?377
SWITCH PAC#2 (BM873 BOOT ADD)?377
```

Following the questions the status map is printed out as described above, the information in the map reflects the answers to the questions. If the diagnostic was started with SW00=0 and SW07=0 (AUTO-SIZING) then no questions are asked and only the status-map is printed out. If AUTO-SIZING is used the status information must be verified to be correct (match the hardware). if it does not match the hardware the diagnostic must be restarted with SW00=1 and the questions answered.

4.1 CONTROL SWITCH SETTINGS

```
Sw 15 Set:  Halt on error
SW 14 Set:  Loop on current test
SW 13 Set:  Inhibit error print out
SW 12 Set:  Inhibit type out/abell on error.
SW 11 Set:  Inhibit iterations.  (quick pass)
SW 10 Set:  Escape to next test on error
SW 09 Set:  Loop with current data
SW 08 Set:  Catch error and loop on it
SW 07 Set:  Use previous status table.
SW 06 Set:  Halt in    ROMCLK    routine    before    clocking
            micro-processor
SW 05 Set:  Reserved
SW 04 Set:  Reserved
SW 03 Set:  Reselect DMC11's desired active
SW 02 Set:  Lock on selected test
SW 01 Set:  Restart program at selected test
SW 00 Set:  Build new status table from questions.  (If SW07=0
              and  SW00=0  a  new  status  table  is  built by
              auto-sizing)
```

Switch 06 and 08-15 are dynamic and can be changed as needed while the diagnostic is running. Switches 00-03 and switch 07 are static, and are used only on starting or restarting the diagnostic.

4.1.2 SWITCH REGISTER OPTIONS (at start up)

SW 01 RESTART PROGRAM AT SELECTED TEST. It is strongly suggested that at least one pass has been made before trying to select a test, the reason being is that the program has to clear areas and set up parameters. When this switch is used the diagnostic will ask TEST NO.? Answer by typing the number of the test desired and carrige return to begin execution at the selected test.

SW 02 LOCK ON SELECTED TEST. This switch when used with SW01 will cause the program to constantly loop on the selected test. Hitting any key on the console will let it advance to the next test and loop until a key is hit again. If SW02=0 when SW01 is used. The program will begin at the selected test and continue normal operations.

SW 03 RESELECT DMC11'S DESIRED ACTIVE. Please note that a message is typed out for setting the switch register equal to DMC11's active. this means if the system has four DMC11s; bits 00,01,02,03 will be set in loc 'DMACTV' from the switch register. Using this switch(SW00) alters that location;therefore if four DMC11s are in the system ***DO NOT*** set switchs greater than SW 03 in the up position. this would be a fatal error. do not select more active DMC11s than there is information on in the status table.

METHOD:
A: Load address 200
B: Start with SW 00=1
C: Program will type message
D: Set a switch for each DMC desired active. EXAMPLE: If you have 4 DMC's but only want to run the first and the last set SWR bits 0 and 3 = 1. PRESS CONTINUE
E: Number (IF VALID) will be in data lights (excluding 11/05)
F: Set with any other switch settings desired. PRESS CONTINUE.

4.1.3 DYNAMIC SWITCHES

ERROR SWITCHES

1. SW 12 Delete print out/bell on error.
2. SW 13 Delete error printout.
3. SW 15 Halt on the error
4. SW 08 Goto beginning of the test(on error).
5. SW 10 Goto next test(on error).

SCOPE SWITCHES

1. SW06 Halt in ROMCLK routine before clocking micro-processor instruction. This allows the operator to scope a micro-processor instruction in the static state before it is clocked. Hit continue to resume running.
2. SW09 (if enabled by 'SCOP1') on an error; If an '*' is printed in front of the test no. (ex. *TEST NO. 10) SW09 is incorporated in that test and therefore SW09 is usually the best switch for the scope loop (SW14=0, SW10=0, SW09=1, SW08=0). If SW09 is not enabeled; and there is a HARD error (constant); SW08 is best. (SW14=1,0, SW10=0, SW09=0, SW08=1). for intermittemt errors; SW14=1 will loop on test reguardless of error or not error. (SW14=1, SW10=0, SW09=0, SW08=1,0)
3. SW11 Inhibit interations.
4. SW14 Loop on current test.

4.2 STARTING ADDRESS

Starting address is at 000200 there are no other starting addresses for the DMC11 diagnostics. (See Section 4.0)

NOTE: If address 000042 is non-zero the program assumes it is under ACT11 or XXDP control and will act accordingly after all available DMC11's are tested the program will return to 'XXDP' or 'ACT-11'.

5. OPERATING PROCEDURE

When program is initially started messages as described in section 4.0 will be printed, and program will begin running the diagnostic

5.2 PROGRAM AND/OR OPERATOR ACTION

The typical approach should be

1. Halt on error (via SW 15=1) when ever an error occurs.
2. Clear SW 15.
3. Set SW 14: (loop on this test)
4. Set SW 13: (inhibit error print out)

The TEST NUMBER and PC will be typed out and possibily an error message (this depends on the test) to give the operator an idea as to the source of the problem. If it is necessary to know more information concerning the error report; LOOK IN THE LISTING for that TEST NUMBER which was typed out and then NOTE THE PC of thE ERROR REPORT this way the EXACT FUNCTION of the test CAN BE DETERMINED.

6. ERRORS

As described previously there will always be a TEST NUMBER and PC typed out at the time of an error (providing SW 13=0 and SW 12=0). in most cases additional information will be supplied in the the error message to give the operator an indication of the error.

6.2 ERROR RECOVERY

If for some reason the DMC11 should 'HANG THE BUS' (gain control of bus so that console manual functions are inhibited) an init or power down/up is necessary for operator to regain control of cpu. If this should happen; look in location 'TSTNO' (address 1226)for the number of the test that was running at the time of the catastrophic error. In this way the operator will have an idea as to what the DMC11 was doing at the time of the error.

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

See section 4. (PLEASE)
Status table should be verified reguardless of how program was started. Also it is important to use this listing along with the information printed on the TTY to completly isolate problems.

7.2 OPERATING RESTRICTIONS

The first time a DMC11 diagnostic is loaded into core and run the STATUS TABLE must be set up. This is done by manual input (SW00=1) or by autosizing (SW00=0 and SW07=0). Thereafter however the status table need not be setup by subsequent restarts or even loading the next DMC diagnostic because the STATUS TABLE is overlayed. The current parameters in the STATUS TABLE are used when SW07=1 on start up.

7.3 HARDWARE CONFIGURATION RESTRICTIONS

DMC11(M8200)- Jumper W1 must be in, and switch 7 of E76 must be in the OFF position.

KMC(M8204)- Jumper W1 must be in.

LINE UNIT(M8201)- Jumpers W1, W2, and W4 must be IN. Jumpers W3, and W5 must be OUT. SW8 of E26 must be in the ON POSITION.

LINE UNIT (M8202)- Jumper W1 must be in. SW8 of E26 must be in the OFF position.

8. MISCELLANEOUS

8.1 EXECUTION TIME

All DMC11 device diagnostics will give an 'END PASS' message (providing no errors and sw12=0) within 4 mins. This is assuming SW11=1 (DELETE ITERATIONS) is set to give the fastest possible execution. The actual execution time depends greatly on the PDP11 CPU configuration and the amount of memory in the system.

8.2 PASS COMPLETE

NOTE: EVERY time the program is started; the tests will run as if SW11 (delete iterations) was up (=1). This is to 'VERIFY NO HARD ERRORS' as soon as possible. Therefore the first pass -EACH TIME PROGRAM IS STARTED- will be a 'QUICK PASS' until all DMC11's in system are tested. When the diagnostic has completed a pass the following is an example of the print out to be expected.

```
END PASS DZDMH CSR:  175000 VEC:  0300 PASSES:  000001
ERRORS:  000000
```

NOTE: The pass count and error counts are cummulitive for each DMC11 that is running, and are set to zero only when the diagnostic is started. Therefore after an overnight run for example, the total passes and errors for each DMC11 since the diagnostic was started are reflected in PASSES: and ERRORS:.

8.4 KEY LOCATIONS

RETURN (1214) Contains the address where program will return when iteration count is reached or if loop on test is asserted.

NEXT (1216) Contains the address of the next test to be peformed.

TSTNO (1226) Contains the number of the test now being peformed.

RUN (1316) The bit in 'RUN' always points to the DMC11 currently being tested. EXAMPLE: (RUN) 1302/0000000001000000 Means that DMC11 no.06 is the DMC11 now running.

DMCR00-DMCR17
DMST00-DMST17
(1500)-(1640)

These locations contain the information needed to test up to 16 (decimal) DMC11s sequentialy. they contain the CSR,VECTOR and STATUS concerning the configuration of each DMC11.

DMACTV (1306) Each bit set in this location indicates that the associated DMC11 will be tested in turn. EXAMPLE: (DMACTV) 1276/0000000000011111 means that DMC11 no. 00,01,02,03,04 will be tested. EXAMPLE: (DMACTV) 1276/0000000000010001 Means that DMC11 no. 00,04 will be tested.

DMCSR (1404) Contains the CSR of the current DMC11 under test.

8.4A 'STATUS TABLE' (1500-1640)

The table is filled by AUTO SIZING or by the manual parameter input (questions) as described previously. Also if desired by user; the locations may be altered by hand (toggled in) to suit the specific configuration.

The example status map shown below contains information for two DMC11'S. the table can contain up to 16 DMC11'S. Following the map is a description of tne bits for each map entry

```
                 MAP OF DMC11 STATUS
                 -------------------

           PC     CSR    STAT1   STAT2   STAT3
           --     ---    -----   -----   -----
         001500 160010 145310  177777  000000
         001510 160020 016320  000000  000000
```

Each map entry contains 4 words which contain the status information for 1 DMC11. The PC shows where in core memory the first of the 4 words is. In the example above the first DMC'S status is in locations, 1500, 1502, '504, and 1506. The second DMC status is located at 1510, 1512, 1514, and 1516. The information contained in each 4 word entry is defined as follows:

```
CSR:    Contains DMC11 CSR address

STAT1:  BITS 00-08 IS DMC11 VECTOR ADDRESS
        BIT15=1 MICRO-PROCESSOR HAS CRAM
        BIT15=0 MICRO-PROCESSOR HAS CROM
        BIT14=1 TURNAROUND CONNECTOR IS ON
        BIT14=0 NO TURNAROUND CONNECTOR
        BIT13=0 LINE UNIT IS AN M8201
        BIT13=1 LINE UNIT IS AN M8202
        BIT12=1 NO LINE UNIT
        BITS 09-11 IS DMC11 BR PRIORITY LEVEL

STAT2:  LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
        HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)

STAT3:  BIT0=1 PERFORM FREE RUNNING TESTS ON KMC
                (MUST BE SET MANUALLY. SEE TEST 1)
        BIT1=0 DMC11-AR (LOW SPEED)
        BIT1=1 DMC11-AL (HIGH SPEED)
```

8.5 METHOD OF AUTO SIZING

8.5.1 FINDING THE CONTROL STATUS REGISTER.

The auto-sizing routine finds a DMC11 as follows: It starts at address 160000 and tests all address in increments of 10 up to and including address 167760. If the address does not time out, the following is done, the first CROM address is written to a 125252 then it is read back. If it contains a -1 or 125252 or a 626 or 16520 a DMC11 or KMC11 has been found, if not, the address is updated by 10 and the search continues. A -1 indicates a DMC11 with no CROM, a 125252 indicates a KMC11 with CRAM, a 626 indicates a DMC11-AL and a 16520 indicates a DMC11-AR. Further tests are performed at this point to determine which line unit, if any, is installed, if a loop-back connector is installed and various switch settings on the line unit. THIS IS WHY THE STATUS TABLE MUST BE VERIFIED BY THE USER AND IF ANY OF THE INFORMATION DOES NOT AGREE WITH THE HARDWARE THE DIAGNOSTIC MUST BE RESTARTED AND THE QUESTIONS MUST BE ANSWERED. All DMC11's in the system will be found by the auto-sizer. If it does not find a DMC11 the diagnostic must be restarted and the questions answered.

8.5.2 FINDING THE VECTOR AND BR LEVEL

The vector area (address 300-776) is filled with the instruction IOT and '.+2' (next address). The processor status is started at 7 and the DMC is programmed to interrupt. The PS is lowered by 1 until the DMC interrupts, a delay is made and if no interupt occures at PS level 3 (because of a bad DMC11) the program assumes vector address 300 at BR level 5 and the problem should be fixed in the diagnostic. Once the problem is fixed; the program should be re-setup again to get correct vector. If an interupt occured; the address to which the DMC11 interupted to is picked up and reported as the vector. NOTE: if the vector reported is not the vector set up by you; there is a problem and AUTO SIZING should not be done.

8.6 SOFTWARE SWITCH REGISTER

If the diagnostic is run on an 11/04 or other CPU without a switch register then a software switch register is used to allow user the same switch options as described previously. If the hardware switch register does not exist or if one does and it contains all ones (177777) this software switch register is used.

Control:

To obtain control at any allowable time during execution of the diagnostic the operator types a CTRL G on the console terminal keyboard. As soon as the CTRL G is recognized. by the diagnostic, the following message will be displayed:

SWR=XXXXXX NEW?

Where XXXXXX is the current contents of the software switch register in octal. The software control routine will then await operator action. At which time the operator is required to type one or more of the legal characters: 1) 0 - 7, 2) line feed(<LF>), 3) carriage return(<CR>), or 4) control-U (CTRL U). No check is made for legality. If the input character is not a <LF>, <CR>, or CTRL U it is assumed tc be an octal digit.

To change the contents of the SSR the operator simply types the new desired value in octal - leading zeros need not be typed. And terminates the input string with a <CR> or <LF> depending on the program action desired as described below. The input value will be truncated to the last 6 digits typed. At least one digit must be typed on any given input string prior to the terminator before a change to the SSR will occur.

When the input string is terminated with a <CR> the diagnostic will continue execution from the point at which it was interrupted. If a <CR> is the only thing typed the program will continue without changing the SSR. The <LF> differs from the <CR> by restarting the program as if it were restarted at address 200.

If a CTRL U is typed at any point in the input string prior to the terminator the input value will be disregarded and the prompt displayed (SWR = XXXXXX NEW?).

To set the SSR for the starting switches, first load the diagnostic, then hit CTRL G, then start the diagnostic.

```
  DOCUMENT
***************
 DZDMH  LST
***************
```

```
6       MAINDEC-11-DZDMH-B   DMC11 FREE RUNNING TESTS
        COPYRIGHT 1976, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
        ----------------------------------------------------------------------

1666    ************************** TEST 1 ***************************
        FREE RUNNING FLAG MODE DATA TEST
        TRANSMIT A MESSAGE AND VERIFY THE RECEIVED DATA
        LINE UNIT LOOP IS SET FOR THIS TEST.
        ALL FOLLOWING TESTS ARE FREE RUNNING AND ARE PERFORMED
        ONLY ON DMC'S WITH LINE UNITS. IF YOU WISH TO PERFORM
        THESE FREE RUNNING TESTS ON A KMC (NORMALLY THE FREE RUNNING TESTS
        WILL FAIL ON A KMC, THE TIMER IS TOO FAST) THEN YOU MUST
        MANUALLY SET BIT0 OF STAT3 IN THE STATUS MAP. ALSO THE KMC
        MUST HAVE THE MICRO-CODE LOADED BY PREVIOUSLY RUNNING
        DZDMG TEST 2 AND THEN LOADING AND STARTING DZDMH
         WITH SWITCH 7 = 1

1857    ************************** TEST 2 ***************************
        OVERUN TEST
        IN FREE RUNNING MODE SEND MESSAGE WITH NO RECEIVE
        BUFFER AVAILABLE, VERIFY THAT AN OVERRUN ERROR OCCURS

1937    ************************** TEST 3 ***************************
        LOST DATA TEST
        IN FREE RUNNING MODE SEND A MESSAGE LONGER THAN THE RECEIVE
        BUFFER, VERIFY THAT A LOST DATA ERROR OCCURS.

2003    ************************** TEST 4 ***************************
        TRANSMIT NON-EXISTENT MEMORY TEST
        IN FREE RUNNING MODE, LOAD A TRANSMIT BA THAT WILL TIME OUT
        VERIFY THAT A NON-EXISTENT MEMORY ERROR OCCURS

2066    ************************** TEST 5 ***************************
        RECEIVE NON-EXISTENT MEMORY TEST
        IN FREE RUNNING MODE, LOAD A RECEIVE BA THAT WILL TIME OUT
        VERIFY THAT A NON-EXISTENT MEMORY ERROR OCCURS

2132    ************************** TEST 6 ***************************
        PROCESSOR ERROR TEST
        IN FREE RUNNING MODE, DO A BASE TRANSFER REQUEST AFTER A
        BASE HAS BEEN SET UP, VERIFY THAT A PROCESSOR ERROR OCCURS.

2192    ************************** TEST 7 ***************************
        PROCESSOR ERROR TEST
        IN FREE RUNNING MODE DO A RQI WITH AN ILLEGAL IO CODE
        VERIFY THAT A PROCESSOR ERROR OCCURS

2252    ************************** TEST 10 ***************************
        HALF DUPLEX TEST
        IN FREE RUNNING MODE, SET HALF DUPLEX AND L U LOOP
        SEND A MESSAGE AND VERIFY THAT THERE ARE NO DONES
```

```
2291    ************************** TEST 11 ***************************
        RESUME TEST
        THIS TEST SENDS AND RECEIVES A BUFFER AND SHUTS DOWN THE
        DMC. THEN A MASTER CLEAR IS ISSUED AND A BASE WITH RESUME
        BIT SET IS GIVEN, ANOTHER BUFFER IS SENT AND RECEIVED.
        DATA IS CHECKED.

2380    ************************** TEST 12 ***************************
        FREE RUNNING DATA TEST (INTERRUPT DRIVEN EXERCISER)
        THIS TEST REPEATEDLY QUEUES UP 7 RECEIVE BUFFERS AND
        7 TRANSMIT BUFFERS AND CHECKS DATA WHEN ALL 7 BUFFERS
        ARE RECEIVED. TRANSMIT COUNTS RANGE FROM 2 TO 104.
        DATA IS A BINARY COUNT PATTERN. THE RESUME FUNCTION
        IS CHECKED IN THIS TEST. THIS TEST USES THE TURNAROUND CONNECTOR
        IF IT IS PRESENT. OTHERWISE LINE UNIT LOOP IS SET.
```

```
                         ;*MAINDEC-11-DZDMH-B   DMC11 FREE RUNNING TESTS
                         ;*COPYRIGHT 1976, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                         ;*------------------------------------------------------------------

                         ;STARTING PROCEDURE
                         ;LOAD PROGRAM
                         ;LOAD ADDRESS 000200
                         ;SWR=0  AUTOSIZE DMC11
                         ;SW07=1  USE CURRENT DMC11 PARAMETERS
                         ;SW00=1  INPUT NEW DMC11 PARAMETERS
                         ;PRESS START
                         ;PROGRAM WILL TYPE "MAINDEC-11-DZDMH-B   DMC11 FREE RUNNING TESTS"
                         ;PROGRAM WILL TYPE STATUS MAP
                         ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                         ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                         ;AND THEN RESUME TESTING
                         ;SUBSEQUENT RESTARTS WILL NOT TYPE PROGRAM TITLE



                         ;SWITCH REGISTER OPTIONS
                         ;-----------------------

        100000           SW15=100000            ;=1,HALT ON ERROR
        040000           SW14=40000             ;=1,LOOP ON CURRENT TEST
        020000           SW13=20000             ;=1,INHIBIT ERROR TYPEOUT
        010000           SW12=10000             ;=1,DELETE TYPEOUT/BELL ON ERROR.
        004000           SW11=4000              ;=1,INHIBIT ITERATIONS
        002000           SW10=2000              ;=1,ESCAPE TO NEXT TEST ON ERROR
        001000           SW09=1000              ;=1,LOOP WITH CURRENT DATA
        000400           SW08=400               ;=1,LOOP ON ERROR
        000200           SW07=200               ;=1,USE CURRENT DMC11 PARAMETERS, =0,AUTOSIZE DMC11
        000100           SW06=100               ;=1, HALT BEFORE CLOCKING MICRO-PROCESSOR INSTRUCTION
        000040           SW05=40
        000020           SW04=20
        000010           SW03=10                ;RESELECT DMC11'S TO BE TESTED (ACTIVE)
        000004           SW02=4                 ;LOCK ON TEST SELECT
        000002           SW01=2                 ;RESTART PROGRAM AT SELECTED TEST
        000001           SW00=1                 ;INPUT DMC11 PARAMETERS
```

```


                                ;REGISTER DEFINITIONS
                                ;--------------------

        000000                  R0=%0           ;GENERAL REGISTER
        000001                  R1=%1           ;GENERAL REGISTER
        000002                  R2=%2           ;GENERAL REGISTER
        000003                  R3=%3           ;GENERAL REGISTER
        000004                  R4=%4           ;GENERAL REGISTER
        000005                  R5=%5           ;GENERAL REGISTER
        000006                  SP=%6           ;PROCESSOR STACK POINTER
        000007                  PC=%7           ;PROGRAM COUNTER

                                ;LOCATION EQUIVALENCIES
                                ;----------------------

        177776                  PS=177776       ;PROCESSOR STATUS WORD
        001200                  STACK=1200      ;START OF PROCESSOR STACK

                                ;INSTRUCTION DEFINITIONS
                                ;-----------------------

        005746                  PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
        005726                  POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
        010046                  PUSHR0=10046    ;SAVE R0 ON STACK
        012600                  POPR0=12600     ;RESTORE R0 FROM STACK
        024646                  PUSH2SP=24646   ;DECREMENT STACK TWICE
        022626                  POP2SP=22626    ;INCREMENT STACK TWICE
                                .EQUIV  EMT,HLT ;BASIC DEFINITION OF ERROR CALL

                                ;BIT DEFINITIONS
                                ;---------------

        100000                  BIT15=100000
        040000                  BIT14=40000
        020000                  BIT13=20000
        010000                  BIT12=10000
        004000                  BIT11=4000
        002000                  BIT10=2000
        001000                  BIT9=1000
        000400                  BIT8=400
        000200                  BIT7=200
        000100                  BIT6=100
        000040                  BIT5=40
        000020                  BIT4=20
        000010                  BIT3=10
        000004                  BIT2=4
        000002                  BIT1=2
        000001                  BIT0=1


```

```
                                                ;;*******************************************************************
                                                ;-----------------------------------------------------------------
                                                        ;TRAPCATCAER FOR ILLEGAL INTERRUPTS
                                                        ;THE STANDARD "TRAP CATCHER" IS PLACED
                                                        ;BETWEEN ADDRESS 0 TO ADDRESS 776.
                                                        ;IT LOOKS LIKE "PC+2 HALT".
                                                ;-----------------------------------------------------------------
                                                ;;*******************************************************************

                000000                          .=0
                                                ;STANDARD INTERRUPT VECTORS
                                                ;-------------------------

                000024                          .=24
        000024  005336                                  .PFAIL                  ;POWER FAIL HANDLER
        000026  000340                                  340                     ;SERVICE AT LEVEL 7
        000030  004750                                  .HLT                    ;ERROR HANDLER
        000032  000340                                  340                     ;SERVICE AT LEVEL 7
        000034  004716                                  .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
        000036  000340                                  340                     ;SERVICE AT LEVEL 7
                000040                          .=40
        000040  000000                                  0                       ;SAVE FOR ACT-11 OR XXDP
        000042  000000                                  0                       ;RETURN ADDRESS IF UNDER ACT-11 OR XXDP
        000044  000000                                  0                       ;SAVE FOR ACT-11 OR XXDP
        000046  003522                                  $ENDAD                  ;FOR USE WITH ACT-11 OR XXDP
                000052                          .=52
        000052  000000                                  0                       ;ACT-11 PROGRAM CHARACTERISTICS

                000174                          .=174
        000174  000000                          DISPREG:0                       ;SOFTWARE DISPLAY REGISTER
        000176  000000                          SWREG:  0                       ;SOFTWARE SWITCH REGISTER

                000200                          .=200
        000200  000137  002002                          JMP     .START          ;GO TO START OF PROGRAM


                001000                          .=1000
        001000  005377  040515  047111          MTITLE: .ASCII  <377><12>/MAINDEC-11-DZDMH-B/<377>
        001025     104  041515  030461                  .ASCIZ  /DMC11 FREE RUNNING TESTS/<377>

                001200                          .=1200

                                                ;INDIRECT POINTERS TO SWITCH REGISTER AND LIGHT DISPLAY
                                                ;-----------------------------------------------------

        001200  177570                          DISPLAY:177570
        001202  177570                          SWR:    177570
```

```

                                             ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                                             ;-----------------------------------------------------
                                             ;

 001204  177560                              TKCSR:  177560                 ;TELETYPE KEYBOARD CONTROL REGISTER
 001206  177562                              TKDBR:  177562                 ;TELETYPE KEYBOARD DATA BUFFER
 001210  177564                              TPCSR:  177564                 ;TELEPRINTER CONTROL REGISTER
 001212  177566                              TPDBR:  177566                 ;TELEPRINTER DATA BUFFER

                                             ;PROGRAM CONTROL PARAMETERS
                                             ;--------------------------
                                             ;

 001214  000000                              RETURN: 0                      ;SCOPE ADDRESS FOR LOOP ON TEST
 001216  000000                              NEXT:   0                      ;ADDRESS OF NEXT TEST TO BE EXECUTED
 001220  000000                              LOCK:   0                      ;ADDRESS FOR LOCK ON CURRENT DATA
 001222  000003                              ICOUNT: 3                      ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE
 001224  000000                              LPCNT:  0                      ;NUMBER OF ITEREATIONS COMPLETED
 001226  000000                              TSTNO:  0                      ;NUMBER OF TEST IN PROGRESS
 001230  000000                              PASCNT: 0                      ;NUMBER OF PASSES COMPLETED
 001232  000000                              ERRCNT: 0                      ;TOTAL NUMBER OF ERRORS
 001234  000000                              LSTERR: 0                      ;PC OF LAST ERROR CALL

                                             ;PROGRAM VARIABLES
                                             ;-----------------
                                             ;

 001236  000000                              STRTSW: 0                      ;SWITCHES AT START OF PROGRAM
 001240  000000                              STAT:   0                      ;DM STATUS WORD STORAGE
 001242  000000                              CLKX:   0
 001244  000000                              MASKX:  0
 001246  000000                              TEMP1:  0                      ;TEMPORARY STORAGE
 001250  000000                              TEMP2:  0                      ;TEMPORARY STORAGE
 001252  000000                              TEMP3:  0                      ;TEMPORARY STORAGE
 001254  000000                              TEMP4:  0                      ;TEMPORARY STORAGE
 001256  000000                              TEMP5:  0                      ;TEMPORARY STORAGE
 001260  000000                              SAVR0:  0                      ;R0 STORAGE
 001262  000000                              SAVR1:  0                      ;R1 STORAGE
 001264  000000                              SAVR2:  0                      ;R2 STORAGE
 001266  000000                              SAVR3:  0                      ;R3 STORAGE
 001270  000000                              SAVR4:  0                      ;R4 STORAGE
 001272  000000                              SAVR5:  0                      ;R5 STORAGE
 001274  000000                              SAVSP:  0                      ;STACK POINTER STORAGE
 001276  000000                              SAVPC:  0                      ;PROGRAM COUNTER STORAGE
 001300  000000                              ZERO:   0
 001302  000001                              ONE:    1
 001304  000000                              MEMLIM: 0                      ;HIGHEST LOCATION FOR NPR'S
 001306  000001                              DMACTV: .BLKW 1                ;DMC11'S SELECTED ACTIVE.
 001310  000001                              DMNUM:  .BLKW 1                ;OCTAL NUMBER OF DMC11'S.
 001312  000001                              SAVACT: .BLKW 1                ;ORIGINAL ACTV  DEVICES
 001314  000001                              SAVNUM: .BLKW 1                ;WORKABLE NUMBER
 001316  000000                              RUN:    0                      ;POINTER TO RUNNING DEVICE.
                                             .EVEN
 001320  001472                              CREAM:  DM.MAP-6               ;TABLE POINTER.
 001322  001676                              MILK:   CNT.MAP-4              ;TABLE POINTER
```

```

                                ;PROGRAM CONTROL FLAGS
                                ;---------------------

001324      000                 INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001325      000                 ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001326      000                 LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
001327      000                 QV.FLG: .BYTE   0               ;QUICK VERIFY FLAG.
                                                                ;ON FIRST PASS OF EACH DMC11 ITERATIONS WILL BE
                                .EVEN

                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

                                ;:*****************************************************************
                                ;-----------------------------------------------------------------
001330                          .TRPTAB:
            104400              SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001330  003576                          .SCOPE
            104401              SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001332  003736                          .SCOP1
            104402              TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001334  003766                          .TYPE
            104403              INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001336  004050                          .INSTR
            104404              INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001340  004154                          .INSTER
            104405              PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001342  004174                          .PARAM
            104406              SAV05=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001344  004374                          .SAV05
            104407              RES05=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001346  004434                          .RES05
            104410              CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001350  004466                          .CONVRT
            104411              CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001352  004472                          .CNVRT
            104412              MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001354  005466                          .MSTCLR
            104413              DELAY=TRAP+13           ;CALL TO DELAY
001356  005436                          .DELAY
            104414              ROMCLK=TRAP+14          ;CALL TO CLOCK ROM ONCE
001360  005504                          .ROMCLK
            104415              DATACLK=TRAP+15         ;CALL TO CLK DATA
001362  005552                          .DATACLK
            104416              TIMER=TRAP+16           ;CALL TO DELAY A CLOCK TICK
001364  005616                          .TIMER

                                ;-----------------------------------------------------------------
                                ;:*****************************************************************
```

```
                                  ;DMC11 CONTROL INDICATORS FOR CURRENT DMC11 UNDER TEST
                                  ;---------------------------------------------------

001366  000000                    STAT1:  0
001370  000000                    STAT2:  0
001372  000000                    STAT3:  0

                                  ;DMC11 VECTOR AND REGISTER INDIRECT POINTERS

                                  ;------------------------------------------

001374  000000                    DMRVEC: 0             ;POINTER TO DMC11 RECEIVER INTERRUPT VECTOR
001376  000000                    DMRLVL: 0             ;POINTER TO DMC11 RECEIVER INTERRUPT SERVICE PS
001400  000000                    DMTVEC: 0             ;POINTER TO DMC11 TRANSMITTER INTERRUPT VECTOR
001402  000000                    DMTLVL: 0             ;POINTER TO DMC11 TRANSMITTER INTERRUPT SERVICE PS
001404  000000                    DMCSR:  0             ;POINTER TO DMC11 CONTROL STATUS REGISTER
001406  000000                    DMCSRH: 0             ;POINTER TO DMC11 CONTROL STATUS REGISTER HIGH BYTE.
001410  000000                    DMCTL:  0             ;POINTER TO DMC11 CONTOL OUT REGISTER
001412  000000                    DMP04:  0             ;POINTER TO DMC11 PORT REGISTER(SEL 4)
001414  000000                    DMP06:  0             ;POINTER TO DMC11 PORT REGISTER(SEL 6)

                                  ;TEMP STORAGE
                                  ;------------

001416  000000                    TEMP:   0
        001460                    .=.+40

                                  ;DMC11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                                  ;----------------------------------------


        001500                    .=1500
001500                            DM.MAP:
001500  000001                    DMCR00: .BLKW   1             ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 00
001502  000001                    DMS100: .BLKW   1             ;VECTOR FOR DMC11 NUMBER 00
001504  000001                    DMS200: .BLKW   1             ;DDCMP LINE# FOR DMC11 NUMBER 00
001506  000001                    DMS300: .BLKW   1             ;3RD STATUS WORD

001510  000001                    DMCR01: .BLKW   1             ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 01
001512  000001                    DMS101: .BLKW   1             ;VECTOR FOR DMC11 NUMBER 01
001514  000001                    DMS201: .BLKW   1             ;DDCMP LINE# FOR DMC11 NUMBER 01
001516  000001                    DMS301: .BLKW   1             ;3RD STATUS WORD

001520  000001                    DMCR02: .BLKW   1             ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 02
001522  000001                    DMS102: .BLKW   1             ;VECTOR FOR DMC11 NUMBER 02
001524  000001                    DMS202: .BLKW   1             ;DDCMP LINE# FOR DMC11 NUMBER 02
001526  000001                    DMS302: .BLKW   1             ;3RD STATUS WORD

001530  000001                    DMCR03: .BLKW   1             ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 03
001532  000001                    DMS103: .BLKW   1             ;VECTOR FOR DMC11 NUMBER 03
001534  000001                    DMS203: .BLKW   1             ;DDCMP LINE# FOR DMC11 NUMBER 03
001536  000001                    DMS303: .BLKW   1             ;3RD STATUS WORD

001540  000001                    DMCR04: .BLKW   1             ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 04
001542  000001                    DMS104: .BLKW   1             ;VECTOR FOR DMC11 NUMBER 04
001544  000001                    DMS204: .BLKW   1             ;DDCMP LINE# FOR DMC11 NUMBER 04
001546  000001                    DMS304: .BLKW   1             ;3RD STATUS WORD

```

```
001550  000001          DMCR05: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 05
001552  000001          DMS105: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 05
001554  000001          DMS205: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 05
001556  000001          DMS305: .BLKW   1               ;3RD STATUS WORD

001560  000001          DMCR06: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 06
001562  000001          DMS106: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 06
001564  000001          DMS206: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 06
001566  000001          DMS306: .BLKW   1               ;3RD STATUS WORD

001570  000001          DMCR07: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 07
001572  000001          DMS107: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 07
001574  000001          DMS207: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 07
001576  000001          DMS307: .BLKW   1               ;3RD STATUS WORD

001600  000001          DMCR10: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 10
001602  000001          DMS110: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 10
001604  000001          DMS210: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 10
001606  000001          DMS310: .BLKW   1               ;3RD STATUS WORD

001610  000001          DMCR11: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 11
001612  000001          DMS111: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 11
001614  000001          DMS211: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 11
001616  000001          DMS311: .BLKW   1               ;3RD STATUS WORD

001620  000001          DMCR12: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 12
001622  000001          DMS112: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 12
001624  000001          DMS212: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 12
001626  000001          DMS312: .BLKW   1               ;3RD STATUS WORD

001630  000001          DMCR13: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 13
001632  000001          DMS113: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 13
001634  000001          DMS213: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 13
001636  000001          DMS313: .BLKW   1               ;3RD STATUS WORD

001640  000001          DMCR14: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 14
001642  000001          DMS114: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 14
001644  000001          DMS214: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 14
001646  000001          DMS314: .BLKW   1               ;3RD STATUS WORD

001650  000001          DMCR15: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 15
001652  000001          DMS115: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 15
001654  000001          DMS215: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 15
001656  000001          DMS315: .BLKW   1               ;3RD STATUS WORD

001660  000001          DMCR16: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 16
001662  000001          DMS116: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 16
001664  000001          DMS216: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 16
001666  000001          DMS316: .BLKW   1               ;3RD STATUS WORD

001670  000001          DMCR17: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 17
001672  000001          DMS117: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 17
001674  000001          DMS217: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 17
001676  000001          DMS317: .BLKW   1               ;3RD STATUS WORD

001700  000000          DM.END: 000000
```

```

                                     ;DMC11 PASS COUNT AND ERROR COUNT TABLE
                                     ;--------------------------------------

 001702                              CNT.MAP:
 001702   000000                     PACT00: 0               ;PASS COUNT FOR DMC11 NUMBER 00
 001704   000000                     ERCT00: 0               ;ERROR COUNT FOR DMC11 NUMBER 00

 001706   000000                     PACT01: 0               ;PASS COUNT FOR DMC11 NUMBER 01
 001710   000000                     ERCT01: 0               ;ERROR COUNT FOR DMC11 NUMBER 01

 001712   000000                     PACT02: 0               ;PASS COUNT FOR DMC11 NUMBER 02
 001714   000000                     ERCT02: 0               ;ERROR COUNT FOR DMC11 NUMBER 02

 001716   000000                     PACT03: 0               ;PASS COUNT FOR DMC11 NUMBER 03
 001720   000000                     ERCT03: 0               ;ERROR COUNT FOR DMC11 NUMBER 03

 001722   000000                     PACT04: 0               ;PASS COUNT FOR DMC11 NUMBER 04
 001724   000000                     ERCT04: 0               ;ERROR COUNT FOR DMC11 NUMBER 04

 001726   000000                     PACT05: 0               ;PASS COUNT FOR DMC11 NUMBER 05
 001730   000000                     ERCT05: 0               ;ERROR COUNT FOR DMC11 NUMBER 05

 001732   000000                     PACT06: 0               ;PASS COUNT FOR DMC11 NUMBER 06
 001734   000000                     ERCT06: 0               ;ERROR COUNT FOR DMC11 NUMBER 06

 001736   000000                     PACT07: 0               ;PASS COUNT FOR DMC11 NUMBER 07
 001740   000000                     ERCT07: 0               ;ERROR COUNT FOR DMC11 NUMBER 07

 001742   000000                     PACT10: 0               ;PASS COUNT FOR DMC11 NUMBER 10
 001744   000000                     ERCT10: 0               ;ERROR COUNT FOR DMC11 NUMBER 10

 001746   000000                     PACT11: 0               ;PASS COUNT FOR DMC11 NUMBER 11
 001750   000000                     ERCT11: 0               ;ERROR COUNT FOR DMC11 NUMBER 11

 001752   000000                     PACT12: 0               ;PASS COUNT FOR DMC11 NUMBER 12
 001754   000000                     ERCT12: 0               ;ERROR COUNT FOR DMC11 NUMBER 12

 001756   000000                     PACT13: 0               ;PASS COUNT FOR DMC11 NUMBER 13
 001760   000000                     ERCT13: 0               ;ERROR COUNT FOR DMC11 NUMBER 13

 001762   000000                     PACT14: 0               ;PASS COUNT FOR DMC11 NUMBER 14
 001764   000000                     ERCT14: 0               ;ERROR COUNT FOR DMC11 NUMBER 14

 001766   000000                     PACT15: 0               ;PASS COUNT FOR DMC11 NUMBER 15
 001770   000000                     ERCT15: 0               ;ERROR COUNT FOR DMC11 NUMBER 15

 001772   000000                     PACT16: 0               ;PASS COUNT FOR DMC11 NUMBER 16
 001774   000000                     ERCT16: 0               ;ERROR COUNT FOR DMC11 NUMBER 16

 001776   000000                     PACT17: 0               ;PASS COUNT FOR DMC11 NUMBER 17
 002000   000000                     ERCT17: 0               ;ERROR COUNT FOR DMC11 NUMBER 17

```

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                                   FORMAT OF STATUS TABLE
                                   ----------------------

                  15  14  13  12  11  10  09  08  07  06  05  04  03  02  01  00
                 -----------------------------------------------------------------
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 I C   O   N   T   R   O   L       R   E   G   I   S   T   E   R I     CSR
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 -----------------------------------------------------------------

                 -----------------------------------------------------------------
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 I * I * I * I * I * I * I * I *   *   V   E   C   T   O   R   * I     STAT1
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 -----------------------------------------------------------------

                 -----------------------------------------------------------------
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 I *   B   M       A   D   D   * I *   L   I   N   E       #   * I     STAT2
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 -----------------------------------------------------------------

                 -----------------------------------------------------------------
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I * I * I     STAT3
                 I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I   I
                 -----------------------------------------------------------------


                                    DEFINITION OF FORMAT
                                    --------------------

                          CSR:      CONTAINS DMC11 CSR ADDRESS

                          STAT1:    BITS 00-08 IS DMC11 VECTOR ADDRESS
                                    BIT15=1 MICRO-PROCESSOR HAS CRAM
                                    BIT15=0 MICRO-PROCESSOR HAS CROM
                                    BIT14=1 ???? TURNAROUND CONNECTOR IS ON
                                    BIT14=0 NO TURNAROUND CONNECTOR
                                    BIT13=0 LINE UNIT IS AN M8201
                                    BIT13=1 LINE UNIT IS AN M8202
                                    BIT12=1 NO LINE UNIT
                                    BITS 09-11 IS DMC11 BR PRIORITY LEVEL

                          STAT2:    LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
                                    HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)

                          STAT3:    BIT0=1 DO FREE RUNNING TESTS ON KMC
                                    (MUST BE SET TO A ONE MANUALLY [PROGRAM DZDMI ONLY])
                                    KMC MUST HAVE MICRO-CODE WRITTEN FROM RUNNING
                                    DZDMG TEST 2 FIRST
                                    BIT1=1 DMC11-AL LOCAL HIGH SPEED MICRO-CODE
                                    BIT1=0 DMC11-AR REMOTE LOW SPEED MICRO-CODE
```

```

                                                      ;PROGRAM INITIALIZATION
                                                      ;LOCK OUT INTERRUPTS
                                                      ;SET UP PROCESSOR STACK
                                                      ;SET UP POWER FAIL VECTOR
                                                      ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
                                                      ;TYPE TITLE MESSAGE

002002  012737  000340  177776  .START: MOV   #340,PS          ;LOCK OUT INTERRUPTS
002010  012706  001200                  MOV   #STACK,SP        ;SET UP STACK
002014  012737  005336  000024          MOV   #.PFAIL,@#24     ;SET UP POWER FAIL VECTOR
002022  013737  001310  001314          MOV   DMNUM,SAVNUM     ;SAVE NUMBER OF DEVICES IN SYSTEM.
002030  005037  010016                  CLR   SWFLG            ;CLEAR SOFT TYPEOUT FLAG
002034  105037  001325                  CLRB  ERRFLG           ;CLEAR ERROR FLAG
002040  105037  001327                  CLRB  QV.FLG           ;ZERO QUICK VERIFY FLAG
002044  012737  001470  001320          MOV   #DM.MAP-10,CREAM;GET MAP POINTER.
002052  012737  001676  001322          MOV   #CNT.MAP-4,MILK  ;GET PASS COUNT MAP POINTER
002060  012737  100000  001316          MOV   #BIT15,RUN       ;POINT POINTER TO FIRST DEVICE.
002066  012700  001702                  MOV   #CNT.MAP,R0      ;PASS COUNT POINTER TO R0
002072  005020                  23$:    CLR   (R0)+            ;CLEAR TABLE
002074  022700  002002                  CMP   #CNT.MAP+100,R0  ;DONE YET?
002100  001374                          BNE   23$              ;KEEP GOING
002102  005037  001234                  CLR   LSTERR           ;CLEAR LAST ERROR POINTER
002106  012737  000001  001226          MOV   #1,TSTNO         ;SET UP FOR TEST 1
002114  012737  002002  001214          MOV   #.START,RETURN   ;SET UP FOR POWER FAIL BEFORE
                                                               ;TESTING STARTS
002122  013746  000006                  MOV   @#6,-(SP)        ;SAVE CURRENT VECTORS
002126  013746  000004                  MOV   @#4,-(SP)        ;
002132  012737  002166  000004          MOV   #6$,@#4          ;SET UP FOR TIMEOUT
002140  012737  177570  001202          MOV   #177570,SWR      ;SET SWR TO HARD SWR ADDRESS
002146  012737  177570  001200          MOV   #177570,DISPLAY  ;SET DISPLAY TO HARD SWR ADDRESS
002154  022777  177777  177020          CMP   #-1,@SWR         ;REFERENCE HARDWARE SWITCH REGISTER
002162  001402                          BEQ   6$+2             ;IF = -1 USE SOFT SWR ANYWAY
002164  000407                          BR    7$               ;IF IT EXISTS AND NOT = -1 USE HARD SWR
002166  022626                  6$:     CMP   (SP)+,(SP)+      ;ADJUST STACK
002170  012737  000176  001202          MOV   #SWREG,SWR       ;POINTER TO SOFT SWR
002176  012737  000174  001200          MOV   #DISPREG,DISPLAY;POINTER TO SOFT DISPLAY REG
002204  012637  000004          7$:     MOV   (SP)+,@#4        ;RESTORE VECTORS
002210  012637  000006                  MOV   (SP)+,@#6
002214  105737  001324                  TSTB  INIFLG           ;HAS INITIALIZATION BEEN PERFORMED
002220  001006                          BNE   20$              ;BR IF YES
002222  022737  003522  000042          CMP   #$ENDAD,@#42     ;IF ACT-11 AUTOMATIC MODE, DON'T TYPE ID
002230  001402                          BEQ   20$
002232  104402  001000                  TYPE  ,MTITLE          ;TYPE TITLE MESSAGE
002236  004737  007606          20$:    JSR   PC,CKSWR         ;CHECK FOR SOFT SWR
002242  017737  176734  001236          MOV   @SWR,STRTSW      ;STORE STARTING SWITCHES
002250  005737  000042                  TST   @#42             ;IS IT RUNNING IN AUTO MODE?
002254  001402                          BEQ   .+6              ;BR IF NO
002256  005037  001236                  CLR   STRTSW           ;IF YES, CLEAR SWITCHES
002262  032737  000001  001236          BIT   #SW00,STRTSW     ;IF SW00=1, QUESTIONS ARE ASKED.
002270  001012                          BNE   17$              ;BR IF SW00=1
002272  105737  001236                  TSTB  STRTSW           ;BIT7=1??
002276  100007                          BPL   17$              ;BR IF SW07=0
002300  005737  001306                  TST   DMACTV           ;ARE ANY DEVICES SELECTED?
002304  001006                          BNE   16$              ;BR IF YES
002306  104402  007154                  TYPE, NOACT            ;NO DEVICES SELECTED.
```

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002312  000000                                  HALT                            ;STOP THE SHOW
002314  000776                                  BR      .-2                     ;DISQUALIFY CONTINUE SWITCH
002316  004737  010512                  17$:    JSR     PC,AUTO.SIZE            ;GO DO THE AUTO SIZE
002322  105737  001324                  16$:    TSTB    INIFLG                  ;FIRST TIME?
002326  001410                                  BEQ     21$                     ;BR IF YES
002330  105737  001236                          TSTB    STRTSW                  ;IF USING SAME PARAMETERS DONT TYPE MAP
002334  100431                                  BMI     1$
002336  032737  000006  001236                  BIT     #BIT1!BIT2,STRTSW;IS TEST NO. OR LOCK SELECTED
002344  001403                                  BEQ     24$                     ;IF NO THEN TYPE STATUS
002346  000424                                  BR      1$                      ;IF YES DO NOT TYPE STATUS
002350  005137  001324                  21$:    COM     INIFLG                  ;SET FLAG
002354  104402  006224                  24$:    TYPE    ,XHEAD                  ;TYPE HEADER
002360  012704  001500                          MOV     #DM.MAP,R4              ;SET POINTER
002364  010437  001246                  5$:     MOV     R4,TEMP1                ;SET ADDRESS
002370  012437  001250                          MOV     (R4)+,TEMP2             ;SET CSR
002374  001411                                  BEQ     1$                      ;ALL DONE IF ZERO
002376  012437  001252                          MOV     (R4)+,TEMP3             ;SET STAT1
002402  012437  001254                          MOV     (R4)+,TEMP4             ;SET STAT2
002406  012437  001256                          MOV     (R4)+,TEMP5             ;SET STAT3
002412  104410                                  CONVRT                          ;TYPE OUT STATUS MAP
002414  007454                                  XSTATQ                          ;
002416  000762                                  BR      5$
002420  012700  001500                  1$:     MOV     #DM.MAP,R0              ;R0 POINTS TO STATUS TABLE

                                        ;;*************************************************************************
                                        ;;*AUTO SIZE TEST
                                        ;;*THIS TEST VERIFYS THAT THE DMC11S AND/OR KMC11S ARE AT THE CORRECT FLOATING
                                        ;;*ADDRESSES FOR YOUR SYSTEM. IF THIS TEST FAILS, IT IS NOT A HARDWARE ERROR.
                                        ;;*CHECK THE ADDRESSES OF ALL FLOATING DEVICES (DJ,DH,DQ,DU,DUP,LK,DMC,DZ,KMC).
                                        ;;*IF THERE ARE NO OTHER FLOATING DEVICES BEFORE THE DMC11, THE FIRST
                                        ;;*DMC11 ADDRESS IS 760070, KMC11 IS 760110. NO DEVICE SHOULD EVER BE AT
                                        ;;*ADDRESS 760000. THIS TEST MAY REQUIRE 2 OR MORE ATTEMPTS TO GET THE
                                        ;;*RIGHT ADDRESSES. AFTER YOU HAVE CHANGED THE ADDRESS TO WHAT IT TOLD
                                        ;;*YOU THE FIRST TIME, IT MAY COME BACK AND TELL YOU A DIFFERENT ADDRESS
                                        ;;*THE NEXT TIME YOU RUN IT. PLEASE HAVE PATIENCE, THE FINAL ADDRESS
                                        ;;*WILL BE CORRECT (AS LONG AS ALL DEVICES IN FRONT OF THE DMC'S ARE
                                        ;;*CORRECT).
                                        ;;*************************************************************************


002424  013746  000004                          MOV     @#4,-(SP)               ;SAVE LOC 4
002430  013746  000006                          MOV     @#6,-(SP)               ;SAVE LOC 6
002434  005037  000006                          CLR     @#6                     ;CLEAR VEC+2
002440  005037  001252                          CLR     TEMP3                   ;CLEAR FLAG
002444  005005                                  CLR     R5                      ;R5=0=DMC, R5=-1=KMC
002446  011037  001404                  AUSTRT: MOV     (R0),DMCSR              ;GET NEXT DMC CSR
002452  001564                                  BEQ     AUDONE                  ;BR IF DONE
002454  005705                                  TST     R5                      ;DMC OR KMC?
002456  001005                                  BNE     1$                      ;BR IF KMC
002460  032760  100000  000002                  BIT     #BIT15,2(R0)            ;CHECK FOR DMC CSR
002466  001061                                  BNE     SKIP                    ;SKIP IF NOT DMC
002470  000404                                  BR      2$                      ;ITS A DMC SO CONTINUE
002472  032760  100000  000002          1$:     BIT     #BIT15,2(R0)            ;CHECK FOR KMC CSR
002500  001454                                  BEQ     SKIP                    ;SKIP IF NOT KMC
002502  012737  002674  000004          2$:     MOV     #NODEV,@#4              ;SET UP FOR TIMEOUT
002510  005705                                  TST     R5                      ;DMC OR KMC?
002512  001003                                  BNE     3$                      ;BR IF KMC
```

```
002514  012703  000006                          MOV     #6,R3           ;R3 IS COUNT OF DEVICES BEFORE DMC
002520  000402                                  BR      4$              ;GO ON
002522  012703  000010                  3$:     MOV     #10,R3          ;R3 IS COUNT OF DEVICES BEFORE KMC
002526  012702  003010                  4$:     MOV     #DEVTAB,R2      ;R2 IS DEVICE TABLE PONTER
002532  012701  160010                          MOV     #160010,R1      ;START WITH ADDRESS 160010
002536  005711                          FLOAT:  TST     (R1)            ;CHECK ADDRESS IN R1
002540  111204                                  MOVB    (R2),R4         ;IF NO TIMEOUT, GET NEXT ADDRESS
002542  060401                                  ADD     R4,R1           ;IN R1
002544  005201                                  INC     R1              ;
002546  040401                                  BIC     R4,R1           ;
002550  005703                                  TST     R3              ;ANY MORE DEVICES TO CHECK FOR?
002552  001371                                  BNE     FLOAT           ;BR IF YES
002554  012737  002700  000004                  MOV     #ERR,@#4        ;OK ONLY DMC'S ARE LEFT, SET UP FOR TIMEOUT
002562  010137  003022                          MOV     R1,XLOC         ;SAVE FIRST DMC/KMC ADDRESS
002566  005705                          FY:     TST     R5              ;DMC OR KMC?
002570  001005                                  BNE     1$              ;BR IF KMC
002572  032760  100000  000002                  BIT     #BIT15,2(R0)    ;CHECK FOR DMC CSR
002600  001014                                  BNE     SKIP            ;SKIP IF NOT DMC
002602  000404                                  BR      2$              ;ITS A DMC SO CONTINUE
002604  032760  100000  000002          1$:     BIT     #BIT15,2(R0)    ;CHECK FOR KMC CSR
002612  001407                                  BEQ     SKIP            ;SKIP IF NOT KMC
002614  005711                          2$:     TST     (R1)            ;CHECK DMC ADDRESS
002616  020137  001404                          CMP     R1,DMCSR        ;DOES IT MATCH
002622  001411                                  BEQ     OK              ;BR IF YES
002624  062701  000010                          ADD     #10,R1          ;GET NEXT DMC ADDRESS
002630  000756                                  BR      FY              ;DO IT AGAIN
002632  062700  000010                  SKIP:   ADD     #10,R0          ;SKIP TO NEXT CSR IN TABLE
002636  011037  001404                          MOV     (R0),DMCSR      ;GET NEXT CSR
002642  001470                                  BEQ     AUDONE          ;BR IF DONE
002644  000750                                  BR      FY              ;ELSE CONTINUE
002646  062700  000010                  OK:     ADD     #10,R0          ;SKIP TO NEXT DMC CSR
002652  062737  000010  003022                  ADD     #10,XLOC        ;UPDATE EXPECTED DMC/KMC ADDRESS
002660  011037  001404                          MOV     (R0),DMCSR      ;GET NEXT DMC/KMC CSR
002664  001457                                  BEQ     AUDONE          ;BR IF DONE
002666  013701  003022                          MOV     XLOC,R1         ;GET EXPECTED DMC/KMC ADDRESS
002672  000735                                  BR      FY              ;CONTINUE
002674  122243                          NODEV:  CMPB    (R2)+,-(R3)     ;ON TIMEOUT, INC R2, DEC R3
002676  000002                                  RTI                     ;RETURN
002700  005737  001252                  ERR:    TST     TEMP3           ;CHECK FLAG IF = 0 TYPE HEADER
002704  001014                                  BNE     1$              ;SKIP HEADER
002706  104402                                  TYPE                    ;TYPEOUT HEADER MESSAGE
002710  007223                                  CONERR                  ;CONFIGURATION ERROR!!!!
002712  012737  002700  001276                  MOV     #ERR,SAVPC      ;SAVE PC FOR TYPEOUT
002720  104411                                  CNVRT                   ;TYPE OUT ERROR PC
002722  002770                                  ERRPC                   ;
002724  104402                                  TYPE                    ;TYPE REST OF HEADER
002726  007277                                  CNERR                   ;
002730  012737  177777  001252                  MOV     #-1,TEMP3       ;SET FLAG SO IT ONLY GETS TYPED ONCE
002736  010137  001262                  1$:     MOV     R1,SAVR1        ;SAVE R1 FOR TYPEOUT
002742  104410                                  CONVRT
002744  002776                                  CONTAB                  ;TYPE CSR VALUES
002746  005705                                  TST     R5              ;DMC OR KMC ?
002750  001003                                  BNE     3$              ;BR IF KMC
002752  104402                                  TYPE
002754  007320                                  DMCM
002756  000402                                  BR      4$              ;CONTINUE
```

```
002760  104402                          3$:     TYPE
002762  007330                                  KMCM
002764  022626                          4$:     CMP     (SP)+,(SP)+         ;ADJUST STACK
002766  000727                                  BR      OK                  ;BR TO GET OUT
002770  000001                          ERRPC:  1
002772     006     002                          .BYTE   6,2
002774  001276                                  SAVPC
002776  000002                          CONTAB: 2
003000     006     004                          .BYTE   6,4
003002  003022                                  XLOC
003004     006     002                          .BYTE   6,2
003006  001404                                  DMCSR
003010     007                          DEVTAB: .BYTE   7                   ;DJ
003011     017                                  .BYTE   17                  ;DH
003012     007                                  .BYTE   7                   ;DQ
003013     007                                  .BYTE   7                   ;DU
003014     007                                  .BYTE   7                   ;DUP
003015     007                                  .BYTE   7                   ;LK
003016     007                                  .BYTE   7                   ;DMC
003017     007                                  .BYTE   7                   ;DZ
003020     007                                  .BYTE   7                   ;KMC
        003022                          .EVEN
003022  000000                          XLOC:   0
003024  005705                          AUDONE: TST     R5                  ;DMC?
003026  001005                                  BNE     1$                  ;BR IF KMC AND ALL DONE
003030  012705  177777                          MOV     #-1,R5              ;SET R5 TO -1 (KMC)
003034  012700  001500                          MOV     #DM.MAP,R0          ;RESET R0 TO START OF TABLE
003040  000602                                  BR      AUSTRT              ;GO DO KMC'S
003042  012637  000006                  1$:     MOV     (SP)+,@#6           ;RESTORE LOC 6
003046  012637  000004                          MOV     (SP)+,@#4           ;RESTORE LOC 4
003052  032737  000010  001236                  BIT     #SW03,STRTSW        ;SELECT SPECIFIC DEVICES??
003060  001422                                  BEQ     3$                  ;BR IF NO.
003062  104402  006144                          TYPE    ,MNEW               ;TYPE THE MESSAGE.
003066  005000                                  CLR     R0                  ;ZERO DATA LIGHTS
003070  000000                                  HALT                        ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
003072  027737  176104  001312                  CMP     @SWR,SAVACT         ;IS THE NUMBER VALID?
003100  101404                                  BLOS    2$                  ;BR IF NUMBER IS OK.
003102  104402  006005                          TYPE    ,MERR3              ;TELL USER OF INVALID NUMBER.
003106  000000                                  HALT                        ;STOP EVERY THING.
003110  000776                                  BR      .-2                 ;RESTART THE PROGRAM AGAIN.
003112  017737  176064  001306          2$:     MOV     @SWR,DMACTV         ;GET NEW DEVICE PATTERN
003120  013700  001306                          MOV     DMACTV,R0           ;SHOW THE USER WHAT HE SELECTED.
003124  000000                                  HALT                        ;CONTINUE DYNAMIC SWITCHES.
003126  012700  000300                  3$:     MOV     #300,R0             ;PREPARE TO CLEAR THE FLOATING
003132  012701  000302                          MOV     #302,R1             ;VECTOR AREA. 300-776
003136  010120                          4$:     MOV     R1,(R0)+            ;START PUTTING "PC+2 - HALT"
003140  005021                                  CLR     (R1)+               ;IN VECTOR AREA.
003142  022021                                  CMP     (R0)+,(R1)+         ;POP POINTERS
003144  022700  001000                          CMP     #1000,R0            ;ALL DONE??
003150  001372                                  BNE     4$                  ;BR IF NO.

                                        ;TEST START AND RESTART
                                        ;----------------------

003152  012706  001200                  .BEGIN: MOV     #STACK,SP           ;SET UP STACK
003156  013746  000006                          MOV     @#6,-(SP)           ;SAVE LOC 6
```

```
003162  013746  000004                          MOV     @#4,-(SP)       ;SAVE LOC 4
003166  005000                                  CLR     R0              ;START AT 0
003170  012737  003234  000004                  MOV     #2$,@#4         ;SET UP FOR TIME OUT
003176  005037  000006                          CLR     @#6             ;TO AUTOSIZE MEMORY
003202  005720                          6$:     TST     (R0)+           ;CHECK ADDRESS IN R0
003204  022700  157776                          CMP     #157776,R0      ;IS IT AT LEAST 28K
003210  001374                                  BNE     6$              ;BR IF NO
003212  162700  007776                          SUB     #7776,R0        ;SAVE 2K FOR MONITORS
003216  010037  001304                  7$:     MOV     R0,MEMLIM       ;STORE MEMORY LIMIT
003222  012637  000004                          MOV     (SP)+,@#4       ;RESTORE LOC 4
003226  012637  000006                          MOV     (SP)+,@#6       ;RESTORE LOC 6
003232  000413                                  BR      10$             ;CONTINUE
003234  022626                          2$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
003236  162700  000004                          SUB     #4,R0           ;GET LAST GOOD ADDRESS
003242  162700  007776                          SUB     #7776,R0        ;SAVE 2K FOR MONITORS
003246  022700  030000                          CMP     #30000,R0       ;IS IT 8K?
003252  001361                                  BNE     7$              ;BR IF NO
003254  012700  037400                          MOV     #37400,R0       ;IF 8K DON'T SAVE 2K
003260  000756                                  BR      7$              ;
003262  012737  000340  177776          10$:    MOV     #340,PS         ;LOCK OUT INTERRUPTS
003270  032737  000004  001236                  BIT     #BIT2,STRTSW    ;CHECK FOR LOCK ON TEST
003276  001411                                  BEQ     1$              ;BR IF NO LOCK DESIRED.
003300  104402  006040                          TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
003304  012737  000240  003612                  MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
003312  012737  000240  003614                  MOV     #NOP,TTST+2     ;SET UP TO LOCK
003320  000406                                  BR      3$              ;CONTINUE ALONG.
003322  013737  003730  003612          1$:     MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
003330  013737  003732  003614                  MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
003336  012737  010060  001214          3$:     MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
003344  032737  000002  001236          4$:     BIT     #SW01,STRTSW    ;IS TEST NO. SELECTED?
003352  001002                                  BNE     5$              ;BR IF YES
003354  104402  005755                          TYPE    ,MR             ;TYPE R
003360  000177  175630                  5$:     JMP     @RETURN         ;START TESTING
```

```
                                                      ;END OF PASS
                                                      ;TYPE NAME OF TEST
                                                      ;UPDATE PASS COUNT
                                                      ;CHECK FOR EXIT TO ACT-11
                                                      ;RESTART TEST

003364  000005                              .EOP:     RESET                         ;MAKE THE  WORLD CLEAN AGAIN.
003366  005037  001234                                CLR     LSTERR                ;CLEAR LAST ERROR PC
003372  105037  001325                                CLRB    ERRFLG                ;CLEAR ERROR FLAG
003376  005237  001230                                INC     PASCNT                ;UPDATE PASS COUNT
003402  013777  001230  175570                        MOV     PASCNT,@DISPLAY       ;DISPLAY PASS COUNT
003410  104402  005733                                TYPE    ,MEPASS               ;TYPE END PASS
003414  104402  006072                                TYPE    ,MCSRX                ;TYPE CSR
003420  104411  003546                                CNVRT   ,XCSR                 ;SHOW IT
003424  104402  006100                                TYPE    ,MVECX                ;TYPE VECTOR
003430  104411  003554                                CNVRT   ,XVEC                 ;SHOW IT
003434  104402  006106                                TYPE    ,MPASSX               ;TYPE PASSES
003440  104411  003562                                CNVRT   ,XPASS                ;SHOW IT
003444  104402  006117                                TYPE    ,MERRX                ;TYPE ERRORS
003450  104411  003570                                CNVRT   ,XERR                 ;SHOW IT
003454  013700  001322                                MOV     MILK,R0               ;GET POINTER TO PASS COUNT
003460  013720  001230                                MOV     PASCNT,(R0)+          ;STORE PASS COUNT FOR THIS DMC11
003464  013720  001232                                MOV     ERRCNT,(R0)+          ;STORE ERROR COUNT FOR THIS DMC11
003470  005337  001314                                DEC     SAVNUM                ;ARE ALL DEVICES TESTED?
003474  001017                                        BNE     RESTRT                ;BR IF NO.
003476  112737  000377  001327                        MOVB    #377,QV.FLG           ;SET THE QUICK VERIFY FLAG.
003504  013737  001310  001314                        MOV     DMNUM,SAVNUM          ;RESTORE THE COUNT
003512  013701  000042                                MOV     @#42,R1               ;CHECK FOR ACT-11 OR DDP
003516  001406                                        BEQ     RESTRT                ;IF NOT, CONTINUE TESTING
003520  000005                                        RESET                         ;STOP THE SHOW--CLEAR THE WORLD
003522                                      $ENDAD:
003522  004711                                        JSR     PC,(R1)
003524  000240                                        NOP
003526  000240                                        NOP
003530  000240                                        NOP
003532  000240                                        NOP
003534  012737  010060  001214              RESTRT:   MOV     #CYCLE,RETURN
003542  000137  010060                                JMP     CYCLE
003546  000001                              XCSR:     1
003550     006     002                                .BYTE   6,2
003552  001404                                        DMCSR
003554  000001                              XVEC:     1
003556     004     002                                .BYTE   4,2
003560  001374                                        DMRVEC
003562  000001                              XPASS:    1
003564     006     002                                .BYTE   6,2
003566  001230                                        PASCNT
003570  000001                              XERR:     1
003572     006     002                                .BYTE   6,2
003574  001232                                        ERRCNT

                                                      ;SCOPE LOOP AND INTERATION HANDLER
                                                      ;---------------------------------

003576  004737  007606                      .SCOPE:   JSR     PC,CKSWR              ;CHECK FOR SOFT SWR
003602  010016                                        MOV     R0,(SP)               ;SAVE R0 ON THE STACK
```

```
003604  032777  040000  175370                    BIT     #BIT14,@SWR       ;"LOOP ON THIS TEST"?
003612  001407                          TTST:     BEQ     1$                ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240.
003614  000437                                    BR      3$                ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240.
003616  005737  003734                            TST     DONE              ;WAS TKCSR DONE SET?
003622  001434                                    BEQ     3$                ;BR IF NO (LOCKED ON TEST)
003624  005037  003734                            CLR     DONE              ;YES, CLEAR FLAG
003630  000415                                    BR      2$                ;GO TO NEXT TEST
003632  032777  004000  175342          1$:       BIT     #SW11,@SWR        ;DELETE ITERATION?  (QUICK PASS,
003640  001011                                    BNE     2$                ;BR IF YES
003642  105737  001327                            TSTB    QV.FLG            ;HAVE PASSES BEECOMPLETED?
003646  001406                                    BEQ     2$                ;BR IF QUICK PASS.
003650  005237  001224                            INC     LPCNT             ;UPDATE ITERATION COUNTER
003654  023737  001224  001222                    CMP     LPCNT,ICOUNT      ;ARE ALL ITERATIONS DONE??
003662  101414                                    BLOS    3$                ;BR IF NOT YET
003664  105037  001325                  2$:       CLRB    ERRFLG            ;PREPARE FOR NEW TEST
003670  005037  001224                            CLR     LPCNT             ;START ICOUNTER AT 0
003674  005037  001220                            CLR     LOCK
003700  012737  000020  001222                    MOV     #20,ICOUNT        ;RESET ITERATIONS
003706  013737  001216  001214                    MOV     NEXT,RETURN       ;GET NEXT TEST
003714  011600                          3$:       MOV     (SP),R0           ;POP R0 OFF OF THE STACK
003716  022626                                    POP2SP                    ;FAKE AN "RTI"
003720  013701  001404                            MOV     DMCSR,R1          ;R1 CONTAINS BASE DMC ADDRESS
003724  000177  175264                            JMP     @RETURN           ;GO DO THE TEST
003730  001407                          BRW:      1407
003732  000437                          BRX:      437
003734  000000                          DONE:     0

                                                  ;CHECK FOR FREEZE ON CURRENT DATA
                                                  ;--------------------------------

003736  004737  007606                  .SCOP1:   JSR     PC,CKSWR          ;CHECK FOR SOFT SWR
003742  032777  001000  175232                    BIT     #SW09,@SWR        ;IS SW09=1(SET)?
003750  001405                                    BEQ     1$                ;BR IF NOT SET.
003752  005737  001220                            TST     LOCK
003756  001402                                    BEQ     1$
003760  013716  001220                            MOV     LOCK,(SP)         ;GOTO THE ADDRESS IN LOCK.
003764  000002                          1$:       RTI                       ;GO BACK.

                                                  ;TELETYPE OUTPUT ROUTINE
                                                  ;-----------------------

003766  010546                          .TYPE:    MOV     R5,-(SP)          ;SAVE R5 ON THE STACK.
003770  017605  000002                            MOV     @2(SP),R5         ;GET ADDRESS OF MESSAGE.
003774  062766  000002  000002                    ADD     #2,2(SP)          ;POP OVER ADDRESS.
004002  005737  010016                  4$:       TST     SWFLG             ;SOFT SWR MESSAGE?
004006  001004                                    BNE     1$                ;IF YES TYPE IT OUT REGARDLESS OF SW12
004010  032777  010000  175164                    BIT     #SW12,@SWR        ;INHIBIT ALL PRINT OUT??
004016  001012                                    BNE     3$                ;BR IF NO PRINT OUT WANTED (SW12=1)
004020  105715                          1$:       TSTB    (R5)              ;IS NUMBER MINUS? (MSB=1(BIT7))
004022  100002                                    BPL     2$                ;BR IF NUMBER IS PLUS
004024  104402  005672                            TYPE    ,MCRLF            ;TYPE A CR/LF!
004030  105777  175154                  2$:       TSTB    @TPCSR            ;TTY READY?
004034  100375                                    BPL     2$                ;BR IF NO.
004036  112577  175150                            MOVB    (R5)+,@TPDBR      ;PRINT CURRENT CHAR.
004042  001357                                    BNE     4$                ;IF NOT ZERO KEEP PRINTING!
004044  012605                          3$:       MOV     (SP)+,R5          ;END OF OUTPUT. RESTORE R5
```

```
004046  000002                                   RTI                            ;GO HOME
                                                 ;--------------------------

004050  010346                          .INSTR:  MOV      R3,-(SP)              ;SAVE R3 ON STACK
004052  010446                                   MOV      R4,-(SP)              ;SAVE R4 ON STACK
004054  017637  000004  004072                   MOV      @4(SP),.MSG
004062  062766  000002  000004                   ADD      #2,4(SP)
004070  104402                          .INST1:  TYPE
004072  000000                          .MSG:    0
004074  012704  007502                           MOV      #INBUF,R4
004100  012703  000007                           MOV      #7,R3
004104  105777  175074                  1$:      TSTB     @TKCSR
004110  100375                                   BPL      1$
004112  117714  175070                           MOVB     @TKDBR,(R4)
004116  142714  000200                           BICB     #200,(R4)
004122  122427  000015                           CMPB     (R4)+,#15
004126  001417                                   BEQ      INSTR2
004130  105777  175054                  2$:      TSTB     @TPCSR
004134  100375                                   BPL      2$
004136  017777  175044  175046                   MOV      @TKDBR,@TPDBR
004144  005303                                   DEC      R3
004146  001356                                   BNE      1$
004150  012604                                   MOV      (SP)+,R4
004152  012603                                   MOV      (SP)+,R3
004154  104402  005666                  .INSTE:  TYPE     ,MQM
004160  010346                                   MOV      R3,-(SP)
004162  010446                                   MOV      R4,-(SP)
004164  000741                                   BR       .INST1
004166  012604                          INSTR2:  MOV      (SP)+,R4              ;RESTORE R4
004170  012603                                   MOV      (SP)+,R3              ;RESTORE R3
004172  000002                                   RTI

                                                 ;CONVERT ASCII STRING TO OCTAL
                                                 ;-----------------------------

004174  010546                          .PARAM:  MOV      R5,-(SP)
004176  010446                                   MOV      R4,-(SP)
004200  016605  000004                           MOV      4(SP),R5
004204  012537  004364                           MOV      (R5)+,LOLIM
004210  012537  004366                           MOV      (R5)+,HILIM
004214  012537  004370                           MOV      (R5)+,DEVADR
004220  112537  004372                           MOVB     (R5)+,LOBITS
004224  112537  004373                           MOVB     (R5)+,ADRCNT
004230  010566  000004                           MOV      R5,4(SP)
004234  005005                          PARAM1:  CLR      R5
004236  012704  007502                           MOV      #INBUF,R4
004242  122714  000015                           CMPB     #15,(R4)
004246  001420                                   BEQ      PARERR
004250  121427  000060                  1$:      CMPB     (R4),#60
004254  002415                                   BLT      PARERR
004256  121427  000067                           CMPB     (R4),#67
004262  003012                                   BGT      PARERR
004264  142714  000060                           BICB     #60,(R4)
004270  152405                                   BISB     (R4)+,R5
004272  122714  000015                           CMPB     #15,(R4)
004276  001406                                   BEQ      LIMITS
```

```
004300  006305                          ASL     R5
004302  006305                          ASL     R5
004304  006305                          ASL     R5
004306  000760                          BR      1$
004310  104404                  PARERR: INSTER
004312  000750                          BR      PARAM1

                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
                                        ;--------------------------------------

004314  020537  004366          LIMITS: CMP     R5,HILIM
004320  101373                          BHI     PARERR
004322  020537  004364                  CMP     R5,LOLIM
004326  103770                          BLO     PARERR
004330  133705  004372                  BITB    LOBITS,R5
004334  001365                          BNE     PARERR

                                        ;STORE NUMBER AT SPECIFIED ADDRESS

004336  013704  004370                  MOV     DEVADR,R4
004342  010524                  1$:     MOV     R5,(R4)+
004344  062705  000002                  ADD     #2,R5
004350  105337  004373                  DECB    ADRCNT
004354  001372                          BNE     1$
004356  012604                          MOV     (SP)+,R4
004360  012605                          MOV     (SP)+,R5
004362  000002                          RTI
004364  000000                  LOLIM:  0
004366  000000                  HILIM:  0
004370  000000                  DEVADR: 0
004372  000000                  LOBITS: 0
        004373                  ADRCNT=LOBITS+1

                                        ;SAVE PC OF TEST THAT FAILED AND R0-R5
                                        ;-------------------------------------

004374  016637  000004  001276  .SAV05: MOV     4(SP),SAVPC     ;SAVE R7 (PC)

                                        ;SAVE R0-R5

004402  010537  001272          SV05:   MOV     R5,SAVR5        ;SAVE R5
004406  010437  001270                  MOV     R4,SAVR4        ;SAVE R4
004412  010337  001266                  MOV     R3,SAVR3        ;SAVE R3
004416  010237  001264                  MOV     R2,SAVR2        ;SAVE R2
004422  010137  001262                  MOV     R1,SAVR1        ;SAVE R1
004426  010037  001260                  MOV     R0,SAVR0        ;SAVE R0
004432  000002                          RTI                     ;LEAVE.

                                        ;RESTORE R0-R5

004434  013700  001260          .RES05: MOV     SAVR0,R0        ;RESTORE R0
004440  013701  001262                  MOV     SAVR1,R1        ;RESTORE R1
004444  013702  001264                  MOV     SAVR2,R2        ;RESTORE R2
004450  013703  001266                  MOV     SAVR3,R3        ;RESTORE R3
004454  013704  001270                  MOV     SAVR4,R4        ;RESTORE R4
004460  013705  001272                  MOV     SAVR5,R5        ;RESTORE R5
```

```
004464  000002                                RTI                      ;LEAVE

                                              ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
                                              ;-----------------------------------------------------------

004466  104402  005672              .CONVR:  TYPE     ,MCRLF
004472  010046                      .CNVRT:  MOV      R0,-(SP)
004474  010146                               MOV      R1,-(SP)
004476  010346                               MOV      R3,-(SP)
004500  010446                               MOV      R4,-(SP)
004502  010546                               MOV      R5,-(SP)
004504  017601  000012                       MOV      @12(SP),R1
004510  062766  000002  000012               ADD      #2,12(SP)
004516  012137  004710                       MOV      (R1)+,WRDCNT
004522  112137  004712              1$:      MOVB     (R1)+,CHRCNT
004526  112137  004713                       MOVB     (R1)+,SPACNT
004532  013137  004714                       MOV      @(R1)+,BINWRD
004536  122737  000003  004712               CMPB     #3,CHRCNT
004544  001003                               BNE      2$
004546  042737  177400  004714               BIC      #177400,BINWRD
004554  013704  004714              2$:      MOV      BINWRD,R4
004560  113705  004712                       MOVB     CHRCNT,R5
004564  012700  001416                       MOV      #TEMP,R0
004570  010403                      3$:      MOV      R4,R3
004572  042703  177770                       BIC      #177770,R3
004576  062703  000060                       ADD      #060,R3
004602  110320                               MOVB     R3,(R0)+
004604  000241                               CLC
004606  006004                               ROR      R4
004610  000241                               CLC
004612  006004                               ROR      R4
004614  000241                               CLC
004616  006004                               ROR      R4
004620  005305                               DEC      R5
004622  001362                               BNE      3$
004624  012703  007544                       MOV      #MDATA,R3
004630  114023                      4$:      MOVB     -(R0),(R3)+
004632  105337  004712                       DECB     CHRCNT
004636  001374                               BNE      4$
004640  105737  004713                       TSTB     SPACNT
004644  001405                               BEQ      6$
004646  112723  000040              5$:      MOVB     #040,(R3)+
004652  105337  004713                       DECB     SPACNT
004656  001373                               BNE      5$
004660  105013                      6$:      CLRB     (R3)
004662  104402  007544                       TYPE     ,MDATA
004666  005337  004710                       DEC      WRDCNT
004672  001313                               BNE      1$
004674  012605                               MOV      (SP)+,R5
004676  012604                               MOV      (SP)+,R4
004700  012603                               MOV      (SP)+,R3
004702  012601                               MOV      (SP)+,R1
004704  012600                               MOV      (SP)+,R0
004706  000002                               RTI
004710  000000                      WRDCNT:  0
004712  000000                      CHRCNT:  0
```

```
        004713                          SPACNT=CHRCNT+1
004714  000000                          BINWRD: 0



                                                :TRAP DISPATCH SERVICE
                                                :ARGUMENT OF TRAP IS EXTRACTED
                                                :AND USED AS OFFSET TO OBTAIN POINTER
                                                :TO SELECTED SUBROUTINE

004716  011646                          .TRPSR: MOV     (SP),-(SP)      ;GET PC OF RETURN
004720  162716  000002                          SUB     #2,(SP)         ;=PC OF TRAP
004724  017616  000000                          MOV     @(SP),(SP)      ;GET TRAP
004730  006316                          TRPOK:  ASL     (SP)            ;MULTIPLY TRAP ARG BY 2
004732  042716  177001                          BIC     #177001,(SP)    ;CLEAR UNWANTED BITS
004736  062716  001330                          ADD     #.TRPTAB,(SP)   ;POINTER TO SUBROUTINE ADDRESS
004742  017616  000000                          MOV     @(SP),(SP)      ;SUBROUTINE ADDRESS
004746  000136                                  JMP     @(SP)+          ;GO TO SUBROUTINE

                                                :ERROR HANDLER
                                                ;-------------

004750  004737  007606                  .HLT:   JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
004754  032777  010000  174220                  BIT     #SW12,@SWR      ;BELL ON ERROR?
004762  001406                                  BEQ     XBX             ;BR IF NO BELL
004764  105777  174220                          TSTB    @TPCSR          ;TTY READY.
004770  100003                                  BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
004772  112777  000207  174212                  MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
005000  032777  020000  174174          XBX:    BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
005006  001105                                  BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
005010  021637  001234                          CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
005014  001404                                  BEQ     1$              ;BR IF YES
005016  011637  001234                          MOV     (SP),LSTERR     ;RECORD BEING HERE
005022  105037  001325                          CLRB    ERRFLG          ;PREPARE HEADER
005026  104406                          1$:     SAVOS                   ;SAVE ALL PROC REGISTERS
005030  011605                                  MOV     (SP),R5         ;GET THE PC OF ERROR
005032  162705  000002                          SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
005036  011504                                  MOV     (R5),R4         ;GET HLT INSTRUCTION
005040  006304                                  ASL     R4              ;MULT BY TWO
005042  061504                                  ADD     (R5),R4         ;DOUBLE IT
005044  006304                                  ASL     R4              ;MULT AGAIN
005046  042704  177001                          BIC     #177001,R4      ;CLEAR JUNK
005052  062704  023414                          ADD     #.ERRTAB,R4     ;GET POINTER
005056  012437  005172                          MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
005062  012437  005204                          MOV     (R4)+,DATAHD    ;GET DATA HEADRER
005066  011437  005216                          MOV     (R4),DATABP     ;GET DATA TABLE
005072  105737  001325                          TSTB    ERRFLG          ;TYPE HEADREER
005076  001403                                  BEQ     TYPMSG          ;BR IF YES
005100  005737  005216                          TST     DATABP          ;DOES DATA TABLE EXIST?
005104  001040                                  BNE     TYPDAT          ;BR IF YES.
005106  104402  005672                  TYPMSG: TYPE    ,MCRLF
005112  104402  005672                          TYPE    ,MCRLF
005116  005737  001220                          TST     LOCK
005122  001402                                  BEQ     1$
005124  104402  006142                          TYPE    ,MASTEK
005130  104402  006130                  1$:     TYPE    ,MTSTN
005134  104411  005330                          CNVRT   ,XTSTN          ;SHOW IT
```

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005140  104402  006217                  TYPE    ,MERRPC         ;TYPE PC.
005144  104411  005322                  CNVRT   ,ERTABO         ;SHOW IT
005150  104402  005672                  TYPE    ,MCRLF          ;GIVE A CR/LF
005154  112737  177777  001325          MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
005162  005737  005172                  TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
005166  001402                          BEQ     WRKO.FM         ;BR IF NO.
005170  104402                          TYPE                    ;TYPE
005172  000000                  ERRMSG: 0                       ;    ERROR MESSAGE
005174                          WRKO.FM:                        ;
005174  005737  005204                  TST     DATAHD          ;DATA HEADER?
005200  001402                          BEQ     TYPDAT          ;BR IF NO
005202  104402                          TYPE                    ;TYPE
005204  000000                  DATAHD: 0                       ;    DATA HEADER
005206  005737  005216          TYPDAT: TST     DATABP          ;DATA TABLE?
005212  001402                          BEQ     RESREG          ;BR IF NO.
005214  104410                          CONVRT                  ;SHOW
005216  000000                  DATABP: C                       ;    DATA TABLE
005220  104407                  RESREG: RESOS                   ;RESTORE PROC REGISTERS
005222  022737  003522  000042  HALTS:  CMP     #$ENDAD,@#42    ;IF ACT-11 AUTOMATIC MODE, HALT!!
005230  001403                          BEQ     1$
005232  005777  173744                  TST     @SWR            ;HALT ON ERROR?
005236  100005                          BPL     EXITER          ;BR IF NO HALT ON ERROR
005240  010046                  1$:     PUSHRO                  ;SAVE RO
005242  016600  000002                  MOV     2(SP),RO        ;SHOW ERROR PC IN DATA LIGHTS
005246  000000                          HALT                    ;HALT
005250  012600                          POPRO                   ;GET RO
005252  005237  001232          EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
005256  032777  000400  173716          BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
005264  001007                          BNE     1$              ;BR IF YES
005266  032777  002000  173706          BIT     #SW10,@SWR      ;GOTO NEXT TEST?
005274  001411                          BEQ     2$              ;BR IF NO
005276  013737  001216  001214          MOV     NEXT,RETURN     ;SET FOR NEXT TEST
005304  012706  001200          1$:     MOV     #STACK,SP       ;RESET SP
005310  013701  001404                  MOV     DMCSR,R1        ;SET UP R1
005314  000177  173674                  JMP     @RETURN         ;GOTO SPECIFIED TEST
005320  000002                  2$:     RTI                     ;RETURN
005322  000001                  ERTABO: 1
005324     006     002                  .BYTE   6,2
005326  001276                          SAVPC
005330  000001                  XTSTN:  1
005332     003     002                  .BYTE   3,2
005334  001226                          TSTNO
                                        ;ENTER HERE ON POWER FAILURE
                                        ;---------------------------


005336                          .PFAIL:
005336  012737  005350  000024          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
005344  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
005346  000777                          BR      .

                                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

005350                          RESTAR:
005350  012737  005336  000024          MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
005356  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
```

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005362  013701  001404                          MOV     DMCSR,R1        ;RESTORE R1
005366  005037  001416                          CLR     TEMP            ;READY FOR TIMMER
005372  005237  001416                          INC     TEMP            ;PLUS ONE TO THE TIMER!
005376  001375                                  BNE     .-4             ;BR IF MORE TO GO
005400  104402  005675                          TYPE    ,MPFAIL         ;TYPE THE MESSAGE
005404  104411  005430                          CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
005410  105037  001325                          CLRB    ERRFLG          ;START CLEAN
005414  005037  001234                          CLR     LSTERR          ;************
                                                                        ;
005420  005011                                  CLR     (R1)            ;CLEAR MAINT BITS
005422  104412                                  MSTCLR                  ;START CLEAN UP OF DEVICE
005424  000177  173564                          JMP     @RETURN         ;START DOING THAT TEST AGAIN.
005430  000001                          PFTAB:  1
005432     003     002                  .BYTE   3,2
005434  001226                                  TSTNO

005436                                  .DELAY:
005436  012777  000020  173746                  MOV     #20,@DMP04
005444  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005446  121111                                  121111                  ;POKE CLOCK DELAY BIT
005450                                  1$:
005450  104414                                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005452  121224                                  121224                  ;PORT4+IBUS*11
005454  032777  000020  173730                  BIT     #BIT4,@DMP04    ;IS CLOCK BIT SET?
005462  001772                                  BEQ     1$              ;BR IF NO
005464  000002                                  RTI

005466                                  .MSTCLR:
005466  152777  000100  173712                  BISB    #BIT6,@DMCSRH   ;SET MASTER CLEAR
005474  142777  000300  173704                  BICB    #BIT6!BIT7,@DMCSRH  ;CLEAR MASTER CLEAR AND RUN
005502  000002                                  RTI                     ;RETURN

005504                                  .ROMCLK:
005504  152777  000002  173674                  BISB    #BIT1,@DMCSRH   ;SET ROMI
005512  013677  173676                          MOV     @(SP)+,@DMP06   ;LOAD INSTRUCTION IN SEL6
005516  062746  000002                          ADD     #2,-(SP)        ;ADJUST STACK
005522  032777  000100  173452                  BIT     #SW06,@SWR      ;HALT IF SW06 =1
005530  001401                                  BEQ     1$              ;BR IF SW06 =0
005532  000000                                  HALT                    ;HALT BEFORE CLOCKING INSTRUCTION
005534  152777  000003  173644          1$:     BISB    #BIT1!BIT0,@DMCSRH ;CLOCK INSTRUCTION
005542  142777  000007  173636                  BICB    #BIT2!BIT1!BIT0,@DMCSRH  ;CLEAR ROMO, ROMI, STEP
005550  000002                                  RTI

005552                                  .DATACLK:
005552  013637  001416                          MOV     @(SP)+,TEMP     ;PUT TICK COUNT IN TEMP
005556  062746  000002                          ADD     #2,-(SP)        ;ADJUST STACK
005562  152777  000020  173616          1$:     BISB    #BIT4,@DMCSRH   ;SET STEP LU
005570  027777  173610  173606                  CMP     @DMCSR,@DMCSR   ;WASTE TIME
005576  142777  000020  173602                  BICB    #BIT4,@DMCSRH   ;CLEAR STEP LU
005604  005337  001416                          DEC     TEMP            ;DEC TICK COUNT
005610  001364                                  BNE     1$              ;BR IF NOT DONE
005612  000002                                  RTI                     ;RETURN
005614  000001                          3$:     .BLKW 1

005616                                  .TIMER:
005616  013637  001416                          MOV     @(SP)+,TEMP     ;MOVE COUNT TO TEMP
005622  062746  000002                          ADD     #2,-(SP)        ;ADJUST STACK
```

```
      005626                                1$:
      005626  104414                                ROMCLK                     ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
      005630  021364                                021364                     ;PORT4+IBUS* REG11
      005632  032777  000002  173552                BIT       #2,@DMP04        ;IS PGM CLOCK BIT CLEAR?
      005640  001772                                BEQ       1$               ;BR IF YES
      005642                                2$:
      005642  104414                                ROMCLK                     ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
      005644  021364                                021364                     ;PORT4+IBUS* REG11
      005646  032777  000002  173536                BIT       #2,@DMP04        ;IS PGM CLOCK BIT SET?
      005654  001372                                BNE       2$               ;BR IF YES
      005656  005337  001416                        DEC       TEMP             ;DEC COUNT
      005662  001361                                BNE       1$               ;BR IF NOT DONE
      005664  000002                                RTI                        ;RETURN

      005666  020040  000077                MQM:    .ASCIZ  /  ?/
 (2)  005672  005015     000                MCRLF:  .ASCIZ   <15><12>
 (2)  005675     377  053520  020122        MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
 (2)  005733     377  047105  020104        MEFASS: .ASCIZ  <377>/END PASS DZDMH  /
 (2)  005755     377  000122                MR:     .ASCIZ  <377>/R/
 (2)  005760  047377  020117  042504        MERR2:  .ASCIZ  <377>/NO DEVICES PRESENT./
 (2)  006005     377  047111  052523        MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 (2)  006031     377  042524  052123        MTSTPC: .ASCIZ  <377>/TEST PC-/
 (2)  006043     377  047514  045503        MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
 (2)  006072  051503  035122  000040        MCSRX:  .ASCIZ   /CSR: /
 (2)  006100  042526  035103  000040        MVECX:  .ASCIZ  /VEC: /
 (2)  006106  040520  051523  051505        MPASSX: .ASCIZ  /PASSES: /
 (2)  006117     105  051122  051117        MERRX:  .ASCIZ  /ERRORS: /
 (2)  006130  042524  052123  047040        MTSTN:  .ASCIZ  /TEST NO: /
 (2)  006142  000052                        MASTEK: .ASCIZ  /*/
 (2)  006144  051777  052105  051440        MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DMC11'S DESIRED ACTIVE./
 (2)  006217     120  035103  000040        MERRPC: .ASCIZ  /PC: /
 (2)  006224  020212  020040  020040        XHEAD:  .ASCII  <212>/              MAP OF DMC11 STATUS/
 (2)  006263     377  020040  020040                .ASCII  <377>/              -------------------/
 (2)  006322  020212  050040  020103                .ASCII  <212>/  PC      CSR      STAT1     STAT2     STAT3/
 (2)  006374  026777  026455  026455                .ASCIZ  <377>/------   ------   ------    ------    ------/
 (2)  006450  044377  053517  046440        NUM:    .ASCIZ  <377>/HOW MANY DMC11'S TO BE TESTED?/
 (2)  006510  041777  051123  040440        CSR:    .ASCIZ  <377>/CSR ADDRESS?/
 (2)  006526  053377  041505  047524        VEC:    .ASCIZ  <377>/VECTOR ADDRESS?/
 (2)  006547     377  051102  050040        PRIO:   .ASCIZ  <377>/BR PRIORITY LEVEL? (4,5,6,7)?/
 (2)  006606  044777  020106  046504        CRAM:   .ASCIZ  <377>/IF DMC HAS CRAM (M8204) TYPE "Y", IF CROM (M8200) TYPE "N"
 (2)  006704  053777  044510  044103        MODU:   .ASCIZ  <377>/WHICH LINE UNIT? IF NONE TYPE "N", IF M8201 TYPE "1", IF M
 (2)  007016  051777  044527  041524        LINE:   .ASCIZ  <377>/SWITCH PAC#1 (DDCMP LINE #)?/
 (2)  007054  051777  044527  041524        BM:     .ASCIZ  <377>/SWITCH PAC#2 (BM873 BOOT ADD)?/
 (2)  007114  044777  020123  044124        CONN:   .ASCIZ  <377>/IS THE LOOP BACK CONNECTOR ON?/
 (2)  007154  047377  020117  042504        NOACT:  .ASCIZ  <377>/NO DEVICES ARE SELECTED/
 (2)  007205     377  051412  051127        SWMES:  .ASCIZ  <377><12>/SWR= /
 (2)  007215     116  053505  020077        SWMES1: .ASCIZ  /NEW? /
 (2)  007223     377  042377  041515        CONERR: .ASCIZ  <377><377>/DMC11 FOUND AT NON-STANDARD ADDRESS  PC: /
 (2)  007277     377  054105  042520        CNERR:  .ASCIZ  <377>/EXPECTED  FOUND/
 (2)  007320  024040  046504  024503        DMCM:   .ASCIZ  / (DMC) /
 (2)  007330  024040  046513  024503        KMCM:   .ASCIZ  / (KMC) /
 (2)  007340  042377  041515  030461        SPEED:  .ASCIZ  <377>/DMC11-AR(REMOTE,LOW SPEED) OR DMC11-AL(LOCAL,HIGH SPEED) T
 (2)                                        .EVEN
 (2)  007454  000005                        XSTATQ: 5
      007456     006     003                        .BYTE   6,3
      007460  001246                                TEMP1
```

```
007462     006     003                          .BYTE   6,3
007464  001250                                  TEMP2
007466     006     003                          .BYTE   6,3
007470  001252                                  TEMP3
007472     006     003                          .BYTE   6,3
007474  001254                                  TEMP4
007476     006     002                          .BYTE   6,2
007500  001256                                  TEMP5
                                        .EVEN

                                                ;BUFFERS FOR INPUT-OUTPUT

007502  000000                          INBUF:  0
        007544                          .=.+40
007544  000000                          MDATA:  0
        007606                          .=.+40


                                                ;ROUTINE USED TO CHANGE SOFTWARE SWITCH
                                                ;REGISTER USING THE CONSOLE TERMINAL
                                                ;--------------------------------------

007606  022737  000176  001202          CKSWR:  CMP     #SWREG,SWR      ;IS THE SOFT SWR BEING USED?
007614  001077                                  BNE     CKSWR5          ;BR IF NO
007616  105777  171362                          TSTB    @TKCSR          ;IS DONE SET?
007622  100003                                  BPL     2$              ;GO ON IF NOT SET
007624  012737  177777  003734                  MOV     #-1,DONE        ;IF DONE SET, SET FLAG
007632  022777  000007  171346          2$:     CMP     #7,@TKDBR       ;WAS CTRL G TYPED? (7 BIT ASCII
007640  001404                                  BEQ     1$              ;BR IF YES
007642  022777  000207  171336                  CMP     #207,@TKDBR     ;WAS CTRL G TYPED? (8 BIT ASCII)
007650  001061                                  BNE     CKSWR5          ;BR IF NO
007652  010246                          1$:     MOV     R2,-(SP)        ;STORE R2
007654  010346                                  MOV     R3,-(SP)        ;STORE R3
007656  010446                                  MOV     R4,-(SP)        ;STORE R4
007660  012737  177777  010016                  MOV     #-1,SWFLG       ;SET SOFT TYPE OUT FLAG
007666  005002                          CKSWR1: CLR     R2              ;CLEAR NEW SWR CONTENTS
007670  012704  177777                          MOV     #-1,R4          ;SET FLAG TO ALL ONES
007674  104402  007205                          TYPE    ,SWMES          ;TYPE "SWR= "
007700  104411                          CKSWR2: CNVRT                   ;TYPE OUT PRESENT CONTENTS
007702  010052                                  SOFTSW                  ;OF SOFT SWITCH REGISTER
007704  104402  007215                  CKSWR3: TYPE    ,SWMES1         ;TYPE "NEW? "
007710  004737  010020                  CKSWR4: JSR     PC,INCHAR       ;GET RESPONSE
007714  022703  000015                          CMP     #15,R3          ;WAS IT A CR?
007720  001424                                  BEQ     5$              ;BR IF YES
007722  022703  000012                          CMP     #12,R3          ;WAS IT A LF?
007726  001416                                  BEQ     4$              ;BR IF YES
007730  022703  000025                          CMP     #25,R3          ;WAS IT CTRL U?
007734  001754                                  BEQ     CKSWR1          ;BR IF YES(START OVER)
007736  022703  000007                          CMP     #7,R3           ;IF CNTL G GET NEXT CHAR
007742  001762                                  BEQ     CKSWR4
007744  005004                                  CLR     R4              ;IT MUST BE A DIGIT SO CLR FLAG
007746  042703  177770                          BIC     #177770,R3      ;ONLY 0-7 ARE LEGAL SO MASK OFF BITS
007752  006302                                  ASL     R2              ;SHIFT R2 3 TIMES
007754  006302                                  ASL     R2
007756  006302                                  ASL     R2
007760  050302                                  BIS     R3,R2           ;ADD LAST DIGIT
```

```
007762  000752                            BR      CKSWR4          ;GET NEXT CHARACTER
007764  012766  002002  000006   4$:      MOV     #.START,6(SP)   ;LF WAS TYPED SO GO TO START
007772  005704                   5$:      TST     R4              ;IS FLAG CLEAR?
007774  001002                            BNE     6$              ;IF NOT DON'T CHANGE SOFT SWR
007776  010277  171200                    MOV     R2,@SWR         ;IF YES THEN WRITE NEW CONTENTS TO SOFT SWR
010002  005037  010016           6$:      CLR     SWFLG           ;CLEAR TYPEOUT FLAG
010006  012604                            MOV     (SP)+,R4        ;RESTORE R4
010010  012603                            MOV     (SP)+,R3        ;RESTORE R3
010012  012602                            MOV     (SP)+,R2        ;RESTORE R2
010014  000207                   CKSWR5:  RTS     PC              ;RETURN

010016  000000                   SWFLG:   0

010020  105777  171160           INCHAR:  TSTB    @TKCSR
010024  100375                            BPL     .-4
010026  017703  171154                    MOV     @TKDBR,R3
010032  105777  171152                    TSTB    @TPCSR
010036  100375                            BPL     .-4
010040  010377  171146                    MOV     R3,@TPDBR
010044  042703  000200                    BIC     #BIT7,R3
010050  000207                            RTS     PC

010052  000001                   SOFTSW:  1
010054     006     002                    .BYTE   6,2
010056  000176                            SWREG
```

```


                                                      ;
                                                      ;ROUTINE USED TO "CYCLE" THROUGH UP TO 16 DMC11'S
                                                      ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
                                                      ;AND RUNS THE SPECIFIED DMC11'S.   THIS ROUTINE *MUST*
                                                      ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
                                                      ;SETUP NECESSARY.
                                                      ;

010060  005737  001306                       CYCLE:   TST     DMACTV            ;ARE ANY DMC11'S TO BE TESTED?
010064  001004                                        BNE     1$                ;BR IF OK.
010066  104402  007154                                TYPE    ,NOACT            ;NO DMC11'S SELECTED!!
010072  000000                                        HALT                      ;STOP THE SHOW.
010074  000776                                        BR      .-2               ;DISQUALIFY CONT. SW.
010076  000241                               1$:      CLC                       ;CLEAR PROC. CARRY BIT.
010100  006137  001316                                ROL     RUN               ;UPDATE POINTER
010104  005537  001316                                ADC     RUN               ;CATCH CARRY FROM RUN
010110  062737  000004  001322                        ADD     #4,MILK           ;UPDATE POINTER
010116  062737  000010  001320                        ADD     #10,CREAM         ;UPDATE ADDRESS POINTER.
010124  022737  001700  001320                        CMP     #DM.MAP+200,CREAM
010132  001006                                        BNE     2$                ;KEEP GOING; NOT ALL TESTED FOR.
010134  012737  001500  001320                        MOV     #DM.MAP,CREAM     ;RESET ADDRESS POINTER.
010142  012737  001702  001322                        MOV     #CNT.MAP,MILK     ;RESET PASS COUNT POINTER
010150  033737  001316  001306               2$:      BIT     RUN,DMACTV        ;IS THIS ONE ACTIVE?
010156  001747                                        BEQ     1$                ;BR IF NO
010160  013700  001320                                MOV     CREAM,R0          ;GET ADDRESS POINTER
010164  013702  001322                                MOV     MILK,R2           ;GET PASS COUNT POINTER
010170  012037  001404                                MOV     (R0)+,DMCSR       ;LOAD SYSTEM CTRL. REG
010174  011037  001374                                MOV     (R0),DMRVEC       ;LOAD VECTOR
010200  042737  177000  001374                        BIC     #177000,DMRVEC    ;CLEAR UNWANTED BITS
010206  012037  001366                                MOV     (R0)+,STAT1       ;LOAD STAT1
010212  012037  001370                                MOV     (R0)+,STAT2       ;LOAD STAT2
010216  012037  001372                                MOV     (R0)+,STAT3       ;LOAD STAT3
010222  012237  001230                                MOV     (R2)+,PASCNT      ;LOAD PASS COUNT
010226  012237  001232                                MOV     (R2)+,ERRCNT      ;LOAD ERROR COUNT
010232  012700  000002                                MOV     #2,R0             ;SAVE CORE THIS WAY!
010236  013737  001404  001406                        MOV     DMCSR,DMCSRH
010244  005237  001406                                INC     DMCSRH
010250  013737  001406  001410                        MOV     DMCSRH,DMCTL
010256  005237  001410                                INC     DMCTL
010262  013737  001410  001412                        MOV     DMCTL,DMP04
010270  060037  001412                                ADD     R0,DMP04
010274  013737  001412  001414                        MOV     DMP04,DMP06
010302  060037  001414                                ADD     R0,DMP06

010306  013737  001374  001376                        MOV     DMRVEC,DMRLVL     ;PTY LVL
010314  060037  001376                                ADD     R0,DMRLVL         ;
010320  013737  001376  001400                        MOV     DMRLVL,DMTVEC     ;TX VEC
010326  060037  001400                                ADD     R0,DMTVEC         ;
010332  013737  001400  001402                        MOV     DMTVEC,DMTLVL     ;TX LVL
010340  060037  001402                                ADD     R0,DMTLVL

010344  032737  000002  001236                        BIT     #SW01,STRTSW      ;IS TEST NO. SELECTED
010352  001450                                        BEQ     7$                ;BR IF NO
010354                                       4$:
010354  005737  000042                                TST     @#42              ;RUNNING IN AUTO MODE?
```

```
010360  001045                                      BNE     7$              ;BR IF YES
010362  104402  005672                              TYPE    ,MCRLF
010366  104403                                      INSTR                   ;GET TEST NO.
010370  006130                                      MTSTN
010372  104405                                      PARAM
010374  000001                                      1
010376  001000                                      1000
010400  001226                                      TSTNO
010402     000                              .BYTE   0
010403     001                              .BYTE   1
010404  012700  012320                              MOV     #TST1,R0
010410  022710                              5$:     CMP     (PC)+,(R0)      ;CMP FIRST WORD TO 12737
010412  012737                                      MOV     (PC)+,@(PC)+
010414  001020                                      BNE     6$              ;BR IF NOT SAME
010416  023760  001226  000002                      CMP     TSTNO,2(R0)     ;DOES TSTNO MATCH?
010424  001014                                      BNE     6$              ;BR IF NO
010426  022760  001226  000004                      CMP     #TSTNO,4(R0)    ;IS LAST WORD OK?
010434  001010                                      BNE     6$              ;BR IF NO
010436  010037  001214                              MOV     R0,RETURN       ;IT IS A LEGAL TEST SO DO IT
010442  104402  005755                              TYPE    ,MR
010446  042737  000002  001236                      BIC     #SW01,STRTSW
010454  000412                                      BR      8$
010456  005720                              6$:     TST     (R0)+           ;POP R0
010460  020027  016224                              CMP     R0,#TLAST+10    ;AT END YET?
010464  001351                                      BNE     5$              ;BR IF NO
010466  104402  005666                              TYPE    ,MQM            ;YES ILLEGAL TEST NO.
010472  000730                                      BR      4$              ;TRY AGAIN

010474  012737  012320  001214              7$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
010502  013701  001404                      8$:     MOV     DMCSR,R1        ;R1 = BASE DMC11 ADDRESS
010506  000177  173502                              JMP     @RETURN         ;GO START TESTING.


                                                    ;ROUTINE USED TO "AUTO SIZE" THE DMC11
                                                    ;CSR AND VECTOR.
                                                    ;NOTE:  THE CSR MAY BE ANY WHERE IN THE FLOATING
                                                    ;       ADDRESS RANGE (160000:164000)
                                                    ;       AND THE VECTOR MAY BE ANY WHERE IN THE
                                                    ;       FLOATING VECTOR RANGE (300:770)
                                                    ;

010512                                      AUTO.SIZE:
010512  000005                                      RESET                   ;INSURE A BUS INIT.
010514  012702  001500                      CSRMAP: MOV     #DM.MAP,R2      ;LOAD MAP POINTER.
010520  005022                              1$:     CLR     (R2)+           ;ZERO ENTIRE MAP
010522  022702  001700                              CMP     #DM.END,R2      ;ALL DONE?
010526  001374                                      BNE     1$              ;BR IF NO
010530  005037  001310                              CLR     DMNUM           ;SET OCTAL NUMBER OF DMC11'S TO 0
010534  012702  001500                              MOV     #DM.MAP,R2      ;R2 POINTS TO DMC MAP
010540  005037  001306                              CLR     DMACTV          ;CLEAR ACTIVE
010544  032737  000001  001236                      BIT     #SW00,STRTSW    ;QUESTIONS?
010552  001002                                      BNE     .+6             ;BR IF YES
010554  000137  011252                              JMP     7$              ;IF NO SKIP QUESTIONS
010560  012737  000001  001256                      MOV     #1,TEMP5        ;START WITH 1
010566  104403                                      INSTR
010570  006450                                      NUM
```

```
010572  104405                          PARAM
010574  000001                          1
010576  000020                          16.
010600  001252                          TEMP3
010602     000                          .BYTE   0
010603     001                          .BYTE   1
010604  013737  001252  001310          MOV     TEMP3,DMNUM     ;DMNUM = HOW MANY
010612  104402  005672          12$:    TYPE    ,MCRLF
010616  104410                          CONVRT                  ;TYPE WHICH DMC IS BEING DONE
010620  012002                          WHICH                   ;TEMP5 IS WHICH DMC
010622  005237  001256                  INC     TEMP5
010626  104403                          INSTR
010630  006510                          CSR
010632  104405                          PARAM
010634  160000                          160000
010636  164000                          164000
010640  001254                          TEMP4
010642     000                          .BYTE   0
010643     001                          .BYTE   1
010644  013722  001254                  MOV     TEMP4,(R2)+     ;STORE CSR IN MAP
010650  104403                          INSTR
010652  006526                          VEC
010654  104405                          PARAM
010656  000000                          0
010660  000776                          776
010662  001254                          TEMP4
010664     000                          .BYTE   0
010665     001                          .BYTE   1
010666  013712  001254                  MOV     TEMP4,(R2)      ;STORE VECTOR IN MAP
010672  104402                  10$:    TYPE
010674  006547                          PRIO                    ;ASK WHAT BR LEVEL
010676  004737  012266                  JSR     PC,INTTY        ;GET RESPONSE
010702  022703  000024                  CMP     #24,R3          ;
010706  101014                          BHI     50$             ;BR IF LESS THAN 4
010710  022703  000027                  CMP     #27,R3          ;
010714  103411                          BLO     50$             ;BR IF GREATER THAN 7
010716  012704  000011                  MOV     #11,R4          ;R4 = NUMBER OF SHIFTS
010722  006303                          ASL     R3              ;SHIFT R3 LEFT
010724  005304                          DEC     R4              ;DEC SHIFT COUNT
010726  001375                          BNE     .-4             ;BR IF NOT DONE
010730  042703  170777                  BIC     #170777,R3      ;BIC UNWANTED BITS
010734  050312                          BIS     R3,(R2)         ;PUT BR LEVEL IN STATUS MAP
010736  000403                          BR      8$              ;CONTINUE
010740  104402                  50$:    TYPE
010742  005666                          MQM                     ;RESPONSE IS OUT OF LIMITS
010744  000752                          BR      10$             ;TRY AGAIN
010746  104402                  8$:     TYPE
010750  006606                          CRAM                    ;DOES DMC HAVE CRAM?
010752  004737  012266                  JSR     PC,INTTY        ;GET REPLY
010756  022703  000131                  CMP     #131,R3
010762  001427                          BEQ     9$              ;YES
010764  022703  000116                  CMP     #116,R3         ;NO
010770  001403                          BEQ     40$             ;NOT A Y OR N
010772  104402                          TYPE
010774  005666                          MQM                     ;TYPE "?"
010776  000763                          BR      8$              ;ASK AGAIN
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011000  104402                          40$:    TYPE
011002  007340                                  SPEED                           ;DMC11-AR OR DMC11-AL?
011004  004737  012266                          JSR     PC,INTTY                ;GET RESPONSE
011010  022703  000122                          CMP     #122,R3                 ;IS IT R
011014  001414                                  BEQ     16$                     ;BR IF REMOTE
011016  022703  000114                          CMP     #114,R3                 ;IS IT L
011022  001403                                  BEQ     41$                     ;BR IF LOCAL
011024  104402                                  TYPE
011026  005666                                  MQM
011030  000763                                  BR      40$                     ;TRY AGAIN
011032  052762  000002  000004          41$:    BIS     #BIT1,4(R2)             ;SET BIT1 IN STAT3
011040  000402                                  BR      16$                     ;CONTINUE
011042  052712  100000                  9$:     BIS     #BIT15,(R2)             ;SET BIT 15 IF CRAM
011046  104402                          16$:    TYPE
011050  006704                                  MODU                            ;ASK WHICH LINE UNIT
011052  004737  012266                          JSR     PC,INTTY                ;GET REPLY
011056  022703  000021                          CMP     #21,R3                  ;"1"
011062  001417                                  BEQ     30$
011064  022703  000022                          CMP     #22,R3                  ;"2"
011070  001412                                  BEQ     31$
011072  022703  000116                          CMP     #116,R3                 ;"N"
011076  001403                                  BEQ     32$
011100  104402                                  TYPE
011102  005666                                  MQM                             ;IF NOT A 1,2 OR N TYPE "?"
011104  000760                                  BR      16$                     ;TRY AGIAN
011106  052722  010000                  32$:    BIS     #BIT12,(R2)+            ;SET BIT 12 IN STAT2 IF NO LU
011112  022222                                  CMP     (R2)+,(R2)+             ;POP OVER STAT2 AND STAT3
011114  000447                                  BR      33$
011116  052712  020000                  31$:    BIS     #BIT13,(R2)             ;SET BIT 13 IN STAT2 IF M8202
011122  104402                          30$:    TYPE
011124  007114                                  CONN                            ;ASK IF LOOP-BACK IS ON
011126  004737  012266                          JSR     PC,INTTY                ;GET REPLY
011132  022703  000131                          CMP     #131,R3                 ;Y
011136  001406                                  BEQ     17$
011140  022703  000116                          CMP     #116,R3                 ;N
011144  001406                                  BEQ     18$
011146  104402                                  TYPE
011150  005666                                  MQM                             ;IF NOT Y OR N TYPE "?"
011152  000763                                  BR      30$                     ;TRY AGAIN
011154  052722  040000                  17$:    BIS     #BIT14,(R2)+            ;TURNAROUND IS CONNECTED
011160  000402                                  BR      19$
011162  042722  040000                  18$:    BIC     #BIT14,(R2)+            ;NO TURNAROUND
011166                                  19$:
011166  104403                                  INSTR
011170  007016                                  LINE
011172  104405                                  PARAM
011174  000000                                  0
011176  000377                                  377
011200  001254                                  TEMP4
011202     000                                  .BYTE   0
011203     001                                  .BYTE   1
011204  113722  001254                          MOVB    TEMP4,(R2)+             ;STORE SWITCH PAC IN MAP
011210  104403                                  INSTR
011212  007054                                  BM
011214  104405                                  PARAM
011216  000000                                  0
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011220  000377                                      377
011222  001254                                      TEMP4
011224     000                                      .BYTE   0
011225     001                                      .BYTE   1
011226  113722  001254                              MOVB    TEMP4,(R2)+     ;STORE SWITCH PAC IN MAP
011232  005722                                      TST     (R2)+           ;POP OVER STAT3
011234  005337  001252                      33$:    DEC     TEMP3           ;DEC DMC COUNT
011240  001402                                      BEQ     34$             ;BR IF DONE
011242  000137  010612                              JMP     12$             ;JUMP IF NOT
011246  000137  011702                      34$:    JMP     13$             ;CONTINUE
011252  012701  160000                      7$:     MOV     #160000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
011256  012737  011774  000004                      MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
011264  005011                              2$:     CLR     (R1)            ;CLEAR SEL0
011266  005711                                      TST     (R1)            ;IF DMC11 DMCSR S/B 0
011270  001172                                      BNE     3$              ;IF NO DEV : TRAP TO 4. IF NO BIT 8 THEN NO DMC1
011272  005061  000006                              CLR     6(R1)           ;CLEAR SEL6
011276  005761  000006                              TST     6(R1)           ;IF DMC11 THEN DMRIC S/B =0!
011302  001165                                      BNE     3$              ;BR IF NOT DMC11
011304  012711  002000                              MOV     #BIT10,(R1)     ;SET ROMO
011310  005061  000004                              CLR     4(R1)           ;CLEAR SEL4
011314  012761  125252  000006                      MOV     #125252,6(R1)   ;WRITE THIS TO SEL6
011322  052711  020000                              BIS     #BIT13,(R1)     ;WRITE IT!
011326  022761  125252  000004                      CMP     #125252,4(R1)   ;WAS IT WRITTEN?
011334  001004                                      BNE     21$             ;IF NO IT IS NOT CRAM
011336  052762  100000  000002                      BIS     #BIT15,2(R2)    ;SET BIT15 IF CRAM
011344  000431                                      BR      22$
011346  012711  001000                      21$:    MOV     #BIT9,(R1)      ;SET ROMI
011352  012761  100417  000006                      MOV     #100417,6(R1)   ;PUT INSTRUCTION IN SEL6
011360  012711  001400                              MOV     #BIT9!BIT8,(R1) ;CLOCK INSTRUCTION (MICRO PROC PC TO 0)
011364  012711  002000                              MOV     #BIT10,(R1)     ;SET ROMO
011370  022761  000626  000006                      CMP     #626,6(R1)      ;IS IT LOCAL CROM
011376  001411                                      BEQ     23$             ;BR IF YES
011400  022761  016520  000006                      CMP     #16520,6(R1)    ;IS IT REMOTE CROM?
011406  001410                                      BEQ     22$             ;BR IF YES
011410  022761  177777  000006                      CMP     #-1,6(R1)       ;NO CROM?
011416  001404                                      BEQ     22$             ;BR IF YES
011420  000516                                      BR      3$              ;NOT A DMC
011422  052762  000002  000006              23$:    BIS     #BIT1,6(R2)     ;SET BIT 1 IN STAT3
                                            ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DMC11 CSR ADDRESS.
011430  010122                              22$:    MOV     R1,(R2)+        ;STORE CSR IN CORE TABLE.
011432  012711  001000                      15$:    MOV     #BIT9,(R1)      ;CLEAR LINE UNIT LOOP
011436  005061  000004                              CLR     4(R1)           ;CLEAR PORT4
011442  012761  122113  000006                      MOV     #122113,6(R1)   ;LOAD INSTRUCTION (CLR DTR)
011450  052711  000400                              BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION
011454  012761  021264  000006                      MOV     #021264,6(R1)   ;LOAD INSTRUCTION
011462  052711  000400                              BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION
011466  122761  000377  000004                      CMPB    #377,4(R1)      ;IS IT ALL ONES?
011474  001003                                      BNE     .+10            ;BR IF NO
011476  052712  010000                              BIS     #BIT12,(R2)     ;IF YES, NO LINE UNIT, SET STATUS BIT
011502  000436                                      BR      20$
011504  032761  000002  000004                      BIT     #BIT1,4(R1)     ;IS SWITCH A ONE?
011512  001403                                      BEQ     .+10            ;BR IF M8201
011514  052712  060000                              BIS     #BIT13!BIT14,(R2) ;M8202 ASSUME CONNECTOR
011520  000427                                      BR      20$             ;CONNECTOR ON)
011522  032761  000010  000004                      BIT     #BIT3,4(R1)     ;IS MRDY SET
011530  001023                                      BNE     20$             ;BR IF M8201 NO CONNECTOR (ON LINE
011532  012761  000100  000004            MOV     #BIT6,4(R1)         ;LOAD PORT4
011540  012761  122113  000006            MOV     #122113,6(R1)       ;LOAD INSTRUCTION
011546  052711  000400                    BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION(SET DTR)
011552  012761  021264  000006            MOV     #021264,6(R1)       ;LOAD INSTRUCTION
011560  052711  000400                    BIS     #BIT8,(R1)          ;CLOCK INSTRUCTION(READ MODEM REG.
011564  032761  000010  000004            BIT     #BIT3,4(R1)         ;IS MRDY SET NOW?
011572  001402                            BEQ     20$                 ;BR IF NO CONNECTOR
011574  052712  040000                    BIS     #BIT14,(R2)         ;SET STATUS BIT FOR CONNECTOR
011600  005722                    20$:    TST     (R2)+               ;POP POINTER
011602  012761  021324  000006            MOV     #021324,6(R1)       ;PUT INSTRUCTION IN PORT6
011610  012711  001400                    MOV     #BIT9!BIT8,(R1)     ;PORT4+LU IS
011614  156122  000004                    BISB    4(R1),(R2)+         ;STORE DDCMP LINE # IN TABLE
011620  012761  021344  000006            MOV     #021344,6(R1)       ;PORT6+INSTRUCTION
011626  012711  001400                    MOV     #BIT8!BIT9,(R1)     ;CLOCK INSTR.
011632  156122  000004                    BISB    4(R1),(R2)+         ;STORE BM873 ADD IN TABLE
011636  005722                            TST     (R2)+               ;POP OVER STAT3
011640  005011                            CLR     (R1)                ;CLEAR ROMI
011642  005237  001310                    INC     DMNUM               ;UPDATE DEVICE COUNTER
011646  022737  000020  001310            CMP     #20,DMNUM           ;ARE MAX. NO. OF DEV FOUND?
011654  001412                            BEQ     13$                 ;YES DON'T LOOK FOR ANY MORE.
011656  005011                    3$:     CLR     (R1)                ;CLEAR BIT 10
011660  005061  000006                    CLR     6(R1)               ;CLEAR SEL 6
011664  062701  000010            14$:    ADD     #10,R1              ;UPDATE CSR POINTER ADDRESS
011670  022701  164000                    CMP     #164000,R1
011674  001402                            BEQ     13$                 ;BR IF DONE
011676  000137  011264                    JMP     2$                  ;JUMP IF NOT
011702  005037  001306            13$:    CLR     DMACTV
011706  005737  001310                    TST     DMNUM               ;WERE ANY DMC11'S FOUND AT ALL?
011712  001423                            BEQ     5$                  ;ERROR AUTO SIZER FOUND NO DMC11'S IN THIS SYS.
011714  013701  001310                    MOV     DMNUM,R1
011720  010137  001314                    MOV     R1,SAVNUM           ;SAVE NUMBER OF DEVICES
011724  000241                    4$:     CLC
011726  006137  001306                    ROL     DMACTV              ;GENERATE ACTIVE REGISTER OF DEVICES.
011732  005237  001306                    INC     DMACTV              ;SET THE BIT
011736  005301                            DEC     R1
011740  001371                            BNE     4$                  ;BR IF MORE TO GENERATE
011742  012737  000006  000004            MOV     #6,@#4              ;RESTORE TRAP VECTOR
011750  013737  001306  001312            MOV     DMACTV,SAVACT       ;SAVE ACTIVE REGISTER
011756  000137  012010                    JMP     VECMAP              ;GO FIND THE VECTOR NOW.
011762  104402  005760            5$:     TYPE    ,MERR2              ;NOTIFY OPR THAT NO DMC11'S FOUND.
011766  005000                            CLR     R0                  ;MAKE DATA LIGHTS ZERO
011770  000000                            HALT                        ;STOP THE SHOW
011772  000776                            BR      .-2                 ;DISABLE CONT. SW.
011774  012716  011664            6$:     MOV     #14$,(SP)           ;ENTERED BY NON-EXISTANT TIME-OUT.
012000  000002                            RTI                         ;RETURN TO MAINSTREAM

012002  000001                    WHICH:  1
012004     002     002                    .BYTE   2,2
012006  001256                            TEMPS

012010  032737  000001  001236    VECMAP: BIT     #SW00,STRTSW
012016  001114                            BNE     5$
012020  012737  000340  000022            MOV     #340,@#22           ;SET IOT TRAP PRIO TO 7
012026  012737  012202  000020            MOV     #4$,@#20            ;SET IOT TRAP VECTOR
012034  012702  001500                    MOV     #DM.MAP,R2          ;SET SOFTWARE POINTER
012040  012700  000300                    MOV     #300,R0             ;FLOATING VECTORS START HERE.
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012044  012701  000302                      MOV     #302,R1             ;PC OF IOT INSTR
012050  010120                      1$:     MOV     R1,(R0)+            ;START FILLING VECTOR AREA
012052  012721  000004                      MOV     #4,(R1)+            ;WITH .+2; IOT
012056  022021                              CMP     (R0)+,(R1)+         ;ADD 2 TO R0 +R1
012060  020127  001000                      CMP     R1,#1000
012064  101771                              BLOS    1$                  ;BR IF MORE TO FILL
012066  013737  001306  001246              MOV     DMACTV,TEMP1        ;STORE TEMPORALLY
012074  006037  001246              2$:     ROR     TEMP1               ;BRING OUT A BIT
012100  103063                              BCC     5$                  ;BR IF ALL DONE
012102  012704  000012                      MOV     #12,R4              ;R4 IS INDEX REGISTER
012106  016437  012252  177776              MOV     BRLVL(R4),PS        ;SET PS TO 7
012114  011201                              MOV     (R2),R1
012116  012761  000200  000004              MOV     #200,4(R1)
012124  012711  001000                      MOV     #BIT9,(R1)          ;SET ROMI
012130  012761  121111  000006              MOV     #121111,6(R1)       ;PUT INSTRUCTION IN PORT6
012136  012711  001400                      MOV     #BIT9!BIT8,(R1)     ;FORCE AN INTERRUPT
012142  105200                      7$:     INCB    R0                  ;STALL
012144  001376                              BNE     .-2                 ;FOR TIME TO INTERUPT
012146  162704  000002                      SUB     #2,R4               ;GET NEXT LOWEST PS LEVEL
012152  001404                              BEQ     6$                  ;BR IF R4 = 0
012154  016437  012252  177776              MOV     BRLVL(R4),PS        ;MOVE NEXT LOWER LEVEL IN PS
012162  000767                              BR      7$                  ;BR TO DELAY
012164  052762  005300  000002      6$:     BIS     #5300,2(R2)         ;NO INTERUPT ASSUME 300 AT LEVEL 5 AND FIX DMC11
012172  005011                      3$:     CLR     (R1)                ;CLEAR ROMI
012174  062702  000010                      ADD     #10,R2              ;POP SOFTWARE POINTER
012200  000735                              BR      2$                  ;KEEP GOING
012202  051662  000002              4$:     BIS     (SP),2(R2)          ;GET VECTOR ADDRESS
012206  042762  000007  000002              BIC     #7,2(R2)            ;CLEAR JUNK
012214  016405  012254                      MOV     BRLVL+2(R4),R5      ;GET BR LEVEL OF DMC11
012220  006305                              ASL     R5                  ;SHIFT LEVEL 4 PLACES
012222  006305                              ASL     R5                  ;TO THE LEFT FOR THE
012224  006305                              ASL     R5                  ;STATUS TABLE
012226  006305                              ASL     R5
012230  042705  170777                      BIC     #170777,R5          ;CLEAR UNWANTED BITS
012234  050562  000002                      BIS     R5,2(R2)            ;PUT BR LEVEL IN STATUS TABLE
012240  022626                              CMP     (SP)+,(SP)+         ;POP IOT JUNK OFF STACK
012242  012716  012172                      MOV     #3$,(SP)            ;SET FOR RETURN
012246  000002                              RTI
012250  000207                      5$:     RTS     PC                  ;ALL DONE WITH "AUTO SIZING"

012252  000000                      BRLVL:  0       ;LEVEL 0
012254  000000                              0       ;LEVEL 0
012256  000200                              200     ;LEVEL 4
012260  000240                              240     ;LEVEL 5
012262  000300                              300     ;LEVEL 6
012264  000340                              340     ;LEVEL 7


012266  105777  166712              INTTY:  TSTB    @TKCSR              ;WAIT FOR DONE
012272  100375                              BPL     .-4
012274  017703  166706                      MOV     @TKDBR,R3           ;PUT CHAR IN R3
012300  105777  166704                      TSTB    @TPCSR              ;WAIT UNTIL PRINTER IS READY
012304  100375                              BPL     .-4
012306  010377  166700                      MOV     R3,@TPDBR           ;ECHO CHAR
012312  042703  000240                      BIC     #BIT7!BIT5,R3       ;MASK OFF LOWER CASE
012316  000207                              RTS     PC                  ;RETURN
```

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 1663
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                                          ;************************** TEST 1 **************************
                                          ;*FREE RUNNING FLAG MODE DATA TEST
                                          ;*TRANSMIT A MESSAGE AND VERIFY THE RECEIVED DATA
                                          ;*LINE UNIT LOOP IS SET FOR THIS TEST.
                                          ;*ALL FOLLOWING TESTS ARE FREE RUNNING AND ARE PERFORMED
                                          ;*ONLY ON DMC'S WITH LINE UNITS. IF YOU WISH TO PERFORM
                                          ;*THESE FREE RUNNING TESTS ON A KMC (NORMALLY THE FREE RUNNING TESTS
                                          ;*WILL FAIL ON A KMC, THE TIMER IS TOO FAST) THEN YOU MUST
                                          ;*MANUALLY SET BIT0 OF STAT3 IN THE STATUS MAP. ALSO THE KMC
                                          ;*MUST HAVE THE MICRO-CODE LOADED BY PREVIOUSLY RUNNING
                                          ;*DZDMG TEST 2 AND THEN LOADING AND STARTING DZDMH
                                          ;* WITH SWITCH 7 = 1
                                          ;:*****************************************************************

                                          ;  TEST 1
                                          ;---------------
012320  012737  000001  001226   TST1:    MOV     #1,TSTNO
012326  012737  013404  001216            MOV     #TST2,NEXT
                                                              ;R1 CONTAINS BASE DMC11 ADDRESS
012334  032737  100000  001366            BIT     #BIT15,STAT1    ;IS IT A DMC?
012342  001406                            BEQ     .+16            ;BR IF YES
012344  032737  000001  001372            BIT     #BIT0,STAT3     ;KMC WITH BIT0 SET?
012352  001002                            BNE     .+6             ;BR IF YES
012354  000137  013402                    JMP     14$             ;SKIP TEST
012360  032737  010000  001366            BIT     #BIT12,STAT1    ;LU PRESENT?
012366  001372                            BNE     .-12            ;BR IF NO
012370  013700  021370                    MOV     RCOUNT,R0       ;CLEAR RECEIVER BUFFER
012374  062700  000002                    ADD     #2,R0           ;CLEAR 2 MORE LOCATIONS
012400  012702  021372                    MOV     #RBUF,R2        ;CLEAR OUT RECEIVE BUFFER
012404  105022                   10$:     CLRB    (R2)+           ;CLEAR BUFFER
012406  005300                            DEC     R0              ;DONE YET!
012410  001375                            BNE     10$             ;NO
012412  005037  021316                    CLR     TFLAG           ;SET TFLAG TO 0
012416  005037  021320                    CLR     RFLAG           ;SET RFLAG TO 0
012422  012711  040000                    MOV     #BIT14,(R1)     ;MASTER CLEAR
012426  032737  100000  001366            BIT     #BIT15,STAT1    ;CRAM?
012434  001402                            BEQ     .+6             ;BR IF NO
012436  012711  100000                    MOV     #BIT15,(R1)     ;IF CRAM SET RUN
012442  105227  000000                    INCB    #0              ;DELAY
012446  001375                            BNE     .-4             ;DELAY
012450  005037  001416                    CLR     TEMP            ;GET SET TO DELAY
012454  005711                   1$:      TST     (R1)            ;RUN SET?
012456  100405                            BMI     .+14            ;BR IF YES
012460  005237  001416                    INC     TEMP            ;INC DELAY
012464  001373                            BNE     1$              ;BR IF NOT DONE
012466  104014                            HLT     14              ;ERROR RUN NOT SET
012470  000771                            BR      1$              ;TRY AGAIN
012472  052711  004043                    BIS     #4043,(R1)      ;BASE I, LU LOOP
012476  005037  001416                    CLR     TEMP            ;GET SET TO DELAY
012502  105711                   2$:      TSTB    (R1)            ;RDI SET?
012504  100404                            BMI     .+12            ;BR IF YES
012506  005237  001416                    INC     TEMP            ;INC DELAY
012512  001373                            BNE     2$              ;BR IF NOT DONE
012514  104014                            HLT     14              ;ERROR,RDI NOT SET
```

```
012516  012761  021440  000004          MOV     #BASE,4(R1)      ;SET UP BASE ADDRESS
012524  005061  000006                  CLR     6(R1)            ;CLEAR COUNT
012530  142711  000040                  BICB    #40,(R1)         ;CLEAR RQI
012534  005037  001416                  CLR     TEMP             ;GET SET TO DELAY
012540  105711                  3$:     TSTB    (R1)             ;IS RDI GONE?
012542  100020                          BPL     8$               ;BR IF YES
012544  005237  001416                  INC     TEMP             ;INC DELAY
012550  001373                          BNE     3$               ;BR IF NOT DONE
012552  105761  000002                  TSTB    2(R1)            ;IS THERE A CNTL 0 ERROR
012556  100011                          BPL     18$              ;BR IF NO
012560  016137  000004  001252          MOV     4(R1),TEMP3      ;SAVE SEL4 FOR TYPEOUT
012566  016137  000006  001254          MOV     6(R1),TEMP4      ;SAVE SEL6 FOR TYPEOUT
012574  104016                          HLT     16               ;CNTL 0 ERROR
012576  000137  013402                  JMP     14$              ;FATAL ERROR STOP
012602  104014                  18$:    HLT     14               ;ERROR RDI STILL SET
012604                          8$:
012604  152711  000041                  BISB    #41,(R1)         ;ASK FOR CNTL I
012610  105711                  64$:    TSTB    (R1)             ;WAIT FOR RDI
012612  100376                          BPL     64$              ;BR IF NOT SETY
012614  005061  000006                  CLR     6(R1)            ;SET FULL DUPLEX
012620  142711  000040                  BICB    #40,(R1)         ;CLEAR RQI
012624  105711                  65$:    TSTB    (R1)             ;RDI UP?
012626  100776                          BMI     65$              ;BR IF YES
012630  152711  000044                  BISB    #44,(R1)         ;REC BA/CC
012634  005037  001416                  CLR     TEMP             ;GET SET TO DELAY
012640  105711                  4$:     TSTB    (R1)             ;IS RDI SET?
012642  100404                          BMI     .+12             ;BR IF YES
012644  005237  001416                  INC     TEMP             ;INC DELAY
012650  001373                          BNE     4$               ;BR IF DELAY NOT DONE
012652  104014                          HLT     14               ;ERROR RDI NOT SET
012654  012761  021372  000004          MOV     #RBUF,4(R1)      ;LOAD REC BA
012662  013761  021370  000006          MOV     RCOUNT,6(R1)     ;LOAD REC COUNT
012670  142711  000040                  BICB    #40,(R1)         ;CLEAR RQI
012674  005037  001416                  CLR     TEMP             ;GET SET TO DELAY
012700  105711                  5$:     TSTB    (R1)             ;RDI GONE?
012702  100004                          BPL     .+12             ;BR IF YES
012704  005237  001416                  INC     TEMP             ;INC DELAY
012710  001373                          BNE     5$               ;BR IF NO DONE
012712  104014                          HLT     14               ;ERROR RDI STILL SET
012714  152711  000040                  BISB    #40,(R1)         ;XMIT BA/CC
012720  005037  001416                  CLR     TEMP             ;GET SET TO DELAY
012724  105711                  6$:     TSTB    (R1)             ;RDI SET?
012726  100404                          BMI     .+12             ;BR IF YES
012730  005237  001416                  INC     TEMP             ;INC DELAY
012734  001373                          BNE     6$               ;BR IF NOT DONE
012736  104014                          HLT     14               ;ERROR RDI NOT SET
012740  012761  021324  000004          MOV     #TBUF,4(R1)      ;LOAD XMIT BUFFER
012746  013761  021322  000006          MOV     TCOUNT,6(R1)     ;LOAD COUNT
012754  142711  000040                  BICB    #40,(R1)         ;CLEAR RQI
012760  005037  001416                  CLR     TEMP             ;GET SET TO DELAY
012764  105711                  7$:     TSTB    (R1)             ;RDI GONE?
012766  100004                          BPL     .+12             ;BR IF YES
012770  005237  001416                  INC     TEMP             ;INC DELAY
012774  001373                          BNE     7$               ;BR IF NOT DONE DELAY
012776  104014                          HLT     14               ;ERROR RDI STILL SET
013000  005037  001416          16$:    CLR     TEMP             ;GET SET TO DELAY
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013004  012737  000022  001246               MOV     #22,TEMP1           ;GET SET FOR LONG DELAY
013012  105761  000002          11$:         TSTB    2(R1)               ;RDO SET?
013016  100407                               BMI     17$                 ;BR IF YES
013020  005237  001416                       INC     TEMP                ;INC DELAY
013024  001372                               BNE     11$                 ;BR IF DELAY NOT DONE
013026  005337  001246                       DEC     TEMP1               ;DEC DELAY COUNT
013032  001367                               BNE     11$                 ;BR IF NOT DONE DELAY
013034  104014                               HLT     14                  ;ERROR RDO NOT SET
013036  016137  000002  001250  17$:         MOV     2(R1),TEMP2         ;SAVE SEL2
013044  001001                               BNE     .+4                 ;BR IF OK
013046  104014                               HLT     14                  ;ERROR!!! SEL2 = 0!!!!!!
013050  032761  000004  000002               BIT     #BIT2,2(R1)         ;REC OR XMIT?
013056  001032                               BNE     13$                 ;BR IF REC
013060  005737  021316          12$:         TST     TFLAG               ;FIRST TIME HERE?
013064  001401                               BEQ     .+4                 ;BR IF YES
013066  104014                               HLT     14                  ;ERROR MULTIPLE XMIT DONES
013070  012737  177777  021316               MOV     #-1,TFLAG           ;SET TFLAG TO -1
013076  132761  000001  000002               BITB    #BIT0,2(R1)         ;IS IT CONTROL 0
013104  001401                               BEQ     .+4                 ;BR IF NO
013106  104014                               HLT     14                  ;XMIT ERROR
013110  022761  021324  000004               CMP     #TBUF,4(R1)         ;XMIT BA CORRECT?
013116  001401                               BEQ     .+4                 ;BR IF YES
013120  104014                               HLT     14                  ;XMIT BA ERROR
013122  023761  021322  000006               CMP     TCOUNT,6(R1)        ;COUNT OK?
013130  001401                               BEQ     .+4                 ;BR IF YES
013132  104014                               HLT     14                  ;XMIT COUNT ERROR
013134  142761  000207  000002               BICB    #207,2(R1)          ;CLEAR RDO AND BITS 0-2
013142  000453                               BR      15$                 ;CONTINUE
013144  005737  021320          13$:         TST     RFLAG               ;FIRST TIME HERE?
013150  001401                               BEQ     .+4                 ;BR IF YES
013152  104014                               HLT     14                  ;ERROR MULTIPLE REC DONES
013154  012737  177777  021320               MOV     #-1,RFLAG           ;SET RFLAG TO -1
013162  132761  000001  000002               BITB    #BIT0,2(R1)         ;IS IT CNTL 0
013170  001401                               BEQ     .+4                 ;BR IF NO
013172  104014                               HLT     14                  ;RECEIVE ERROR
013174  022761  021372  000004               CMP     #RBUF,4(R1)         ;REC BA CORRECT?
013202  001401                               BEQ     .+4                 ;BR IF YES
013204  104014                               HLT     14                  ;REC BA ERROR
013206  023761  021370  000006               CMP     RCOUNT,6(R1)        ;COUNT OK?
013214  001401                               BEQ     .+4                 ;BR IF YES
013216  104014                               HLT     14                  ;REC COUNT ERROR
013220  013700  021370                       MOV     RCOUNT,R0           ;GET SET TO CHECK DATA
013224  012702  021324                       MOV     #TBUF,R2            ;R2 POINTS TO GOOD DATA
013230  012703  021372                       MOV     #RBUF,R3            ;R3 POINTS TO RECEIVE DATA
013234  010337  001252          9$:          MOV     R3,TEMP3            ;SAVE ADDRESS FOR TYPEOUT
013240  112205                               MOVB    (R2)+,R5            ;R5 = XMIT DATA
013242  112304                               MOVB    (R3)+,R4            ;R4 = RECEIVE DATA
013244  120504                               CMPB    R5,R4               ;CHECK DATA
013246  001401                               BEQ     .+4                 ;BR IF OK
013250  104013                               HLT     13                  ;DATA ERROR
013252  005300                               DEC     R0                  ;DEC COUNT
013254  001367                               BNE     9$                  ;BR IF NOT DONE
013256  005713                               TST     (R3)                ;THIS SHOULD BE 0. ELSE
013260  001401                               BEQ     .+4                 ;IT RECEIVED TO MUCH!!
013262  104014                               HLT     14                  ;ERROR
013264  142761  000207  000002               BICB    #207,2(R1)          ;CLEAR RDO AND BITS 0-2
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1832  013272  005737  021320              15$:   TST    RFLAG           ;REC DONE?
1833  013276  001640                             BEQ    16$             ;BR IF NO
1834  013300  005737  021316                     TST    TFLAG           ;XMIT DONE?
1835  013304  001635                             BEQ    16$             ;BR IF NO
1836  013306  004737  022502                     JSR    PC,SHUTDOWN     ;SHUTDOWN DMC
1837  013312  012700  013340                     MOV    #25$,R0         ;POINTER TO EXPECTED SOFT COUNTS
1838  013316  012701  021443              21$:   MOV    #BASE+3,R1      ;POINTER TO ACTUAL COUNTS
1839  013322  012702  000010                     MOV    #10,R2          ;COUNT
1840  013326  122021                      22$:   CMPB   (R0)+,(R1)+     ;COMPARE SOFT ERROR COUNTS
1841  013330  001007                             BNE    23$             ;IF ERROR BR 23$
1842  013332  005302                             DEC    R2              ;DEC COUNT
1843  013334  001374                             BNE    22$             ;CONTINUE CHECKING IF NOT DONE
1844  013336  000421                             BR     24$             ;ALL COUNTS OK, GET OUT
1845  013340     000     000     000      25$:   .BYTE  0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
1846  013343     000     000     000
1847  013346     000     000
1848  013350  113737  021443  001250      23$:   MOVB   BASE+3,TEMP2
1849  013356  113737  021445  001252             MOVB   BASE+5,TEMP3
1850  013364  113737  021447  001254             MOVB   BASE+7,TEMP4
1851  013372  113737  021451  001256             MOVB   BASE+11,TEMP5
1852  013400  104017                             HLT    17
1853  013402                              24$:
1854  013402  104400                      14$:   SCOPE                  ;SCOPE THIS TEST
1855
1856
1857                                             ;************************** TEST 2 **************************
1858                                             ;*OVERRUN TEST
1859                                             ;*IN FREE RUNNING MODE SEND MESSAGE WITH NO RECEIVE
1860                                             ;*BUFFER AVAILABLE, VERIFY THAT AN OVERRUN ERROR OCCURS
1861                                             ;;***********************************************************
1862
1863                                             ;  TEST 2
1864                                             ;---------------
1865  013404  012737  000002  001226      TST2:  MOV    #2,TSTNO
1866  013412  012737  013754  001216             MOV    #TST3,NEXT
1867                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
1868  013420  032737  100000  001366             BIT    #BIT15,STAT1    ;IS IT A DMC?
1869  013426  001406                             BEQ    .+16            ;BR IF YES
1870  013430  032737  000001  001372             BIT    #BIT0,STAT3     ;KMC WITH BIT0 SET?
1871  013436  001002                             BNE    .+6             ;BR IF YES
1872  013440  000137  013736                     JMP    10$             ;SKIP TEST
1873  013444  032737  010000  001366             BIT    #BIT12,STAT1    ;LU PRESENT?
1874  013452  001372                             BNE    .-12            ;BR IF NO
1875  013454  004737  022040                     JSR    PC,BASELD               ;LOAD DMC BASE ADDRESS
1876  013460  004537  022450                     JSR    R5,XFRELD       ;LOAD XMIT BA/CC
1877  013464  021324                             TBUF                   ;BA
1878  013466  000044                             44                     ;CC
1879  013470  012700  000010                     MOV    #10,R0          ;R0 = RETRANSMISSION COUNT
1880  013474  012703  000015                     MOV    #15,R3          ;DELAY COUNT
1881  013500  005037  001416                     CLR    TEMP            ;CLEAR DELAY COUNTER
1882  013504  105761  000002              1$:    TSTB   2(R1)           ;IS RDY 0 SET?
1883  013510  100407                             BMI    .+20            ;BR IF SET
1884  013512  005237  001416                     INC    TEMP            ;INC DELAY COUNTER
1885  013516  001372                             BNE    1$              ;BR IF NOT DONE DELAY
1886  013520  005303                             DEC    R3              ;DEC DELAY COUNT
1887  013522  001370                             BNE    1$              ;BR IF DELAY NOT DONE
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013524  104014                                  HLT     14                      ;ERROR, RDY C NOT SET
013526  000503                                  BR      10$                     ;GET OUT
013530  132761  000001  000002                  BITB    #BIT0,2(R1)             ;IS IT CNTL 0?
013536  001002                                  BNE     11$                     ;BR IF YES
013540  104014                                  HLT     14                      ;ERROR, NOT CNTL 0
013542  000475                                  BR      10$                     ;CONTINUE
013544  012705  000004                  11$:    MOV     #BIT2,R5                ;PUT "EXPECTED" IN R5
013550  016104  000006                          MOV     6(R1),R4                ;PUT "FOUND" IN R4
013554  020504                                  CMP     R5,R4                   ;IS ORUN SET?
013556  001404                                  BEQ     12$                     ;BR IF YES
013560  022704  000001                          CMP     #1,R4                   ;DATA CK ERROR?
013564  001465                                  BEQ     13$                     ;BR IF YES
013566  104015                                  HLT     15                      ;ERROR, ORUN NOT SET
013570  042761  000207  000002          12$:    BIC     #207,2(R1)              ;CLEAR RDO
013576  005037  001416                          CLR     TEMP                    ;RESET DELAY
013602  005300                                  DEC     R0                      ;DEC RETRANS COUNT
013604  001337                                  BNE     1$                      ;COUNTINUE
013606  004737  022502                          JSR     PC,SHUTDOWN             ;SHUTDOWN DMC
013612  032737  020000  001366                  BIT     #BIT13,STAT1            ;IS IT AN M8201?
013620  001446                                  BEQ     10$                     ;SKIP BASE CHECK IF YES
013622  012700  013664                          MOV     #25$,R0                 ;POINTER TO EXPECTED SOFT COUNTS (LOW SPEED)
013626  032737  000002  001372                  BIT     #BIT1,STAT3             ;IS IT HIGH OR LOW
013634  001402                                  BEQ     21$                     ;BR IF LOW
013636  012700  013674                          MOV     #26$,R0                 ;POINTER TO EXPECTED SOFT COUNTS (HIGH SPEED)
013642  012701  021443                  21$:    MOV     #BASE+3,R1              ;POINTER TO ACTUAL COUNTS
013646  012702  000010                          MOV     #10,R2                  ;COUNT
013652  122021                          22$:    CMPB    (R0)+,(R1)+             ;COMPARE SOFT ERROR COUNTS
013654  001013                                  BNE     23$                     ;IF ERROR BR 23$
013656  005302                                  DEC     R2                      ;DEC COUNT
013660  001374                                  BNE     22$                     ;CONTINUE CHECKING IF NOT DONE
013662  000425                                  BR      24$                     ;ALL COUNTS OK, GET OUT
013664     000     000     000          25$:    .BYTE   0,0,0,100,0,0,0,0               ;EXPECTED ERROR COUNTS (LOW SPEED)
013667     100     000     000
013672     000     000
013674     000     000     077          26$:    .BYTE   0,0,77,100,0,0,0,0              ;EXPECTED ERROR COUNTS (HIGH SPEED)
013677     100     000     000
013702     000     000
013704  113737  021443  001250          23$:    MOVB    BASE+3,TEMP2
013712  113737  021445  001252                  MOVB    BASE+5,TEMP3
013720  113737  021447  001254                  MOVB    BASE+7,TEMP4
013726  113737  021451  001256                  MOVB    BASE+11,TEMP5
013734  104017                                  HLT     17
013736                                  24$:
013736  104400                          10$:    SCOPE                           ;SCOPE THIS TEST
013740  042761  000207  000002          13$:    BIC     #207,2(R1)              ;IGNOR THIS ERROR
013746  005037  001416                          CLR     TEMP                    ;RESET DELAY
013752  000654                                  BR      1$                      ;CONTINUE


                                                ;*************************** TEST 3 ****************************
                                                ;*LOST DATA TEST
                                                ;*IN FREE RUNNING MODE SEND A MESSAGE LONGER THAN THE RECEIVE
                                                ;*BUFFER, VERIFY THAT A LOST DATA ERROR OCCURS.
                                                ;;**************************************************************

                                                ;  TEST 3
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                                                  ;---------------
013754  012737  000003  001226         TST3:     MOV     #3,TSTNO
013762  012737  014236  001216                   MOV     #TST4,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
013770  104412                                   MSTCLR                 ;MASTER CLEAR DMC11
013772  032737  100000  001366                   BIT     #BIT15,STAT1   ;IS IT A DMC?
014000  001406                                   BEQ     .+16           ;BR IF YES
014002  032737  000001  001372                   BIT     #BIT0,STAT3    ;KMC WITH BIT0 SET?
014010  001002                                   BNE     .+6            ;BR IF YES
014012  000137  014234                           JMP     10$            ;SKIP TEST
014016  032737  010000  001366                   BIT     #BIT12,STAT1   ;LU PRESENT?
014024  001372                                   BNE     .-12           ;BR IF NO
014026  004737  022040                           JSR     PC,BASELD              ;LOAD DMC BASE ADDRESS
014032  004537  022416                           JSR     R5,RFRELD      ;LOAD RECEIVE BA/CC
014036  021372                                   RBUF                   ;BA
014040  000020                                   20                     ;CC
014042  004537  022450                           JSR     R5,XFRELD      ;LOAD XMIT BA/CC
014046  021324                                   TBUF                   ;BA
014050  000044                                   44                     ;CC
014052  012703  000015                           MOV     #15,R3         ;DELAY COUNT
014056  005037  001416                           CLR     TEMP           ;CLEAR DELAY COUNTER
014062  103761  000002                 1$:       TSTB    2(R1)          ;IS RDY 0 SET?
014066  100407                                   BMI     .+20           ;BR IF SET
014070  005237  001416                           INC     TEMP           ;INC DELAY COUNTER
014074  001372                                   BNE     1$             ;BR IF NOT DONE DELAY
014076  005303                                   DEC     R3             ;DEC DELAY COUNT
014100  001370                                   BNE     1$             ;BR IF DELAY NOT DONE
014102  104014                                   HLT     14             ;ERROR, RDY 0 NOT SET
014104  000453                                   BR      10$            ;GET OUT
014106  132761  000001  000002                   BITB    #BIT0,2(R1)    ;IS IT CNTL 0?
014114  001002                                   BNE     11$            ;BR IF YES
014116  104014                                   HLT     14             ;ERROR NOT CNTL 0
014120  000445                                   BR      10$            ;CONTINUE
014122  012705  000020                 11$:      MOV     #BIT4,R5       ;PUT "EXPECTED" IN R5
014126  016104  000006                           MOV     6(R1),R4       ;PUT "FOUND" IN R4
014132  020504                                   CMP     R5,R4          ;IS LOST DATA SET?
014134  001401                                   BEQ     12$            ;BR IF YES
014136  104015                                   HLT     15             ;ERROR, LOST DATA NOT SET
014140  004737  022502                 12$:      JSR     PC,SHUTDOWN    ;SHUTDOWN DMC
014144  012700  014172                           MOV     #25$,R0        ;POINTER TO EXPECTED SOFT COUNTS
014150  012701  021443                 21$:      MOV     #BASE+3,R1     ;POINTER TO ACTUAL COUNTS
014154  012702  000010                           MOV     #10,R2         ;COUNT
014160  122021                         22$:      CMPB    (R0)+,(R1)+    ;COMPARE SOFT ERROR COUNTS
014162  001007                                   BNE     23$            ;IF ERROR BR 23$
014164  005302                                   DEC     R2             ;DEC COUNT
014166  001374                                   BNE     22$            ;CONTINUE CHECKING IF NOT DONE
014170  000421                                   BR      24$            ;ALL COUNTS OK, GET OUT
014172     000     000     000         25$:      .BYTE   0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
014175     000     000     000
014200     000     000
014202  113737  021443  001250         23$:      MOVB    BASE+3,TEMP2
014210  113737  021445  001252                   MOVB    BASE+5,TEMP3
014216  113737  021447  001254                   MOVB    BASE+7,TEMP4
014224  113737  021451  001256                   MOVB    BASE+11,TEMP5
014232  104017                                   HLT     17
014234                                 24$:
```

```
014234  104400                          10$:    SCOPE                           ;SCOPE THIS TEST



                                                ;*************************** TEST 4 **************************
                                                ;*TRANSMIT NON-EXISTENT MEMORY TEST
                                                ;*IN FREE RUNNING MODE, LOAD A TRANSMIT BA THAT WILL TIME OUT
                                                ;*VERIFY THAT A NON-EXISTENT MEMORY ERROR OCCURS
                                                ;;************************************************************

                                                ;  TEST 4
                                                ;--------------
014236  012737  000004  001226          TST4:   MOV     #4,TSTNO
014244  012737  014510  001216                  MOV     #TST5,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
014252  104412                                  MSTCLR                  ;MASTER CLEAR DMC11
014254  032737  100000  001366                  BIT     #BIT15,STAT1    ;IS IT A DMC?
014262  001406                                  BEQ     .+16            ;BR IF YES
014264  032737  000001  001372                  BIT     #BIT0,STAT3     ;KMC WITH BIT0 SET?
014272  001002                                  BNE     .+6             ;BR IF YES
014274  000137  014506                          JMP     10$             ;SKIP TEST
014300  032737  010000  001366                  BIT     #BIT12,STAT1    ;LU PRESENT?
014306  001372                                  BNE     .-12            ;BR IF NO
014310  004737  022040                          JSR     PC,BASELD               ;LOAD DMC BASE ADDRESS
014314  004537  022450                          JSR     R5,XFRELD       ;LOAD XMIT BA/CC
014320  177320                                  177320                  ;BA
014322  140044                                  140044                  ;CC
014324  012703  000015                          MOV     #15,R3          ;DELAY COUNT
014330  005037  001416                          CLR     TEMP            ;CLEAR DELAY COUNTER
014334  105761  000002                  1$:     TSTB    2(R1)           ;IS RDY O SET?
014340  100407                                  BMI     .+20            ;BR IF SET
014342  005237  001416                          INC     TEMP            ;INC DELAY COUNTER
014346  001372                                  BNE     1$              ;BR IF NOT DONE DELAY
014350  005303                                  DEC     R3              ;DEC DELAY COUNT
014352  001370                                  BNE     1$              ;BR IF DELAY NOT DONE
014354  104014                                  HLT     14              ;ERROR, RDY O NOT SET
014356  000453                                  BR      10$             ;GET OUT
014360  132761  000001  000002                  BITB    #BIT0,2(R1)     ;IS IT CNTL O?
014366  001002                                  BNE     11$             ;BR IF YES
014370  104014                                  HLT     14              ;ERROR, NOT CNTL O
014372  000445                                  BR      10$             ;CONTINUE
014374  012705  000400                  11$:    MOV     #BIT8,R5        ;PUT "EXPECTED" IN R5
014400  016104  000006                          MOV     6(R1),R4        ;PUT "FOUND" IN R4
014404  020504                                  CMP     R5,R4           ;IS NON-EX-MEM SET?
014406  001401                                  BEQ     .+4             ;BR IF YES
014410  104015                                  HLT     15              ;ERROR NON-EX-MEM NOT SET
014412  004737  022502                          JSR     PC,SHUTDOWN     ;SHUTDOWN DMC
014416  012700  014444                          MOV     #25$,R0         ;POINTER TO EXPECTED SOFT COUNTS
014422  012701  021443                  21$:    MOV     #BASE+3,R1      ;POINTER TO ACTUAL COUNTS
014426  012702  000010                          MOV     #10,R2          ;COUNT
014432  122021                          22$:    CMPB    (R0)+,(R1)+     ;COMPARE SOFT ERROR COUNTS
014434  001007                                  BNE     23$             ;IF ERROR BR 23$
014436  005302                                  DEC     R2              ;DEC COUNT
014440  001374                                  BNE     22$             ;CONTINUE CHECKING IF NOT DONE
014442  000421                                  BR      24$             ;ALL COUNTS OK, GET OUT
014444     000     000     000          25$:    .BYTE   0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
014447     000     000     000
```

```
014452     000     000
014454  113737  021443  001250        23$:    MOVB    BASE+3,TEMP2
014462  113737  021445  001252                MOVB    BASE+5,TEMP3
014470  113737  021447  001254                MOVB    BASE+7,TEMP4
014476  113737  021451  001256                MOVB    BASE+11,TEMP5
014504  104017                                HLT     17
014506                                24$:
014506  104400                        10$:    SCOPE                          ;SCOPE THIS TEST



                                              ;*************************** TEST 5 ***************************
                                              ;*RECEIVE NON-EXISTENT MEMORY TEST
                                              ;*IN FREE RUNNING MODE, LOAD A RECEIVE BA THAT WILL TIME OUT
                                              ;*VERIFY THAT A NON-EXISTENT MEMORY ERROR OCCURS
                                              ;;************************************************************


                                              ;  TEST 5
                                              ;---------------
014510  012737  000005  001226        TST5:   MOV     #5,TSTNO
014516  012737  014772  001216                MOV     #TST6,NEXT
                                                                             ;R1 CONTAINS BASE DMC11 ADDRESS
014524  104412                                MSTCLR                         ;MASTER CLEAR DMC11
014526  032737  100000  001366                BIT     #BIT15,STAT1           ;IS IT A DMC?
014534  001406                                BEQ     .+16                   ;BR IF YES
014536  032737  000001  001372                BIT     #BIT0,STAT3            ;KMC WITH BIT0 SET?
014544  001002                                BNE     .+6                    ;BR IF YES
014546  000137  014770                        JMP     10$                    ;SKIP TEST
014552  032737  010000  001366                BIT     #BIT12,STAT1           ;LU PRESENT?
014560  001372                                BNE     .-12                   ;BR IF NO
014562  004737  022040                        JSR     PC,BASELD                  ;LOAD DMC BASE ADDRESS
014566  004537  022416                        JSR     R5,RFRELD              ;LOAD RECEIVE BA/CC
014572  177320                                177320                         ;BA
014574  140044                                140044                         ;CC
014576  004537  022450                        JSR     R5,XFRELD              ;LOAD XMIT BA/CC
014602  021324                                TBUF                           ;BA
014604  000044                                44                             ;CC
014606  012703  000015                        MOV     #15,R3                 ;DELAY COUNT
014612  005037  001416                        CLR     TEMP                   ;CLEAR DELAY COUNTER
014616  105761  000002                1$:     TSTB    2(R1)                  ;IS RDY O SET?
014622  100407                                BMI     .+20                   ;BR IF SET
014624  005237  001416                        INC     TEMP                   ;INC DELAY COUNTER
014630  001372                                BNE     1$                     ;BR IF NOT DONE DELAY
014632  005303                                DEC     R3                     ;DEC DELAY COUNT
014634  001370                                BNE     1$                     ;BR IF DELAY NOT DONE
014636  104014                                HLT     14                     ;ERROR, RDY O NOT SET
014640  000453                                BR      10$                    ;GET OUT
014642  132761  000001  000002                BITB    #BIT0,2(R1)            ;IS IT CNTL O?
014650  001002                                BNE     11$                    ;BR IF YES
014652  104014                                HLT     14                     ;ERROR, NOT CNTL O
014654  000445                                BR      10$                    ;CONTINUE
014656  012705  000400                11$:    MOV     #BIT8,R5               ;PUT "EXPECTED" IN R5
014662  016104  000006                        MOV     6(R1),R4               ;PUT "FOUND" IN R4
014666  020504                                CMP     R5,R4                  ;IS NON-EX-MEM SET?
014670  001401                                BEQ     .+4                    ;BR IF YES
014672  104015                                HLT     15                     ;ERROR NON-EX-MEM NOT SET
014674  004737  022502                        JSR     PC,SHUTDOWN            ;SHUTDOWN DMC
```

```
014700  012700  014726                      MOV     #25$,R0           ;POINTER TO EXPECTED SOFT COUNTS
014704  012701  021443              21$:    MOV     #BASE+3,R1        ;POINTER TO ACTUAL COUNTS
014710  012702  000010                      MOV     #10,R2            ;COUNT
014714  122021                      22$:    CMPB    (R0)+,(R1)+       ;COMPARE SOFT ERROR COUNTS
014716  001007                              BNE     23$               ;IF ERROR BR 23$
014720  005302                              DEC     R2                ;DEC COUNT
014722  001374                              BNE     22$               ;CONTINUE CHECKING IF NOT DONE
014724  000421                              BR      24$               ;ALL COUNTS OK, GET OUT
014726     000     000     000      25$:    .BYTE   0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
014731     000     000     000
014734     000     000
014736  113737  021443  001250      23$:    MOVB    BASE+3,TEMP2
014744  113737  021445  001252              MOVB    BASE+5,TEMP3
014752  113737  021447  001254              MOVB    BASE+7,TEMP4
014760  113737  021451  001256              MOVB    BASE+11,TEMP5
014766  104017                              HLT     17
014770                              24$:
014770  104400                      10$:    SCOPE                     ;SCOPE THIS TEST



                                            ;**************************** TEST 6 ****************************
                                            ;*PROCESSOR ERROR TEST
                                            ;*IN FREE RUNNING MODE, DO A BASE TRANSFER REQUEST AFTER A
                                            ;*BASE HAS BEEN SET UP, VERIFY THAT A PROCESSOR ERROR OCCURS.
                                            ;;**************************************************************

                                            ;  TEST 6
                                            ;--------------
014772  012737  000006  001226      TST6:   MOV     #6,TSTNO
015000  012737  015234  001216              MOV     #TST7,NEXT
                                                                      ;R1 CONTAINS BASE DMC11 ADDRESS
015006  104412                              MSTCLR                    ;MASTER CLEAR DMC11
015010  032737  100000  001366              BIT     #BIT15,STAT1      ;IS IT A DMC?
015016  001406                              BEQ     .+16              ;BR IF YES
015020  032737  000001  001372              BIT     #BIT0,STAT3       ;KMC WITH BIT0 SET?
015026  001002                              BNE     .+6               ;BR IF YES
015030  000137  015232                      JMP     10$               ;SKIP TEST
015034  032737  010000  001366              BIT     #BIT12,STAT1      ;LU PRESENT?
015042  001372                              BNE     .-12              ;BR IF NO
015044  004737  022040                      JSR     PC,BASELD         ;LOAD BASE ADDRESS
015050  152711  000043              12$:    BISB    #43,(R1)          ;2ND BASE REQUEST
015054  105711                              TSTB    (R1)              ;RDI SET?
015056  100376                              BPL     .-2               ;BR IF NO
015060  142711  000040                      BICB    #40,(R1)          ;CLEAR RQI
015064  005037  001416                      CLR     TEMP              ;GET SET TO DELAY
015070  105761  000002              13$:    TSTB    2(R1)             ;RDO SET?
015074  100405                              BMI     14$               ;BR IF YES
015076  005237  001416                      INC     TEMP              ;INC DELAY
015102  001372                              BNE     13$               ;BR IF NOT DONE DELAY
015104  104014                              HLT     14                ;ERROR, RDO NOT SET
015106  000770                              BR      13$               ;TRY AGAIN
015110  132761  000001  000002      14$:    BITB    #BIT0,2(R1        ;IS IS CNTL 0?
015116  001002                              BNE     11$               ;BR IF YES
015120  104014                              HLT     14                ;ERROR NOT CNTL 0
015122  000443                              BR      10$               ;CONTINUE
015124  012705  001000              11$:    MOV     #BIT9,R5          ;PUT "EXPECTED" IN R5
```

```
015130  016104  000006                      MOV     6(R1),R4        ;PUT "FOUND" IN R4
015134  020504                              CMP     R5,R4           ;IS PROC ERROR SET?
015136  001401                              BEQ     .+4             ;BR IF YES
015140  104015                              HLT     15              ;ERROR, PROC ERROR NOT SET
015142  012700  015170                      MOV     #25$,R0         ;POINTER TO EXPECTED SOFT COUNTS
015146  012701  021443              21$:    MOV     #BASE+3,R1      ;POINTER TO ACTUAL COUNTS
015152  012702  000010                      MOV     #10,R2          ;COUNT
015156  122021                      22$:    CMPB    (R0)+,(R1)+     ;COMPARE SOFT ERROR COUNTS
015160  001007                              BNE     23$             ;IF ERROR BR 23$
015162  005302                              DEC     R2              ;DEC COUNT
015164  001374                              BNE     22$             ;CONTINUE CHECKING IF NOT DONE
015166  000421                              BR      24$             ;ALL COUNTS OK, GET OUT
015170     000     000     000      25$:    .BYTE   0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
015173     000     000     000
015176     000     000
015200  113737  021443  001250      23$:    MOVB    BASE+3,TEMP2
015206  113737  021445  001252              MOVB    BASE+5,TEMP3
015214  113737  021447  001254              MOVB    BASE+7,TEMP4
015222  113737  021451  001256              MOVB    BASE+11,TEMP5
015230  104017                              HLT     17
015232                              24$:
015232  104400                      10$:    SCOPE                   ;SCOPE THIS TEST



                                            ;************************** TEST 7 **************************
                                            ;*PROCESSOR ERROR TEST
                                            ;*IN FREE RUNNING MODE DO A RQI WITH AN ILLEGAL ID CODE
                                            ;*VERIFY THAT A PROCESSOR ERROR OCCURS
                                            ;;************************************************************

                                            ;  TEST 7
                                            ;--------------
015234  012737  000007  001226      TST7:   MOV     #7,TSTNO
015242  012737  015476  001216              MOV     #TST10,NEXT
                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
015250  104412                              MSTCLR                  ;MASTER CLEAR DMC11
015252  032737  100000  001366              BIT     #BIT15,STAT1    ;IS IT A DMC?
015260  001406                              BEQ     .+16            ;BR IF YES
015262  032737  000001  001372              BIT     #BIT0,STAT3     ;KMC WITH BIT0 SET?
015270  001002                              BNE     .+6             ;BR IF YES
015272  000137  015474                      JMP     10$             ;SKIP TEST
015276  032737  010000  001366              BIT     #BIT12,STAT1    ;LU PRESENT?
015304  001372                              BNE     .-12            ;BR IF NO
015306  004737  022040                      JSR     PC,BASELD               ;LOAD DMC BASE ADDRESS
015312  152711  000046                      BISB    #46,(R1)        ;RQI AND ILLEGAL CODE
015316  105711                              TSTB    (R1)            ;WAIT FOR RDI
015320  100376                              BPL     .-2             ;BR IF NO RDI
015322  142711  000040                      BICB    #40,(R1)        ;CLEAR RQI
015326  005037  001416                      CLR     TEMP            ;CLEAR COUNTER
015332  105761  000002              1$:     TSTB    2(R1)           ;RDY O SET?
015336  100405                              BMI     .+14            ;BR IF YES
015340  005237  001416                      INC     TEMP            ;BUMP COUNTER DELAY
015344  001372                              BNE     1$              ;BR IF NOT DONE
015346  104014                              HLT     14              ;ERROR NO RDY O
015350  000770                              BR      1$              ;TRY AGAIN
015352  132761  000001  000002              BITB    #BIT0,2(R1)     ;IS IT CNTL O
```

```
015360  001002                                  BNE     11$                     ;BR IF YES
015362  104014                                  HLT     14                      ;ERROR, NOT CNTL C
015364  000443                                  BR      10$                     ;CONTINUE
015366  012705  001000                  11$:    MOV     #BIT9,R5                ;PUT "EXPECTED" IN R5
015372  016104  000006                          MOV     6(R1),R4                ;PUT "FOUND" IN R4
015376  020504                                  CMP     R5,R4                   ;IS PROC ERROR SET?
015400  001401                                  BEQ     .+4                     ;BR IF YES
015402  104015                                  HLT     15                      ;ERROR PROC ERROR NOT SET
015404  012700  015432                          MOV     #25$,R0                 ;POINTER TO EXPECTED SOFT COUNTS
015410  012701  021443                  21$:    MOV     #BASE+3,R1              ;POINTER TO ACTUAL COUNTS
015414  012702  000010                          MOV     #10,R2                  ;COUNT
015420  122021                          22$:    CMPB    (R0)+,(R1)+             ;COMPARE SOFT ERROR COUNTS
015422  001007                                  BNE     23$                     ;IF ERROR BR 23$
015424  005302                                  DEC     R2                      ;DEC COUNT
015426  001374                                  BNE     22$                     ;CONTINUE CHECKING IF NOT DONE
015430  000421                                  BR      24$                     ;ALL COUNTS OK, GET OUT
015432     000     000     000          25$:    .BYTE   0,0,0,0,0,0,0,0 ;EXPECTED ERROR COUNTS
015435     000     000     000
015440     000     000
015442  113737  021443  001250          23$:    MOVB    BASE+3,TEMP2
015450  113737  021445  001252                  MOVB    BASE+5,TEMP3
015456  113737  021447  001254                  MOVB    BASE+7,TEMP4
015464  113737  021451  001256                  MOVB    BASE+11,TEMP5
015472  104017                                  HLT     17
015474                                  24$:
015474  104400                          10$:    SCOPE                           ;SCOPE THIS TEST



                                                ;****************************** TEST 10 ******************************
                                                ;*HALF DUPLEX TEST
                                                ;*IN FREE RUNNING MODE, SET HALF DUPLEX AND L U LOOP
                                                ;*SEND A MESSAGE AND VERIFY THAT THERE ARE NO DONES
                                                ;;***********************************************************************

                                                ;  TEST 10
                                                ;---------------
015476  012737  000010  001226          TST10:  MOV     #10,TSTNO
015504  012737  015632  001216                  MOV     #TST11,NEXT
                                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015512  104412                                  MSTCLR                          ;MASTER CLEAR DMC11
015514  032737  100000  001366                  BIT     #BIT15,STAT1            ;IS IT A DMC?
015522  001406                                  BEQ     .+16                    ;BR IF YES
015524  032737  000001  001372                  BIT     #BIT0,STAT3             ;KMC WITH BIT0 SET?
015532  001002                                  BNE     .+6                     ;BR IF YES
015534  000137  015624                          JMP     10$                     ;SKIP TEST
015540  032737  010000  001366                  BIT     #BIT12,STAT1            ;LU PRESENT?
015546  001372                                  BNE     .-12                    ;BR IF NO
015550  004737  022156                          JSR     PC,BASELH               ;LOAD BASE AND HALF DUPLEX
015554  004537  022416                          JSR     R5,RFRELD               ;LOAD RECEIVE BUFFER
015560  021372                                  RBUF                            ;BA
015562  000044                                  44                              ;CC
015564  004537  022450                          JSR     R5,XFRELD               ;LOAD TRANSMIT BUFFER
015570  021324                                  TBUF                            ;BA
015572  000044                                  44                              ;CC
015574  012703  000003                          MOV     #3,R3                   ;LOAD DELAY COUNT
015600  005037  001416                          CLR     TEMP                    ;CLEAR DELAY
```

```
015604  105761  000002          4$:     TSTB    2(R1)           ;IS DONE SET?
015610  100406                          BMI     5$              ;BR IF YES ,ERROR
015612  005237  001416                  INC     TEMP            ;INC DELAY
015616  001372                          BNE     4$              ;BR IF DELAY NOT DONE
015620  005303                          DEC     R3              ;DEC DELAY COUNT
015622  001370                          BNE     4$              ;BR IF DELAY NOT DONE
015624  104400                  10$:    SCOPE                   ;SCOPE THIS TEST
015626  104014                  5$:     HLT     14              ;ERROR DONE WITH HALF-DUPLEX
015630  000775                          BR      10$             ;GET OUT


                                        ;*************************** TEST 11 ****************************
                                        ;*RESUME TEST
                                        ;*THIS TEST SENDS AND RECEIVES A BUFFER AND SHUTS DOWN THE
                                        ;*DMC. THEN A MASTER CLEAR IS ISSUED AND A BASE WITH RESUME
                                        ;*BIT SET IS GIVEN. ANOTHER BUFFER IS SENT AND RECEIVED.
                                        ;*DATA IS CHECKED.
                                        ;;****************************************************************


                                        ;  TEST 11
                                        ;---------------
015632  012737  000011  001226  TST11:  MOV     #11,TSTNO
015640  012737  016214  001216          MOV     #TS+12,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015646  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015650  032737  100000  001366          BIT     #BIT15,STAT1    ;IS IT A DMC?
015656  001406                          BEQ     .+16            ;BR IF YES
015660  032737  000001  001372          BIT     #BIT0,STAT3     ;KMC WITH BIT0 SET?
015666  001002                          BNE     .+6             ;BR IF YES
015670  000137  016212                  JMP     10$             ;SKIP TEST
015674  032737  010000  001366          BIT     #BIT12,STAT1    ;LU PRESENT?
015702  001372                          BNE     .-12            ;BR IF NO
015704  005037  020060                  CLR     RESUME          ;CLR RESUME FLAG
015710  005737  020060          1$:     TST     RESUME          ;FIRST OR SECOND PASS
015714  001003                          BNE     2$              ;BR IF SECOND
015716  004737  022040                  JSR     PC,BASELD       ;BASE
015722  000402                          BR      3$              ;CONTINUE
015724  004737  022276          2$:     JSR     PC,RESUM        ;BASE WITH RESUME BIT
015730  004537  022416          3$:     JSR     R5,RFRELD       ;RECEIVE BUFFER
015734  021372                          RBUF                    ;BA
015736  000044                          44                      ;CC
015740  004537  022450                  JSR     R5,XFRELD       ;XMIT BUFFER
015744  021324                          TBUF                    ;BA
015746  000044                          44                      ;CC
015750  012703  000030                  MOV     #30,R3          ;DELAY COUNT
015754  012700  000002                  MOV     #2,R0           ;NEED TWO DONES
015760  005037  001416                  CLR     TEMP            ;CLEAR DELAY COUNTER
015764  105761  000002          4$:     TSTB    2(R1)           ;IS RDY O SET?
015770  100407                          BMI     .+20            ;BR IF SET
015772  005237  001416                  INC     TEMP            ;INC DELAY COUNTER
015776  001372                          BNE     4$              ;BR IF NOT DONE DELAY
016000  005303                          DEC     R3              ;DEC DELAY COUNT
016002  001370                          BNE     4$              ;BR IF DELAY NOT DONE
016004  104014                          HLT     14              ;ERROR, RDY O NOT SET
016006  000501                          BR      10$             ;GET OUT
016010  042761  000207  000002          BIC     #207,2(R1)      ;CLEAR DONE
```

```
016016  005300                                   DEC     R0                 ;TWO DONES YET?
016020  001361                                   BNE     4$                 ;BR IF NOT
016022  012702  021324                           MOV     #TBUF,R2           ;ADDRESS OF GOOD DATA
016026  012703  021372                           MOV     #RBUF,R3           ;ADDRESS OF RECEIVED DATA
016032  012700  000044                           MOV     #44,R0             ;COUNT
016036  112205                           6$:     MOVB    (R2)+,R5           ;LOAD GOOD DATA
016040  112304                                   MOVB    (R3)+,R4           ;LOAD FOUND DATA
016042  120504                                   CMPB    R5,R4              ;COMPARE DATA
016044  001401                                   BEQ     7$                 ;BR IF OK
016046  104012                                   HLT     12                 ;DATA ERROR
016050  005300                           7$:     DEC     R0                 ;DONE YET?
016052  001371                                   BNE     6$                 ;BR IF NOT
016054  004737  022502                           JSR     PC,SHUTDOWN        ;SHUTDOWN DMC
016060  005737  020060                           TST     RESUME             ;
016064  001004                                   BNE     8$                 ;BR IF ALL DONE
016066  012737  177777  020060                   MOV     #-1,RESUME         ;SET FLAG FOR SECOND PASS
016074  000705                                   BR      1$                 ;CONTINUE
016076                                   9$:
016076  012700  016140                           MOV     #25$,R0            ;POINTER TO EXPECTED SOFT COUNTS (LOW SPEED)
016102  032737  000002  001372                   BIT     #BIT1,STAT3        ;IS IT HIGH OR LOW
016110  001402                                   BEQ     21$                ;BR IF LOW
016112  012700  016150                           MOV     #26$,R0            ;POINTER TO EXPECTED SOFT COUNTS (HIGH SPEED)
016116  012701  021443                   21$:    MOV     #BASE+3,R1         ;POINTER TO ACTUAL COUNTS
016122  012702  000010                           MOV     #10,R2             ;COUNT
016126  122021                           22$:    CMPB    (R0)+,(R1)+        ;COMPARE SOFT ERROR COUNTS
016130  001013                                   BNE     23$                ;IF ERROR BR 23$
016132  005302                                   DEC     R2                 ;DEC COUNT
016134  001374                                   BNE     22$                ;CONTINUE CHECKING IF NOT DONE
016136  000425                                   BR      24$                ;ALL COUNTS OK, GET OUT
016140     000     000     000           25$:    .BYTE   0,0,0,0,0,0,1,1    ;EXPECTED ERROR COUNTS (LOW SPEED)
016143     000     000     000
016146     001     001
016150     000     000     000           26$:    .BYTE   0,0,0,0,0,0,0,0    ;EXPECTED ERROR COUNTS (HIGH SPEED)
016153     000     000     000
016156     000     000
016160  113737  021443  001250           23$:    MOVB    BASE+3,TEMP2
016166  113737  021445  001252                   MOVB    BASE+5,TEMP3
016174  113737  021447  001254                   MOVB    BASE+7,TEMP4
016202  113737  021451  001256                   MOVB    BASE+11,TEMP5
016210  104017                                   HLT     17
016212                                   24$:
016212  104400                           10$:    SCOPE                      ;SCOPE THIS TEST



                                                 ;****************************** TEST 12 ******************************
                                                 ;*FREE RUNNING DATA TEST (INTERRUPT DRIVEN EXERCISER)
                                                 ;*THIS TEST REPEATEDLY QUEUES UP 7 RECEIVE BUFFERS AND
                                                 ;*7 TRANSMIT BUFFERS AND CHECKS DATA WHEN ALL 7 BUFFERS
                                                 ;*ARE RECEIVED  TRANSMIT COUNTS RANGE FROM 2 TO 104.
                                                 ;*DATA IS A BINARY COUNT PATTERN. THE RESUME FUNCTION
                                                 ;*IS CHECKED IN THIS TEST. THIS TEST USES THE TURNAROUND CONNECTOR
                                                 ;*IF IT IS PRESENT, OTHERWISE LINE UNIT LOOP IS SET.
                                                 ;;*******************************************************************


                                                 ;  TEST 12
                                                 ;-------------
```

```
016214  012737  000012  001226           TST12:  MOV     #12,TSTNO
016222  012737  003364  001216                   MOV     #.EOP,NEXT
                                                                         ;R1 CONTAINS BASE DMC11 ADDRESS
016230  104412                                   MSTCLR                  ;MASTER CLEAR DMC11
016232  032737  100000  001366                   BIT     #BIT15,STAT1    ;IS IT A DMC?
016240  001406                                   BEQ     .+16            ;BR IF YES
016242  032737  000001  001372                   BIT     #BIT0,STAT3     ;KMC WITH BIT0 SET?
016250  001002                                   BNE     .+6             ;BR IF YES
016252  000137  017044                           JMP     ENDEX1          ;SKIP TEST
016256  032737  010000  001366                   BIT     #BIT12,STAT1    ;LU PRESENT?
016264  001372                                   BNE     .-12            ;BR IF NO
016266  012737  000340  177776                   MOV     #340,PS         ;LOCK OUT INTERRUPTS
016274  013700  001366                           MOV     STAT1,R0        ;GET BR LEVEL
016300  006200                                   ASR     R0              ;SHIFT RIGHT 4 TIMES
016302  006200                                   ASR     R0
016304  006200                                   ASR     R0
016306  006200                                   ASR     R0
016310  042700  177437                           BIC     #177437,R0      ;PUT BR LEVEL IN R0
016314  012777  017132  163052                   MOV     #IISR,@DMRVEC   ;LOAD INPUT VECTOR
016322  010077  163050                           MOV     R0,@DMRLVL      ;LOAD LEVEL
016326  012777  017422  163044                   MOV     #OISR,@DMTVEC   ;LOAD OUTPUT VECTOR
016334  010077  163042                           MOV     R0,@DMTLVL      ;LOAD LEVEL

                                                 ;INITIALIZE ALL BUFFER LISTS AND COUNT LISTS

016340  012737  000104  021316                   MOV     #104,TFLAG      ;TFLAG CONTAINS COUNT
016346  012700  020064                           MOV     #XMITBA+2,R0    ;R0 POINTS TO BA LIST
016352  012703  020356                           MOV     #RBUFF,R3       ;R3 CONTAINS BUFFER ADDRESS
016356  010320                           1$:     MOV     R3,(R0)+        ;LOAD BA LIST WITH REC BA
016360  062703  000104                           ADD     #104,R3         ;UPDATE BUFFER ADDRESS
016364  022700  020102                           CMP     #XMITBA+20,R0   ;END OF REC BUFFERS?
016370  001372                                   BNE     1$              ;NO LOAD NEXT ONE
016372  012720  020120                   2$:     MOV     #TBUFF,(R0)+    ;LOAD BA LIST WITH XMIT BA
016376  022700  020120                           CMP     #XMITBA+36,R0   ;END OF XMIT BUFFERS?
016402  001373                                   BNE     2$              ;NO LOAD NEXT BUFFER
016404  012700  020232                           MOV     #RCNTAB+2,R0    ;R0 POINTS TO COUNT LIST
016410  013720  021316                   3$:     MOV     TFLAG,(R0)+     ;LOAD COUNT OF 104
016414  022700  020250                           CMP     #RCNTAB+20,R0   ;END OF REC COUNT LIST?
016420  001373                                   BNE     3$              ;BR IF NO
016422  012737  000005  021314                   MOV     #5,FLAG ;LOOP COUNT
016430  012711  040000                           MOV     #BIT14,(R1)     ;SET MASTER CLEAR
016434  032737  100000  001366                   BIT     #BIT15,STAT1    ;IOP?
016442  001402                                   BEQ     .+6             ;BR IF NO
016444  012711  100000                           MOV     #BIT15,(R1)     ;SET RUN ON IOP
016450  012700  177777                           MOV     #-1,R0          ;R0 IS INPUT DONE COUNTER
016454  005037  020060                   CLRTAB: CLR     RESUME          ;CLEAR RESUME FLAG
016460  012705  020266                           MOV     #RDNTAB,R5      ;GET READY TO CLEAR ALL RECEIVE
016464  005025                           2$:     CLR     (R5)+           ;BUFFERS
016466  022705  021312                           CMP     #RBUFFE,R5      ;END OF BUFFER?
016472  001374                                   BNE     2$              ;BR IF NO
016474  012704  020250                           MOV     #XCNTAB,R4      ;R4 POINTS TO XMIT COUNT LIST
016500  013724  021316                   4$:     MOV     TFLAG,(R4)+     ;LOAD XMIT CHAR COUNT
016504  022704  020266                           CMP     #XCNTAB+16,R4   ;DONE?
016510  001373                                   BNE     4$              ;BR IF NO
016512  005002                           5$:     CLR     R2              ;R2 IS OUTPUT DONE COUNTER
016514  005004                                   CLR     R4              ;R4 IS USED AS INDEX IN OISR
```

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016516  005711                                    TST     (R1)            ;IS RUN SET?
016520  100376                                    BPL     .-2             ;WAIT FOR RUN
016522  152761  000100  000002                    BISB    #BIT6,2(R1)     ;SET IEO
016530  032737  040000  001366                    BIT     #BIT14,STAT1    ;LOOP BACK CONNECTOR?
016536  001002                                    BNE     .+6             ;BR IF YES
016540  052711  004000                            BIS     #BIT11,(R1)     ;SET LINE UNIT LOOP
016544  022737  000005  021314                    CMP     #5,FLAG         ;FIRST TIME?
016552  001003                                    BNE     1$              ;BR IF NOT
016554  052711  000143                            BIS     #143,(R1)       ;SET IEI,RQI,BASE I
016560  000402                                    BR      3$              ;CONTINUE
016562  052711  000144                    1$:     BIS     #144,(R1)       ;SET IEI, RQI, REC BA/CC
016566  005037  001416                    3$:     CLR     TEMP            ;SET UP FOR DELAY COUNT
016572  012737  000022  001250                    MOV     #22,TEMP2       ;GET SET FOR DELAY
016600  005037  177776                            CLR     PS              ;ALLOW INTERRUPTS
016604  022700  000020                    SCAN:   CMP     #20,R0          ;INPUT DONE?
016610  001402                                    BEQ     SCAN2           ;BR IF YES
016612  000137  017102                            JMP     SCAN1           ;BR IF NO
016616  022702  000034                    SCAN2:  CMP     #34,R2          ;XMIT DONE FOR ALL MESSAGES?
016622  001402                                    BEQ     8$              ;BR IF YES
016624  000137  017102                            JMP     SCAN1           ;BR IF NO
016630  022704  000034                    8$:     CMP     #34,R4          ;REC DONE FOR ALL MESSAGES?
016634  001402                                    BEQ     9$              ;BR IF YES
016636  000137  017102                            JMP     SCAN1           ;BR IF NO
016642                                    9$:
016642  012700  020266                            MOV     #RDNTAB,R0      ;GET FIRST REC BUFFER
016646  012002                            5$:     MOV     (R0)+,R2        ;R2 POINTS TO BUFFER
016650  005005                                    CLR     R5              ;R5=EXPECTED
016652  005003                                    CLR     R3              ;R3 = COUNT
016654  010237  001252                    6$:     MOV     R2,TEMP3        ;SAVE ADDRESS FOR TYPEOUT
016660  112204                                    MOVB    (R2)+,R4        ;GET RECEIVE DATA
016662  120504                                    CMPB    R5,R4           ;IS IT CORRECT?
016664  001401                                    BEQ     .+4             ;BR IF YES
016666  104013                                    HLT     13              ;DATA ERROR
016670  005205                                    INC     R5              ;NEXT CHARACTER
016672  005203                                    INC     R3              ;INC COUNT
016674  021003                                    CMP     (R0),R3         ;DONE YET?
016676  001366                                    BNE     6$              ;BR IF NO
016700  062700  000002                            ADD     #2,R0           ;GET NEXT REC BUFFER
016704  022700  020322                            CMP     #RDNTAB+34,R0   ;DONE YET?
016710  001356                                    BNE     5$              ;BR IF NO
016712  012700  000001                            MOV     #1,R0           ;SET R0 TO 1
016716  032737  000001  021314            4$:     BIT     #BIT0,FLAG      ;CHANGE CHAR COUNT FOR NEXT LOOP
016724  001003                                    BNE     1$              ;BR TO SUB 40
016726  005337  021316                            DEC     TFLAG           ;DEC BY ONE
016732  000403                                    BR      2$              ;CONTINUE
016734  162737  000040  021316            1$:     SUB     #40,TFLAG       ;SUBTRACT 40 FRON XMIT COUNT
016742  005337  021314                    2$:     DEC     FLAG            ;DEC LOOP COUNT
016746  001242                                    BNE     CLRTAB          ;GO DO IT AGAIN
016750  152711  000146                    ENDEX:  BISB    #146,(R1)       ;SHUT DOWN DMC
016754  005737  021314                    1$:     TST     FLAG            ;HAS INTERRUPT OCCURED?
016760  001775                                    BEQ     1$              ;BR IF NO
016762  012700  017024                            MOV     #10$,R0         ;R0 POINTS TO LO SPEED COUNTS
016766  032737  000002  001372                    BIT     #BIT1,STAT3     ;IS IT LO SPEED?
016774  001402                                    BEQ     2$              ;BR IF YES
016776  012700  017034                            MOV     #11$,R0         ;R0 POINTS TO HI COUNTS
017002  012701  021443                    2$:     MOV     #BASE+3,R1      ;POINTER TO ACTUAL COUNTS
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017006  012702  000010                       MOV     #10,R2          ;10 COUNTS TO CHECK
017012  122021                       3$:     CMPB    (R0)+,(R1)+     ;CHECK COUNT
017014  103414                               BLO     ENDEX2          ;BR IF ERROR
017016  005302                               DEC     R2              ;DEC COUNT
017020  001374                               BNE     3$              ;BR IF NOT DONE
017022  000410                               BR      ENDEX1          ;ALL OK GET OUT
017024     000     000     000       10$:    .BYTE   0,0,0,0,0,0,5,5 ;EXPECTED LO SPEEJ COUNTS
017027     000     000     000
017032     005     005
017034     000     000     005       11$:    .BYTE   0,0,5,0,0,0,5,5 ;EXPECTED HI SPEED COUNTS
017037     000     000     000
017042     005     005
017044  104400                       ENDEX1: SCOPE                   ;SCOPE THIS TEST
017046  113737  021443  001250       ENDEX2: MOVB    BASE+3,TEMP2    ;SAVE ALL ODD ADDRESSES
017054  113737  021445  001252               MO'B    BASE+5,TEMP3    ;FOR TYPEOUT
017062  113737  021447  001254               MOVB    BASE+7,TEMP4    ;
017070  113737  021451  001256               MOVB    BASE+11,TEMP5
017076  104017                               HLT     17              ;NON ZERO ERROR COUNT
017100  000761                               BR      ENDEX1          ;GET OUT
017102  005337  001416               SCAN1:  DEC     TEMP            ;DECREMENT DELAY COUNTER
017106  001402                               BEQ     1$              ;BR IF ZERO
017110  000137  016604                       JMP     SCAN            ;BR IF NOT DONE DELAY
017114  005337  001250               1$:     DEC     TEMP2           ;DEC DELAY COUNT
017120  001402                               BEQ     2$              ;BR IF DONE DELAY
017122  000137  016604                       JMP     SCAN            ;BR IF NOT DONE
017126  104001                       2$:     HLT     1               ;ERROR HUNG
017130  000745                               BR      ENDEX1          ;GET OUT

                                             ;INPUT INTERRUPT SERVICE ROUTINE

017132  022700  000017               IISR:   CMP     #17,R0          ;PROC. ERROR DONE?
017136  001421                               BEQ     12$             ;BR IF YES
017140  005737  020060                       TST     RESUME          ;IS THIS A RESUME INTERRUPT
017144  001432                               BEQ     8$              ;BR IF NO
017146  032711  000002                       BIT     #BIT1,(R1)      ;CNTL OR BASE?
017152  001407                               BEQ     13$             ;BR IF CNTL I
017154  012761  021440  000004               MOV     #BASE,4(R1)     ;LOAD BASE ADDRESS
017162  012761  010000  000006               MOV     #BIT12,6(R1)    ;WITH RESUME BIT SET
017170  000404                               BR      12$             ;CONTINUE
017172  005061  000006               13$:    CLR     6(R1)           ;SELECT FULL DUPLEX
017176  005037  020060                       CLR     RESUME          ;CLEAR RESUME FLAG
017202  142711  000040               12$:    BICB    #40,(R1)        ;CLEAR RQI
017206  105711                               TSTB    (R1)            ;IS RDI GONE?
017210  100776                               BMI     .-2             ;BR IF NO
017212  005737  020060                       TST     RESUME          ;BASE OR CNTL I?
017216  001403                               BEQ     14$             ;BR IF IT WAS CNTL I
017220  152711  000041                       BISB    #41,(R1)        ;ASK FOR CNTL I
017224  000002                               RTI                     ;RETURN
017226  105011                       14$:    CLRB    (R1)            ;CLEAR BSEL 0
017230  000002                               RTI                     ;RETURN
017232  005700                       8$:     TST     R0              ;FIRST TIME HERE?
017234  100006                               BPL     7$              ;LOAD BASE IF MINUS
017236  012761  021440  000004               MOV     #BASE,4(R1)     ;SET UP BASE ADDRESS
017244  005061  000006                       CLR     6(R1)           ;CLEAR COUNT
017250  000434                               BR      3$              ;CONTINUE
017252  001003                       7$:     BNE     1$              ;CNTL I FULL DUPLEX IF 0
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017254  005061  000006                    CLR     6(R1)               ;SELECT FULL DUPLEX
017260  000430                            BR      3$                  ;CONTINUE
017262  032700  000010            1$:     BIT     #BIT3,R0            ;XMIT?
017266  001013                            BNE     2$                  ;BR IF YES
017270  000241                            CLC                         ;CLEAR CARRY
017272  006100                            ROL     R0                  ;MAKE R0 EVEN
017274  016061  020062  000004            MOV     RECBA(R0),4(R1)     ;LOAD REC BUFFER
017302  016061  020230  000006            MOV     RCNTAB(R0),6(R1);LOAD COUNT
017310  000241                            CLC                         ;CLEAR CARRY
017312  006000                            ROR     R0                  ;GET R0 BACK
017314  000412                            BR      3$                  ;CONTINUE
017316  000241                    2$:     CLC                         ;CLEAR CARRY
017320  006100                            ROL     R0                  ;MAKE IT EVEN
017322  016061  020062  000004            MOV     XMITBA(R0),4(R1);LOAD XMIT BUFFER
017330  016061  020230  000006            MOV     RCNTAB(R0),6(R1);LOAD COUNT
017336  000241                            CLC                         ;CLEAR CARRY
017340  006000                            ROR     R0                  ;PUT IT BACK
017342  142711  000040            3$:     BICB    #40,(R1)            ;CLEAR RQI
017346  105711                            TSTB    (R1)                ;WAIT FOR
017350  100776                            BMI     .-2                 ;RDI TO GO AWAY
017352  005200                            INC     R0                  ;INC COUNT
017354  001003                            BNE     6$                  ;IF 0 ASK FOR CNTL I
017356  152711  000041                    BISB    #41,(R1)            ;ASK FOR CNTL I
017362  000002                            RTI                         ;RETURN
017364  022700  000017            6$:     CMP     #17,R0              ;DONE YET?
017370  001411                            BEQ     4$                  ;BR IF YES
017372  032700  000010                    BIT     #BIT3,R0            ;XMIT?
017376  001003                            BNE     5$                  ;BR IF YES
017400  152711  000044                    BISB    #44,(R1)            ;ASK FOR REC BA/CC
017404  000002                            RTI                         ;RETURN
017406  152711  000040            5$:     BISB    #40,(R1)            ;ASK FOR XMIT BA/CC
017412  000002                            RTI                         ;RETURN
017414  152711  000046            4$:     BISB    #46,(R1)            ;FORCE PROC. ERROR
017420  000002                            RTI                         ;RETURN

                                  ;OUTPUT INTERRUPT SERVICE ROUTINE

017422  032761  000001  000002    OISR:   BIT     #BIT0,2(R1)         ;IS THIS AN ERROR?
017430  001467                            BEQ     1$                  ;BR IF NO
017432  005737  021314                    TST     FLAG                ;IS THIS SHUT DOWN INTERRUPT?
017436  001006                            BNE     9$                  ;BR IF NO
017440  005237  021314                    INC     FLAG                ;YES MAKE FLAG NON-ZERO
017444  022761  001000  000006            CMP     #BIT9,6(R1)         ;SHUT DOWN BIT SET?
017452  001531                            BEQ     10$                 ;YES ALL IS OK
017454  022700  000017            9$:     CMP     #17,R0              ;RESUME INTERRUPT?
017460  001041                            BNE     11$                 ;BR IF NO
017462  022761  001000  000006            CMP     #BIT9,6(R1)         ;PROC. ERROR BIT SET?
017470  001035                            BNE     11$                 ;BR IF NO
017472  005200                            INC     R0                  ;BUMP COUNTER (TO 20)
017474  012711  040000                    MOV     #BIT14,(R1)         ;MASTER CLEAR DEVICE
017500  032737  100000  001366            BIT     #BIT15,STAT1        ;DMC OR KMC?
017506  001405                            BEQ     .+14                ;BR IF DMC
017510  012711  100000                    MOV     #BIT15,(R1)         ;SET RUN ON KMC
017514  105227  000000                    INCB    #0                  ;DELAY ON KMC
017520  001375                            BNE     .-4
017522  012737  177777  020060            MOV     #-1,RESUME          ;SET RESUME FLAG
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```
017530  005711                                  TST     (R1)            ;RUN SET?
017532  100376                                  BPL     .-2             ;BR IF NO
017534  012761  000100  000002                  MOV     #BIT6,2(R1)     ;SET IEO
017542  032737  040000  001366                  BIT     #BIT14,STAT1    ;LOOP BACK CONNECTOR?
017550  001002                                  BNE     .+6             ;BR IF YES
017552  052711  004000                          BIS     #BIT11,(R1)     ;SET LINE UNIT LOOP
017556  052711  000143                          BIS     #143,(R1)       ;ASK FOR PORT (BASE REQUEST
017562  000002                                  RTI                     ;RETURN
017564  016137  000004  001252          11$:    MOV     4(R1),TEMP3     ;SAVE FOR ERROR TYPEOUT
017572  016137  000006  001254                  MOV     6(R1),TEMP4     ;SAVE FOR ERROR TYPEOUT
017600  104016                                  HLT     16              ;CNTL O ERROR
017602  022626                                  CMP     (SP)+,(SP)+     ;ADJUST STACK
017604  000137  017044                          JMP     ENDEX1          ;GET OUT
017610  032761  000004  000002          1$:     BIT     #BIT2,2(R1)     ;RECEIVE?
017616  001053                                  BNE     2$              ;BR IF YES
017620  022761  020120  000004                  CMP     #TBUFF,4(R1)    ;IS XMIT BA CORRECT?
017626  001412                                  BEQ     4$              ;BR IF OK
017630  022761  020121  000004                  CMP     #TBUFF+1,4(R1)  ;IS XMIT BA CORRECT?
017636  001406                                  BEQ     4$              ;BR IF YES
017640  012705  020120                          MOV     #TBUFF,R5       ;R5 = EXPECTED
017644  016137  000004  001252                  MOV     4(R1),TEMP3     ;SAVE FOUND FOR TYPEOUT
017652  104002                                  HLT     2               ;XMIT BA ERROR
017654  005005                          4$:     CLR     R5              ;R5 IS INDEX REG
017656  026561  020250  000006          5$:     CMP     XCNTAB(R5),6(R1);IS CHAR COUNT OK?
017664  001406                                  BEQ     6$              ;BR IF YES
017666  062705  000002                          ADD     #2,R5           ;INC INDEX
017672  022705  000016                          CMP     #16,R5          ;DONE LIST YET?
017676  001367                                  BNE     5$              ;BR IF NO
017700  104003                                  HLT     3               ;XMIT COUNT ERROR
017702  016162  000004  020322          6$:     MOV     4(R1),XDNTAB(R2);STORE XMIT DONE BA
017710  062702  000002                          ADD     #2,R2           ;INC INDEX
017714  016162  000006  020322                  MOV     6(R1),XDNTAB(R2);STORE XMIT DONE CC
017722  062702  000002                          ADD     #2,R2           ;INC INDEX
017726  142761  000207  000002                  BICB    #207,2(R1)      ;CLEAR RDO
017734  000002                                  RTI                     ;RETURN
017736  105011                          10$:    CLRB    (R1)            ;CLEAR SEL0
017740  105061  000002                          CLRB    2(R1)           ;CLEAR SEL2
017744  000002                                  RTI                     ;RETURN
017746  012705  000002                  2$:     MOV     #2,R5           ;SET UP R5 AS INDEX
017752  026561  020062  000004                  CMP     RECBA(R5),4(R1) ;COMPARE WITH LIST OF CORRECT BA'S
017760  001406                                  BEQ     3$              ;BR IF OK?
017762  062705  000002                          ADD     #2,R5           ;INCREMENT R5
017766  022705  000020                          CMP     #20,R5          ;END OF LIST?
017772  001367                                  BNE     2$+4            ;BR IF NO
017774  104004                                  HLT     4               ;REC BA ERROR
017776  005005                          3$:     CLR     R5              ;R5 IS INDEX
020000  026561  020250  000006          7$:     CMP     XCNTAB(R5),6(R1);CHECK FOR CORRECT REC COUNT
020006  001406                                  BEQ     8$              ;BR IF YES
020010  062705  000002                          ADD     #2,R5           ;INCREMENT R5
020014  022705  000016                          CMP     #16,R5          ;END OF LIST?
020020  001367                                  BNE     7$              ;BR IF NOT
020022  104005                                  HLT     5               ;REC COUNT ERROR
020024  016164  000004  020266          8$:     MOV     4(R1),RDNTAB(R4)  ;STORE REC BA
020032  062704  000002                          ADD     #2,R4           ;INC INDEX
020036  016164  000006  020266                  MOV     6(R1),RDNTAB(R4);STORE REC DONE CC
020044  062704  000002                          ADD     #2,R4           ;INC INDEX
```

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020050  142761  000207  000002                  BICB    #207,2(R1)          ;CLEAR RDO
020056  000002                                  RTI                         ;RETURN


                                                ;BUFFERS

020060  000000                          RESUME: 0
020062                                  RECBA:
020062  000017                          XMITBA: .BLKW   17      ;REC & XMIT BA LIST

020120                                  TBUFF:                              ;TRANSMIT DATA
020120     000     001     002          .BYTE   0,1,2,3,4,5,6,7
020123     003     004     005
020126     006     007
020130     010     011     012          .BYTE   10,11,12,13,14,15,16,17
020133     013     014     015
020136     016     017
020140     020     021     022          .BYTE   20,21,22,23,24,25,26,27
020143     023     024     025
020146     026     027
020150     030     031     032          .BYTE   30,31,32,33,34,35,36,37
020153     033     034     035
020156     036     037
020160     040     041     042          .BYTE   40,41,42,43,44,45,46,47
020163     043     044     045
020166     046     047
020170     050     051     052          .BYTE   50,51,52,53,54,55,56,57
020173     053     054     055
020176     056     057
020200     060     061     062          .BYTE   60,61,62,63,64,65,66,67
020203     063     064     065
020206     066     067
020210     070     071     072          .BYTE   70,71,72,73,74,75,76,77
020213     073     074     075
020216     076     077
020220     100     101     102          .BYTE   100,101,102,103,104,105,106,107
020223     103     104     105
020226     106     107

020230  000010                          RCNTAB: .BLKW   10                  ;RECEIVE COUNT TABLE
020250  000007                          XCNTAB: .BLKW   7                   ;TRANSMIT COUNT TABLE

020266  000016                          RDNTAB: .BLKW   16                  ;RECEIVE DONE TABLE (BA CC)
020322  000016                          XDNTAB: .BLKW   16                  ;XMIT DONE TABLE (BA CC)

020356                                  RBUFF:                              ;RECEIVER BUFFERS
020356  000104                          RBUFF1:  .BLKB 104
020462  000104                          RBUFF2:  .BLKB 104
020566  000104                          RBUFF3:  .BLKB 104
020672  000104                          RBUFF4:  .BLKB 104
020776  000104                          RBUFF5:  .BLKB 104
021102  000104                          RBUFF6:  .BLKB 104
021206  000104                          RBUFF7:  .BLKB 104
021312  000000                          RBUFFE: 0                           ;END OF RECEIVER BUFFERS
                                81800
                                81900
```

```
                                        82000
                                        82100                  ;BUFFER AREA
                                        82200                  ;-----------
                                        82300
021314  000000                          82400           FLAG:   0
021316  000000                          82500           TFLAG:  0
021320  000000                          92600           RFLAG:  0
021322  000044                          82700           TCOUNT: 44
021324  041101  042103  043105          82800           TBUF:   .ASCII/ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789/
021332  044107  045111  046113
021340  047115  050117  051121
021346  052123  053125  054127
021354  055131  030460  031462
021362  032464  033465  034470
                                        82900           .EVEN
021370  000044                          83000           RCOUNT: 44
021372  021440                          83100           RBUF:   .=.+46
                                        83200           .EVEN
021440  022040                          83300           BASE:   .=.+256.
                                        00300
                                        00400
                                        00500           ;SUBROUTINES
                                        00600           ;-----------
                                        00700
                                        00800
022040                                  00900           BASELD:
                                        01000                   ;THIS SUBROUTINE LOADS THE DMC WITH A BASE ADDRESS
                                        01100                   ;AND PUTS DMC INTO FULL-DUPLEX MODE
                                        01200
022040  012711  040000                  01300                   MOV     #BIT14,(R1)     ;MASTER CLEAR
022044  032737  100000  001366          01400                   BIT     #BIT15,STAT1    ;CRAM?
022052  001402                          01500                   BEQ     .+6             ;BR IF NO
022054  012711  100000                  01600                   MOV     #BIT15,(R1)     ;IF CRAM SET RUN
022060  105227  000000                  01700                   INCB    #0              ;DELAY
022064  001375                          01800                   BNE     .-4             ;BR IF NOT DONE DELAY
022066  005711                          01900           1$:     TST     (R1)            ;IS RUN SET?
022070  100376                          02000                   BPL     1$              ;BR IF NO
022072  052711  004000                  02100                   BIS     #BIT11,(R1)     ;SET LU LOOP
022076  152711  000043                  02200                   BISB    #43,(R1)        ;BASE REQUEST
022102  105711                          02300           2$:     TSTB    (R1)            ;RDY I SET?
022104  100376                          02400                   BPL     2$              ;BR IF NO
022106  012761  021440  000004          02500                   MOV     #BASE,4(R1)     ;LOAD BASE ADDRESS
022114  005061  000006                  02600                   CLR     6(R1)           ;CLEAR CC
022120  142711  000040                  02700                   BICB    #40,(R1)        ;CLEAR RQI
022124  105711                          02800           3$:     TSTB    (R1)            ;RDY I CLEAR?
022126  100776                          02900                   BMI     3$              ;BR IF NO
022130  152711  000041                                          BISB    #41,(R1)        ;ASK FOR CNTL I
022134  105711                                          64$:    TSTB    (R1)            ;WAIT FOR RDI
022136  100376                                                  BPL     64$             ;BR IF NOT SETY
022140  005061  000006                                          CLR     6(R1)           ;SET FULL DUPLEX
022144  142711  000040                                          BICB    #40,(R1)        ;CLEAR RQI
022150  105711                                          65$:    TSTB    (R1)            ;RDI UP?
022152  100776                                                  BMI     65$             ;BR IF YES
022154  000207                          03100                   RTS     PC              ;RETURN
                                        03200
022156                                  03300           BASELH:
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                                  03400          ;THIS SUBROUTINE LOADS THE DMC WITH A BASE ADDRESS
                                  03500          ;AND PUTS DMC INTO HALF-DUPLEX MODE
                                  03600
022156  012711  040000            03700          MOV     #BIT14,(R1)     ;MASTER CLEAR
022162  032737  100000  001366    03800          BIT     #BIT15,STAT1    ;CRAM?
022170  001402                    03900          BEQ     .+6             ;BR IF NO
022172  012711  100000            04000          MOV     #BIT15,(R1)     ;IF CRAM SET RUN
022176  105227  000000            04100          INCB    #0              ;DELAY
022202  001375                    04200          BNE     .-4             ;BR IF NOT DONE DELAY
022204  005711                    04300  1$:     TST     (R1)            ;IS RUN SET?
022206  100376                    04400          BPL     1$              ;BR IF NO
022210  052711  004000            04500          BIS     #BIT11,(R1)     ;SET LU LOOP
022214  152711  000043            04600          BISB    #43,(R1)        ;BASE REQUEST
022220  105711                    04700  2$:     TSTB    (R1)            ;RDY I SET?
022222  100376                    04800          BPL     2$              ;BR IF NO
022224  012761  021440  000004    04900          MOV     #BASE,4(R1)     ;LOAD BASE ADDRESS
022232  005061  000006            05000          CLR     6(R1)           ;CLEAR CC
022236  142711  000040            05100          BICB    #40,(R1)        ;CLEAR RQI
022242  105711                    05200  3$:     TSTB    (R1)            ;RDY I CLEAR?
022244  100776                    05300          BMI     3$              ;BR IF NO
022246  152711  000041                           BISB    #41,(R1)        ;ASK FOR CNTL I
022252  105711                           64$:    TSTB    (R1)            ;WAIT FOR RDI
022254  100376                                   BPL     64$             ;BR IF NOT SETY
022256  012761  002000  000006                   MOV     #BIT10,6(R1)    ;SET HALF DUPLEX
022264  142711  000040                           BICB    #40,(R1)        ;CLEAR RQI
022270  105711                           65$:    TSTB    (R1)            ;RDI UP?
022272  100776                                   BMI     65$             ;BR IF YES
022274  000207                    05500          RTS     PC              ;RETURN
                                  05600
022276                            05700  RESUM:
                                  05800          ;THIS SUBROUTINE LOADS THE DMC WITH A BASE ADDRESS
                                  05900          ;WITH RESUME BIT SET AND PUTS DMC INTO FULL-DUPLEX MODE
                                  06000
022276  012711  040000            06100          MOV     #BIT14,(R1)     ;MASTER CLEAR
022302  032737  100000  001366    06200          BIT     #BIT15,STAT1    ;CRAM?
022310  001402                    06300          BEQ     .+6             ;BR IF NO
022312  012711  100000            06400          MOV     #BIT15,(R1)     ;IF CRAM SET RUN
022316  105227  000000            06500          INCB    #0              ;DELAY
022322  001375                    06600          BNE     .-4             ;BR IF NOT DONE DELAY
022324  005711                    06700  1$:     TST     (R1)            ;IS RUN SET?
022326  100376                    06800          BPL     1$              ;BR IF NO
022330  052711  004000            06900          BIS     #BIT11,(R1)     ;SET LU LOOP
022334  152711  000043            07000          BISB    #43,(R1)        ;BASE REQUEST
022340  105711                    07100  2$:     TSTB    (R1)            ;RDY I SET?
022342  100376                    07200          BPL     2$              ;BR IF NO
022344  012761  021440  000004    07300          MOV     #BASE,4(R1)     ;LOAD BASE ADDRESS
022352  012761  010000  000006    07400          MOV     #BIT12,6(R1)    ;SET RESUME BIT
022360  142711  000040            07500          BICB    #40,(R1)        ;CLEAR RQI
022364  105711                    07600  3$:     TSTB    (R1)            ;RDY I CLEAR?
022366  100776                    07700          BMI     3$              ;BR IF NO
022370  152711  000041                           BISB    #41,(R1)        ;ASK FOR CNTL I
022374  105711                           64$:    TSTB    (R1)            ;WAIT FOR RDI
022376  100376                                   BPL     64$             ;BR IF NOT SETY
022400  005061  000006                           CLR     6(R1)           ;SET FULL DUPLEX
022404  142711  000040                           BICB    #40,(R1)        ;CLEAR RQI
022410  105711                           65$:    TSTB    (R1)            ;RDI UP?
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 2840  022412  100776                                    BMI     65$               ;BR IF YES
 2841  022414  000207                     07900          RTS     PC                ;RETURN
 2842                                     08000
 2843  022416                             08100  RFRELD:
 2844                                     08200          ;THIS SUBROUTINE LOADS THE DMC WITH A RECEIVE BA/CC
 2845                                     08300
 2846  022416  152711  000044             08400          BISB    #44,(R1)          ;REC BA/CC REQUEST
 2847  022422  105711                     08500  1$:     TSTB    (R1)              ;RDY I SET?
 2848  022424  100376                     08600          BPL     1$                ;BR IF NO
 2849  022426  012561  000004             08700          MOV     (R5)+,4(R1)       ;LOAD REC BA
 2850  022432  012561  000006             08800          MOV     (R5)+,6(R1)       ;LOAD REC CC
 2851  022436  142711  000040             08900          BICB    #40,(R1)          ;CLEAR RQI
 2852  022442  105711                     09000  2$:     TSTB    (R1)              ;IS RDY I CLEAR
 2853  022444  100776                     09100          BMI     2$                ;BR IF NO
 2854  022446  000205                     09200          RTS     R5                ;RETURN
 2855                                     09300
 2856  022450                             09400  XFRELD:
 2857                                     09500          ;THIS SUBROUTINE LOADS THE DMC WITH A TRANSMIT BA/CC
 2858                                     09600
 2859  022450  152711  000040             09700          BISB    #40,(R1)          ;XMIT BA/CC REQUEST
 2860  022454  105711                     09800  1$:     TSTB    (R1)              ;RDY I SET?
 2861  022456  100376                     09900          BPL     1$                ;BR IF NO
 2862  022460  012561  000004             10000          MOV     (R5)+,4(R1)       ;LOAD XMIT BA
 2863  022464  012561  000006             10100          MOV     (R5)+,6(R1)       ;LOAD XMIT CC
 2864  022470  142711  000040             10200          BICB    #40,(R1)          ;CLEAR RQI
 2865  022474  105711                     10300  2$:     TSTB    (R1)              ;IS RDY I CLEAR
 2866  022476  100776                     10400          BMI     2$                ;BR IF NO
 2867  022500  000205                     10500          RTS     R5                ;RETURN
 2868                                     10600
 2869                                     10700
 2870  022502                             10800  SHUTDOWN:
 2871                                     10900          ;THIS SUBROUTINE FORCES THE DMC TO UPDATE THE BASE TABLE
 2872                                     11000
 2873  022502  042761  000207  000002     11100          BIC     #207,2(R1)        ;CLEAR ANY OUTPUT DONES
 2874  022510  152711  000046             11200          BISB    #46,(R1)          ;ASK FOR ILLEGAL REQUEST
 2875  022514  105711                     11300  1$:     TSTB    (R1)              ;RDI SET?
 2876  022516  100376                     11400          BPL     1$                ;BR IF NO
 2877  022520  142711  000040             11500          BICB    #40,(R1)          ;CLEAR RQI
 2878  022524  105761  000002             11600  2$:     TSTB    2(R1)             ;OUTPUT DONE SET?
 2879  022530  100375                     11700          BPL     2$                ;BR IF NOT
 2880  022532  000207                     11800          RTS     PC                ;RETURN
 2881                                     11900
 2882                                     00300
       022534  052377  040522  051516     00400  EM2:    .ASCIZ  <377>/TRANSMIT BA ERROR/
       022557     377  051124  047101     00500  EM3:    .ASCIZ  <377>/TRANSMIT COUNT ERROR/
       022605     377  042522  042503     00600  EM4:    .ASCIZ  <377>/RECEIVE BA ERROR/
       022627     377  042522  042503     00700  EM5:    .ASCIZ  <377>/RECEIVE COUNT ERROR/
       022654  051377  041505  044505     00800  EM11:   .ASCIZ  <377>/RECEIVE DATA ERROR/
       022700  043377  042522  020105     00900  EM12:   .ASCIZ  <377>/FREE RUNNING ERROR/
       022724  041777  047117  051124     01000  EM13:   .ASCIZ  <377>/CONTROL OUT ERROR/
       022747     377  047111  042524     01100  EM14:   .ASCIZ  <377>/INTERNAL DDCMP ERROR COUNTS NON ZERO
                                          01200
       023015     377  054105  042520     01300  DH1:    .ASCIZ  <377>/EXPECTED  FOUND  ADDRESS
       023047     377  054105  042520     01400  DH2:    .ASCIZ  <377>/EXPECTED  FOUND/
       023070  020377  042523  032114     01500  DH3:    .ASCIZ  <377>/ SEL4     SEL6
       023111     377  040502  042523     01600  DH4:    .ASCIZ  <377  BASE+3 THRU BASE+12
```

```
023137      377  046504  030503  01700   DH5:    .ASCIZ  <377>/DMC11 IS HUNG/
                                 01800   .EVEN
                                 01900
023156  000003                   02000   DT1:    3
023160     006     004           02100           .BYTE   6,4
023162  001264                   02200           SAVR2
023164     006     004           02300           .BYTE   6,4
023166  001270                   02400           SAVR4
023170     004     002           02500           .BYTE   4,2
023172  001260                   02600           SAVR0
023174  000003                   02700   DT2:    3
023176     006     004           02800           .BYTE   6,4
023200  001272                   02900           SAVR5
023202     006     004           03000           .BYTE   6,4
023204  001270                   03100           SAVR4
023206     004     002           03200           .BYTE   4,2
023210  001264                   03300           SAVR2
023212  000003                   03400   DT3:    3
023214     006     004           03500           .BYTE   6,4
023216  001272                   03600           SAVR5
023220     006     004           03700           .BYTE   6,4
023222  001270                   03800           SAVR4
023224     004     002           03900           .BYTE   4,2
023226  001252                   04000           TEMP3
023230  000002                   04100   DT4:    2
023232     003     007           04200           .BYTE   3,7
023234  001272                   04300           SAVR5
023236     003     002           04400           .BYTE   3,2
023240  001270                   04500           SAVR4
023242  000002                   04600   DT5:    2
023244     006     004           04700           .BYTE   6,4
023246  001272                   04800           SAVR5
023250     006     002           04900           .BYTE   6,2
023252  001270                   05000           SAVR4
023254  000003                   05100   DT6:    3
023256     003     010           05200           .BYTE   3,10
023260  001272                   05300           SAVR5
023262     003     004           05400           .BYTE   3,4
023264  001270                   05500           SAVR4
023266     004     002           05600           .BYTE   4,2
023270  021314                   05700           FLAG
023272  000003                   05800   DT7:    3
023274     003     010           05900           .BYTE   3,10
023276  001272                   06000           SAVR5
023300     003     004           06100           .BYTE   3,4
023302  001270                   06200           SAVR4
023304     004     002           06300           .BYTE   4,2
023306  001264                   06400           SAVR2
023310  000003                   06500   DT10:   3
023312     003     007           06600           .BYTE   3,7
023314  001272                   06700           SAVR5
023316     003     004           06800           .BYTE   3,4
023320  001270                   06900           SAVR4
023322     006     002           07000           .BYTE   6,2
023324  001252                   07100           TEMP3
023326  000002                   07200   DT11:   2
```

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023330      006     004     07300             .BYTE   6,4
023332   001252             07400             TEMP3
023334      006     002     07500             .BYTE   6,2
023336   001254             07600             TEMP4
023340   000010             07700   DT12:     10
023342      003     002     07800             .BYTE   3,2
023344   001250             07900             TEMP2
023346      003     002     08000             .BYTE   3,2
023350   021444             08100             BASE+4
023352      003     002     08200             .BYTE   3,2
023354   001252             08300             TEMP3
023356      003     002     08400             .BYTE   3,2
023360   021446             08500             BASE+6
023362      003     002     08600             .BYTE   3,2
023364   001254             08700             TEMP4
023366      003     002     08800             .BYTE   3,2
023370   021450             08900             BASE+10
023372      003     002     09000             .BYTE   3,2
023374   001256             09100             TEMP5
023376      003     002     09200             .BYTE   3,2
023400   021452             09300             BASE+12
023402   000002             09400   DT13:     2
023404      006     004     09500             .BYTE   6,4
023406   001272             09600             SAVR5
023410      006     002     09700             .BYTE   6,2
023412   001270             09800             SAVR4
                            09900
023414                      10000   .ERRTAB:
023414   000000             10100             0
023416   000000             10200             0
023420   000000             10300             0
023422   022700             10400   EM12
023424   023137             10500   DH5       ;HLT     1
023426   000000             10600   0
023430   022534             10700   EM2
023432   023047             10800   DH2       ;HLT     2
023434   023402             10900   DT13
023436   022557             11000   EM3
023440   000000             11100   0         ;HLT     3
023442   000000             11200   0
023444   022605             11300   EM4
023446   000000             11400   0         ;HLT     4
023450   000000             11500   0
023452   022627             11600   EM5
023454   000000             11700   0
023456   000000             11800   0
023460   022605             11900   EM4
023462   023047             12000   DH2       ;HLT     6
023464   023242             12100   DT5
023466   022627             12200   EM5
023470   023047             12300   DH2       ;HLT     7
023472   023230             12400   DT4
023474   000000             12500   0
023476   023015             12600   DH1       ;HLT     10
023500   023254             12700   DT6
023502   000000             12800   0
```

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        023504  023015                  12900   DH1      ;HLT    11
        023506  023272                  13000   DT7
        023510  000000                  13100   0
        023512  023047                  13200   DH2      ;HLT    12
        023514  023230                  13300   DT4
        023516  022654                  13400   EM11
        023520  023015                  13500   DH1      ;HLT    13
        023522  023310                  13600   DT10
        023524  022700                  13700   EM12
        023526  000000                  13800   0        ;HLT    14
        023530  000000                  13900   0
        023532  022700                  14000   EM12
        023534  023047                  14100   DH2      ;HLT    15
        023536  023242                  14200   DT5
        023540  022724                  14300   EM13
        023542  023070                  14400   DH3      ;HLT    16
        023544  023326                  14500   DT11
        023546  022747                  14600   EM14
        023550  023111                  14700   DH4      ;HLT    17
        023552  023340                  14800   DT12
                                        14900
                                        15000
        023554                          15100   CORMAX:
                000001                  15600   .END
```

```
ADRCNT= 004373            879*   915*   924#
AUDONE  003024            569    608    613    659#
AUSTRT  002446            568#   663
AUTO.S  010512            526    1368#
BASE    021440            1720   1838   1848   1849   1850   1851   1912   1925   1926   1927   1928   1984   1994
                          1995   1996   1997   2047   2057   2058   2059   2060   2113   2123   2124   2125   2126
                          2173   2183   2184   2185   2186   2233   2243   2244   2245   2246   2358   2371   2372
                          2373   2374   2503   2517   2518   2519   2520   2540   2556   2746#  2769   2799   2829
                          2882
BASELD  022040            1875   1356   2022   2085   2151   2211   2315   2753#
BASELH  022156            2271   2783#
BINWRD  004714             965*   968*   969   1006#
BIT0   = 000001             95#  1155   1156   1687   1793   1808   1870   1890   1951   1973   2017   2036   2080
                          2102   2146   2163   2206   2223   2266   2307   2398   2489   2597
BIT1   = 000002             94#   531   1149   1155   1156   1449   1532   1545   1909   2355   2500   2538
BIT10  = 002000             85#  1513   1524   2807
BIT11  = 004000             84#  2453   2621   2765   2795   2825
BIT12  = 010000             83#  1464   1543   1690   1873   1954   2020   2083   2149   2209   2269   2310   2401
                          2541   2830
BIT13  = 020000             82#  1467   1516   1547   1906
BIT14  = 040000             81#   781   1478   1480   1547   1558   1700   2432   2451   2609   2619   2757   2787
                          2817
BIT15  = 100000             80#   485    572    575    596    599   1451   1519   1685   1701   1703   1866   1949
                          2015   2078   2144   2204   2264   2305   2396   2433   2435   2610   2612   2758   2760
                          2788   2790   2818   2820
BIT2   = 000004             93#   531    712   1156   1787   1894   2629
BIT3   = 000010             92#  1549   1556   2562   2586
BIT4   = 000020             91#  1139   1162   1164   1977
BIT5   = 000040             90#  1661
BIT6   = 000100             89#  1144   1145   1551   2450   2618
BIT7   = 000200             88#  1145   1265   1661
BIT8   = 000400             87#  1523   1538   1540   1553   1555   1561   1564   1622   2040   2106
BIT9   = 001000             86#  1521   1523   1535   1561   1564   1620   1622   2167   2227   2602   2606
BM      007054            1187#  1492
BRLVL   012252            1617   1627   1635   1647#
BRW     003730             718    804#
BRX     003732             719    805#
CHRCNT  004712             963*   966    970    986*  1004#  1005
CKSWR   007606             512    779    811   1026   1212#
CKSWR1  007666            1225#  1237
CKSWR2  007700            1228#
CKSWR3  007704            1230#
CKSWR4  007710            1231#  1239   1246
CKSWR5  010014            1213   1220   1255#
CLKX    001242             171#
CLRTAB  016454            2437#  2495
CNERR   007277             626   1187#
CNT.MA  001702             196    364#   484    486    488   1293
CNVRT  = 104411            233#   623    738    740    742    744   1060   1062   1122   1228
CONERR  007223             621   1187#
CCNN    007114            1187#  1469
CONTAB  002776             630    643#
CONVRT= 104410             231#   543    629   1076   1391
CCPMAX  023554            2882#
CRAM    006606            1187#  1430
CREAM   001320             195#   483*  1289*  1290   1292*  1296
```

```
CSR      006510                1187#    1395
CSRMAP   010514                1370#
CYCLE    010060                 720      761      762     1280#
DATABP   005216                1049*    1052     1074     1077#
DATACL=  104415                 241#
DATAHD   005204                1048*    1070     1073#
DELAY =  104413                 237#
DEVADR   004370                 877*     912      922#
DEVTAB   003010                 583      648#
DH1      023015                2882#
DH2      023047                2882#
DH3      023070                2882#
DH4      023111                2882#
DH5      023137                2882#
DISPLA   001200                 142#     498*     504*     735*
DISPRE   000174                 128#     504
DMACTV   001306                 189#     521      676*     677     1280     1294     1376*    1577*    1583*    1584*    1588     1613
DMCM     007320                 634     1187#
DMCR00   001500                 279#
DMCR01   001510                 284#
DMCR02   001520                 289#
DMCR03   001530                 294#
DMCR04   001540                 299#
DMCR05   001550                 304#
DMCR06   001560                 309#
DMCR07   001570                 314#
DMCR10   001600                 319#
DMCR11   001610                 324#
DMCR12   001620                 329#
DMCR13   001630                 334#
DMCR14   001640                 339#
DMCR15   001650                 344#
DMCR16   001660                 349#
DMCR17   001670                 354#
DMCSR    001404                 262#     568*     602      607*     612*     647      765      802     1094     1117     1163     1298*    1307
                               1356
DMCSRH   001406                 263#    1144*    1145*    1149*    1155*    1156*    1162*    1164*    1307*    1308*    1309
DMCTL    001410                 264#    1309*    1310*    1311
DMNUM    001310                 190#     479      751     1374*    1389*    1568*    1569     1578     1580
DMP04    001412                 265#    1133*    1139     1176     1181     1311*    1312*    1313
DMP06    001414                 266#    1150*    1313*    1314*
DMRLVL   001376                 259#    1316*    1317*    1318     2411*
DMRVEC   001374                 258#     768     1299*    1300*    1316     2410*
DMS100   001502                 280#
DMS101   001512                 285#
DMS102   001522                 290#
DMS103   001532                 295#
DMS104   001542                 300#
DMS105   001552                 305#
DMS106   001562                 310#
DMS107   001572                 315#
DMS110   001602                 320#
DMS111   001612                 325#
DMS112   001622                 330#
DMS113   001632                 335#
DMS114   001642                 340#
```

```
DMS115  001652          345#
DMS116  001662          350#
DMS117  001672          355#
DMS200  001504          281#
DMS201  001514          286#
DMS202  001524          291#
DMS203  001534          296#
DMS204  001544          301#
DMS205  001554          306#
DMS206  001564          311#
DMS207  001574          316#
DMS210  001604          321#
DMS211  001614          326#
DMS212  001624          331#
DMS213  001634          336#
DMS214  001644          341#
DMS215  001654          346#
DMS216  001664          351#
DMS217  001674          356#
DMS300  001506          282#
DMS301  001516          287#
DMS302  001526          292#
DMS303  001536          297#
DMS304  001546          302#
DMS305  001556          307#
DMS306  001566          312#
DMS307  001576          317#
DMS310  001606          322#
DMS311  001616          327#
DMS312  001626          332#
DMS313  001636          337#
DMS314  001646          342#
DMS315  001656          347#
DMS316  001666          352#
DMS317  001676          357#
DMTLVL  001402          261#    1320*   1321*   2413*
DMTVEC  001400          260#    1318*   1319*   1320    2412*
DM.END  001700          359#    1372
DM.MAP  001500          195      278#    483     536     546     662     1290    1292    1370    1375    1605
DONE    003734          784      786*    806#   1216*
DT1     023156         2882#
DT10    023310         2882#
DT11    023326         2882#
DT12    023340         2882#
DT13    023402         2882#
DT2     023174         2882#
DT3     023212         2882#
DT4     023230         2882#
DT5     023242         2882#
DT6     023254         2882#
DT7     023272         2882#
EM11    022654         2882#
EM12    022700         2882#
EM13    022724         2882#
EM14    022747         2882#
EM2     022534         2882#
```

```
EM3      022557            2882#
EM4      022605            2882#
CM5      022627            2882#
ENDEX    016750            2496#
ENDEX1   017044            2400     2509     2516#    2522     2530     2628
ENDEX2   017046            2506     2517#
ERCT00   001704             366#
ERCT01   001710             369#
ERCT02   001714             372#
ERCT03   001720             375#
ERCT04   001724             378#
ERCT05   001730             381#
ERCT06   001734             384#
ERCT07   001740             387#
ERCT10   001744             390#
ERCT11   001750             393#
ERCT12   001754             396#
ERCT13   001760             399#
ERCT14   001764             402#
ERCT15   001770             405#
ERCT16   001774             408#
ERCT17   002000             411#
ERR      002700             592      618#     622
ERRCNT   001232             163#     747      774     1087*    1305*
ERRFLG   001325             202#     481*     733*     795*    1037*    1050     1064*    1123*
ERRMSG   005172            1047*    1065     1068#
ERRPC    002770             624      640#
ERTAB0   005322            1062     1097#
EXIT   = 000205              96#
EXITER   005252            1082     1087#
FLAG     021314            2431*    2454     2489     2494*    2497     2599     2601*    2732#    2882
FLOAT    002536             585#     591
FY       002566             594#     605      609      615
HALTS    005222            1033     1079#
HILIM    004366             876*     903      921#
ICOUNT   001222             159#     793      798*
IISR     017132            2410     2534#
INBUF    007502             846      882     1202#
INCHAR   010020            1231     1259#
INIFLG   001324             201#     507      527      534*
INSTER=  104404             223#     897
INSTR  = 104403             221#    1329     1381     1394     1403     1482     1491
INSTR2   004166             853      865#
INTTY    012266            1414     1431     1441     1454     1470     1655#
KMCM     007330             637     1187#
LIMITS   004314             892      903#
LINE     007016            1187#    1483
LOBITS   004372             878*     907      923#     924
LOCK     001220             158#     797*     814      816     1056
LOKFLG   001326             203#
LOLIM    004364             875*     905      920#
LPCNT    001224             160#     792*     793      796*
LSTERR   001234             164#     490*     732*    1034     1036*    1124*
MASKX    001244             172#
MASTEK   006142            1058     1187#
MCRLF    005672             831      954     1054     1055     1063     1187#    1328     1390
```

```
MCSRX    006072          737     1187#
MDATA    007544          984      994     1204#
MEMLIM   001304          188#     700*
MEPASS   005733          736     1187#
MERRPC   006217         1061     1187#
MERRX    006117          743     1187#
MERR2    005760         1187#    1590
MERR3    006005          673     1187#
MILK     001322          196#     484*     745     1288*    1293*    1297
MLOCK    006043          714     1187#
MNEW     006144          668     1187#
MODU     006704         1187#    1453
MPASSX   006106          741     1187#
MPFAIL   005675         1121     1187#
MQM      005666          861     1187     1352     1427     1437     1447     1462     1476
MR       005755          723     1187#    1346
MRESET=  004000           96#
MSTCLR=  104412          235#    1126     1948     2014     2077     2143     2203     2263     2304     2395
MTITLE   001000          136#     511
MTSTN    006130         1059     1187#    1330
MTSTPC   006031         1187#
MVECX    006100          739     1187#
NEXT     001216          157#     799     1092     1683*    1866*    1946*    2012*    2075*    2141*    2201*    2261*    2302*    2393*
NOACT    007154          523     1187#    1282
NODEV    002674          577      616#
NUM      006450         1187#    1382
OISR     017422         2412     2597#
OK       002646          603      610#     639
ONE      001302          187#
PACT00   001702          365#
PACT01   001706          368#
PACT02   001712          371#
PACT03   001716          374#
PACT04   001722          377#
PACT05   001726          380#
PACT06   001732          383#
PACT07   001736          386#
PACT10   001742          389#
PACT11   001746          392#
PACT12   001752          395#
PACT13   001756          398#
PACT14   001762          401#
PACT15   001766          404#
PACT16   001772          407#
PACT17   001776          410#
PARAM =  104405          225#    1331     1383     1396     1405     1484     1493
PARAM1   004234          881#     898
PARBIT=  040000           96#
PARERR   004310          884      886      888      897#     904      906      908
PASCNT   001230          162#     734*     735      746      771     1304*
PERFOR=  004537           96#
PFTAB    005430         1122     1128#
POPRO =  012600           72#    1086
POP1SP=  005726           70#
POP2SP=  022626           74#     801
PRIO     006547         1187#    1413
```

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DZDMH   MACY11 30(1046)  11-JUL-77  12:32  PAGE 66
DZDMH.P11    16-MAY-77 09:54            CROSS REFERENCE TABLE -- USER SYMBOLS

PS     = 177776            63#     476*    711*    1617*   1627*   2403*   2461*
PUSHR0= 010046             71#    1083
PUSH1S= 005746             69#
PUSH2S= 024646             73#
QV.FLG  001327            204#     482*    750*     790
RBUF    021372           1694     1750    1811     1819    1958    2273    2319    2339    2744#
RBUFF   020356           2419     2717#
RBUFFE  021312           2440     2725#
RBUFF1  020356           2718#
RBUFF2  020462           2719#
RBUFF3  020566           2720#
RBUFF4  020672           2721#
RBUFF5  020776           2722#
RBUFF6  021102           2723#
RBUFF7  021206           2724#
RCNTAB  020230           2427     2429    2567     2574    2711#
RCOUNT  021370           1692     1751    1814     1817    2743#
RDNTAB  020266           2438     2472    2486     2668*   2670*   2714#
RECBA  .020062           2566     2655    2679#
RESREG  005220           1075     1078#
RESTAR  005350           1108     1114#
RESTRT  003534            749      753     761#
RESUM   022276           2317     2813#
RESUME  020060           2312*    2313    2349     2351*   2437*   2536    2544*   2548    2615*   2678#
RESOS = 104407            229#    1078
RETURN  001214            156#     492*    720*     724     761*    799*    803    1092*   1095    1127    1345*   1355*   1357
RFLAG   021320           1699*    1804    1807*    1832    2734#
RFRELD  022416           1957     2086    2272     2318    2843#
ROMCLK= 104414            239#    1134    1137     1174    1179
RUN     001316            193#     485*   1286*    1287*   1294
SAVACT  001312            191#     671    1588*
SAVNUM  001314            192#     479*    748*     751*   1581*
SAVPC   001276            185#     622*    642      929*   1099
SAVR0   001260            178#     938*    943     2882
SAVR1   001262            179#     628*    937*     944
SAVR2   001264            180#     936*    945     2882
SAVR3   001266            181#     935*    946
SAVR4   001270            182#     934*    947     2882
SAVR5   001272            183#     933*    948     2882
SAVSP   001274            184#
SAVOS = 104406            227#    1038
SCAN    016604           2462#    2525    2528
SCAN1   017102           2464     2467    2470     2523#
SCAN2   016616           2463     2465#
SCOPE = 104400            215#    1854    1931     2000    2063    2129    2199    2249    2286    2377    2515
SCOP1 = 104401            217#
SHUTDO  022502           1836     1905    1982     2045    2111    2348    2870#
SKIP    002632            573      576     597      600     606#
SOFTSW  010052           1229     1268#
SPACNT= 004713            964*     988     991*    1005#
SPEED   007340           1187#    1440
STACK = 001200             64#     477     690     1093    1116
STAT    001240            170#
STAT1   001366            251#    1301*   1685     1690    1701    1868    1873    1906    1949    1954    2015    2020    2078
                         2083     2144    2149     2204    2209    2264    2269    2305    2310    2396    2401    2404    2433
                         2451     2610    2619     2758    2788    2818
```

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STAT2    001370          252#    1302*
STAT3    001372          253#    1303*   1687    1870    1909    1951    2017    2080    2146    2206    2266    2307    2355
                        2398     2500
STRTSW   001236          169#     513*    516*    517     519     529     531     666     712     721    1323    1347*   1377
                        1601
SVOS     004402          933#
SWFLG    010016          480*     825    1224*   1251*   1257#
SWMES    007205         1187#    1227
SWMES1   007215         1187#    1230
SWR      001202          143#     497*    499     503*    513     671     676     781     788     812     827    1027    1032
                        1081     1088    1090    1152    1212    1250*
SWREG    000176          129#     503    1212    1270
SW00   = 000001           45#     517    1377    1601
SW01   = 000002           44#     721    1323    1347
SW02   = 000004           43#
SW03   = 000010           42#     666
SW04   = 000020           41#
SW05   = 000040           40#
SW06   = 000100           39#    1152
SW07   = 000200           38#
SW08   = 000400           37#    1088
SW09   = 001000           36#     812
SW10   = 002000           35#    1090
SW11   = 004000           34#     788
SW12   = 010000           33#     827    1027
SW13   = 020000           32#    1032
SW14   = 040000           31#
SW15   = 100000           30#
TBUF     021324         1766     1796    1818    1877    1961    2090    2276    2322    2338    2736#
TBUFF    020120         2424     2631    2633    2635    2682#
TCOUNT   021322         1767     1799    2735#
TEMP     001416          271#     971    1118*   1119*   1160*   1165*   1171*   1183*   1706*   1709*   1714*   1717*   1723*
                        1726*    1744*   1747*   1753*   1756*   1760*   1763*   1769*   1772*   1775*   1779*   1881*   1884*
                        1902*    1933*   1964*   1967*   2027*   2030*   2093*   2096*   2156*   2159*   2216*   2219*   2279*
                        2282*    2326*   2329*   2459*   2523*
TEMP1    001246          173#     537*   1189    1613*   1614*   1776*   1781*
TEMP2    001250          174#     538*   1191    1784*   1848*   1925*   1994*   2057*   2123*   2183*   2243*   2371*   2460*
                        2517*    2526*   2882
TEMP3    001252          175#     540*    566*    618     627*   1193    1386    1389    1501*   1730*   1820*   1849*   1926*
                        1995*    2058*   2124*   2184*   2244*   2372*   2476*   2518*   2624*   2636*   2882
TEMP4    001254          176#     541*   1195    1399    1402    1408    1411    1487    1490    1496    1499    1731*   1850*
                        1927*    1996*   2059*   2125*   2185*   2245*   2373*   2519*   2625*   2882
TEMP5    001256          177#     542*   1197    1380*   1393*   1599    1851*   1928*   1997*   2060*   2126*   2186*   2246*
                        2374*    2520*   2882
TFLAG    021316         1698*    1789    1792*   1834    2417*   2428    2443    2491*   2493*   2733#
TIMER  = 104416          243#
TKCSR    001204          148#     848    1214    1259    1655
TKDBR    001206          149#     850     856    1217    1219    1261    1657
TLAST  = 016214         1350     2747#
TPCSR    001210          150#     832     854    1029     262    1658
TPDBR    001212          151#     834*    856*   1031*    264*   1660*
TRPOK    004730         1017#
TSTNC    001226          161#     491*   1102    1130    1334    1341    1343    1682*   1865*   1945*   2011*   2074*   2140*
                        2200*    2260*   2301*   2392*
TST1     012320         1337     1355    1682#
TSTIO    015476         2201     2260#
```

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TST11   015632              2261    2301#   2747
TST12   016214              2302    2392#   2747
TST2    013404              1683    1865#
TST3    013754              1866    1945#
TST4    014236              1946    2011#
TST5    014510              2012    2074#
TST6    014772              2075    2140#
TST7    015234              2141    2200#
TTST    003612               715*    716*    718*    719*    782#
TWOSYN= 010000                96#
TYPDAT  005206              1053    1071    1074#
TYPE  = 104402               219#    511     523     535     620     625     633     636     668     673     714     723     736
                             737     739     741     743     831     844     861     954     994    1054    1055    1058    1059
                            1061    1063    1067    1072    1121    1227    1230    1282    1329    1346    1352    1390    1412
                            1426    1429    1436    1439    1446    1452    1461    1468    1475    1590
TYPMSG  005106              1051    1054#
VEC     006526              1187#   1404
VECMAP  012010              1589    1601#
WHICH   012002              1392    1597#
WRDCNT  004710               962*    995*   1003#
WRKO.F  005174              1066    1069#
XBX     005000              1028    1030    1032#
XCNTAB  020250              2442    2444    2639    2662    2712#
XCSR    003546               738     763#
XDNTAB  020322              2645*   2647*   2715#
XERR    003570               744     772#
XFRELD  022450              1876    1960    2023    2089    2275    2321    2856#
XHEAD   006224               535    1187#
XLOC    003022               593*    611*    614     645     658#
XMITBA  020062              2418    2422    2425    2573    2680#
XPASS   003562               742     769#
XSTATQ  007454               544    1187#
XTSTN   005330              1060    1100#
XVEC    003554               740     766#
X0    = 000110              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#   2710#
X1    = 000101              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X2    = 000102              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X3    = 000103              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X4    = 000104              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X5    = 000105              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X6    = 000106              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
X7    = 000107              2683#   2686#   2689#   2692#   2695#   2698#   2701#   2704#   2707#
ZERO    001300               186#
$CCD  = ****** U               1
$CRAP = 177777                 1#   1664#   1667    1678#   1855#   1858    1861#   1935#   1938.   1941#   2001#   2004    2007#
                            2064#   2067    2070#   2130#   2133    2136#   2190#   2193    2196#   2250#   2253    2256#   2289#
                            2292    2297#   2378#   2381    2388#
$ENDAD  003522               123     509     755#   1079
$N    = 000012                 1#   1664    1678    1680    1685#   1855    1861    1863    1868#   1935    1941    1943    1948
                            1949#   2001    2007    2009    2014    2015#   2064    2070    2072    2077    2079#   2130    2136
                            2138    2143    2144#   2190    2196    2198    2203    2204#   2250    2256    2258    2263    2264#
                            2289    2297    2299    2304    2305#   2378    2388    2390    2395    2396#   2747#
$S    = 000014                 1#   1683    1685#   1866    1868#   1946    1949#   2012    2015#   2075    2079#   2141    2144#
                            2201    2204#   2261    2264#   2302    2305#   2396#
$V    = 000017                 1#    207#    215     217#    219#    221#    223#    225#    227#    229#    231#    233#    235#
                             237#    239#    241#    243#    245#
```

```
.      = 023554            108#    109     112#    119#    124#    127#    131#    135#    137#    189#    190#    191#    192#
                           272#    277#    279#    280#    281#    282#    284#    285#    286#    287#    289#    290#    291#
                           292#    294#    295#    296#    297#    299#    300#    301#    302#    304#    305#    306#    307#
                           309#    310#    311#    312#    314#    315#    316#    317#    319#    320#    321#    322#    324#
                           325#    326#    327#    329#    330#    331#    332#    334#    335#    336#    337#    339#    340#
                           341#    342#    344#    345#    346#    347#    349#    350#    351#    352#    354#    355#    356#
                           357#    515     525     657#    675     1110    1120    1168#   1203#   1205#   1260    1263    1284
                          1378    1422    1542    1546    1593    1624    1656    1659    1686    1688    1691    1702    1705
                          1708    1716    1746    1755    1762    1771    1785    1790    1794    1797    1800    1805    1909
                          1812    1815    1824    1829    1869    1871    1874    1883    1950    1952    1955    1966    2016
                          2018    2021    2029    2043    2079    2081    2084    2095    2109    2145    2147    2150    2154
                          2170    2205    2207    2210    2214    2218    2230    2265    2267    2270    2306    2308    2311
                          2328    2397    2399    2402    2434    2449    2452    2479    2547    2579    2611    2614    2617
                          2620    2680#   2711#   2712#   2714#   2715#   2718#   2719#   2720#   2721#   2722#   2723#   2724#
                          2744#   2746#   2759    2762    2799    2792    2819    2822
.BEGIN  003152             690#
.CNVRT  004472             234     955#
.CONVR  004466             232     954#
.DATAC  005552             242    1159#
.DELAY  005436             238    1132#
.EOP    003364             731#   2393
.ERRTA  023414            1046    2882#
.HLT    004750             115    1026#
.INSTE  004154             224     861#
.INSTR  004050             222     940#
.INST1  004070             844#    864
.MSG    004072             842#    845#
.MSTCL  005466             236    1143#
.PARAM  004174             225     872#
.PFAIL  005336             113     478    1107#   1115
.RESOS  004434             230     943#
.ROMCL  005504             240    1148#
.SAVOS  004374             228     929#
.SCOPE  003576             216     779#
.SCOP1  003736             218     811#
.START  002002             132     476#    492    1247
.TIMER  005616             244    1170#
.TRPSR  004716             117    1014#
.TRPTA  001230             214#   1019
.TYPE   003766             220     822#
```

```
                                                                    G07
DZDMH    MACY11 30(1046)  11-JUL-77  12:32  PAGE 71                                                                        PAGE:  0084
DZDMH.P11     16-MAY-77 09:54             CROSS REFERENCE TABLE -- MACRO NAMES

DMEND         1#     725
DMFRNT        1#
HLT          75#    1711     1719     1732     1734     1749     1758     1765     1774     1783     1786     1791     1795     1798     1801
           1806     1810     1813     1816     1825     1830     1852     1888     1892     1900     1929     1971     1975     1981     1998
           2034     2038     2044     2061     2100     2104     2110     2127     2161     2165     2171     2187     2221     2225     2231
           2247     2297     2333     2345     2375     2480     2521     2529     2626     2637     2644     2660     2667
$AUTO         1#     547
$BASEC        1#    1837     1908     1983     2046     2112     2172     2232     2353
$BUFFE        1#    1199
$BYTE         1#    2683     2686     2689     2692     2695     2698     2701     2704     2707
$CKDAT        1#    2472
$COMP         1#
$CYCLE        1#    1271
$DATAF        1#    1664
$EOP          1#     725
$EXER         1#    2378
$FD           1#    1736     2774     2834
$FINI         1#    2747
$GETPA        1#
$HALF         1#    2250
$HD           1#    2804
$HEADE        1#
$LSTDA        1#    1935
$MARHI        1#
$MOCK         1#
$MSG          1#    1187
$NONEX        1#    2001     2064
$ORUN         1#    1855
$PFAIL        1#    1103
$PROC         1#    2130
$PROC1        1#    2190
$QUEST        1#    1381     1394     1403     1482     1491
$RAMCL        1#    1131
$RCLK         1#    1134     1137     1174     1179
$RESUM        1#    2289
$SCOPE        1#     775
$SETUP        1#    1868     1949     2015     2078
$SIMBC        1#
$SKIPT        1#    1685     1868     1949     2015     2078     2144     2204     2264     2305     2396
$SOFTC        1#    1207
$TRPDE        1#     215      217      219      221      223      225      227      229      231      233      235      237      239      241
            243
$TSTN         1#    1680     1863     1943     2009     2072     2138     2198     2258     2299     2390
$VARIA        1#     134
$XZ           1#    1664     1678     1855     1861     1935     1941     2001     2007     2064     2070     2130     2136     2190     2196
           2250     2256     2289     2297     2379     2388

. ABS.  023554     000

 ERRORS DETECTED:  0

 DZDMH,DZDMH/SOL/CRF=IPLUTL,DZDMH
 RUN-TIME: 8 12 1 SECONDS
 RUN-TIME RATIO: 199/21=9.1
 CORE USED:  24K  (47 PAGES)
```