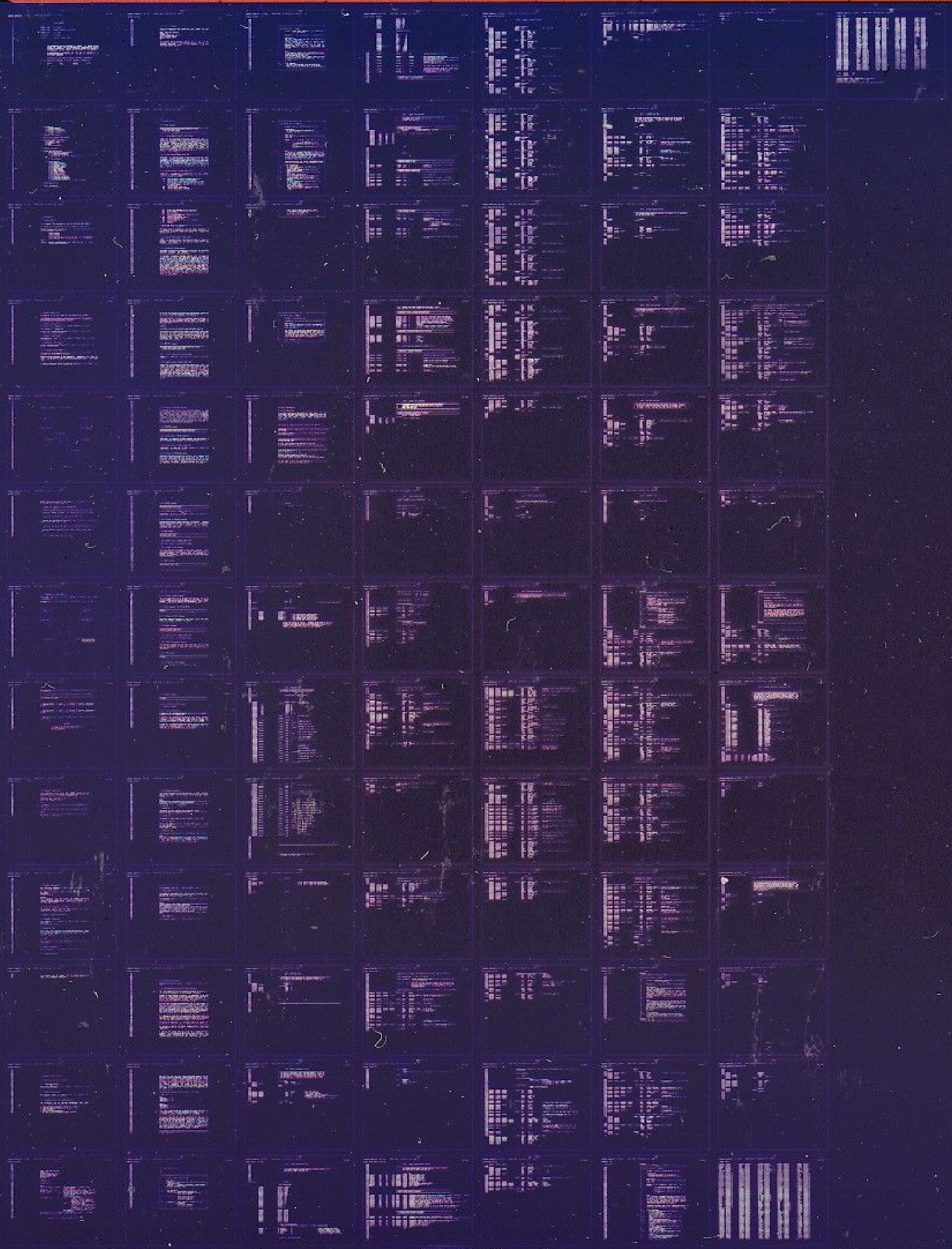
GS03WD

GS3WD/DZ11 LGC DIAG
CZDZGA0

AH-T919A-MC
FICHE 01 OF 01

FEB 1985
digital
Made In USA



```
.rem 8


                IDENTIFICATION
                . ...........

PRODUCT CODE:   AC-T918A-MC

PRODUCT NAME:   CZDZGA0 GS3WD/DZ11 LGC DIAG

PRODUCT DATE:   JULY 1984

MAINTAINER:     CSS ANNECY

AUTHOR:         Jean-Christophe PINASA
```

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1.0 Introduction

1.1 Program abstract


This diagnostic was designed to test the GS03-WD LOGIC MODULE.

The program was implemented using the Diagnostic Supervisor.

Through dialogue with the operator, it will allow modification of
device parameters, such as :

        - UNIBUS address ;
        - vector address ;
        - priority level ;
        - # of lines connected out of the DZ11 into the GS03-WD ;
        - operating mode  (0 ->  harware test ; 1 -> installation
test).

WARNING : RUNNING THIS DIAGNOSTIC WILL CAUSE THE GS03  TO  SWITCH
          LINES BETWEEN COMPUTERS.
```

1.2 Hardware description :

2P-M213A-00 is the part number for the GS03-WD logic module.

The GS03-WD option enables an asynchronous serial line mounted in each computer to control a GS03 installation. It is supported on the DZ11 on PDP11's and DMF32 on VAX'es.

1.3 Hardware configuration :

The name of this diagnostic is : CZDZGAO GS3WD/DZ11 LGC DIAG

The filename is : ZDZGAO.BIN

It will run in stand alone without any operator inter ention, in either of the following modes :

- Diagnostic test (mode 0)

This part will check all the GS03-WD hardware and the GS03 functionality.

- Installation test (mode 1)

It will allow by visual inspection to check site installation and system interconnection.

1.3.1 Diagnostic test (MODE 0)

This part of the diagnostic will run on one of the two PDP11's only and test all of the GS03-WD hardware.

Before running this part of the diagnostic, operators will have to remove the 2P-E16XA-05 cable connected to the PDP11 that is not being used. (Disconnect the cable from the 2P-M213A-00 module in the GS03 rack).

A special "Diag test cable" 2P-E16TA-05, will have to be plugged from the 2P-M213A module into the choosen PDP11 DZ11.

F1

```
Example:  Diagnostic running on PDP11 A.
--------




...............                                   ...............
)             )                                   )             )
)   PDP11 A   )                                   )   PDP11 B   )
)             )                                   )             )
...............                                   ...............
        )                                                )
        )                                                )
...............                                   ...............
)             )                                   )             )
) DZ11 panel  )                                   ) DZ11 panel  )
)             )                                   )             )
...............                                   ...............
    )       )                                         /
    )       )      2P-E16TA-05                       /
    )       .....................                   /
    )                           )                  /
    )                           )                 /
    ......................      )                /
      2P-E16XA-05        )      )       --->    / 2P-E16XA-05
                        ...    ...             /
                        ) )    ) )        ... /
                      ...............     ) )/
                      )             )     ...
                      )             )
                      )             )
                      )             )
                      )             )  2P-M213A-00
                      ...............


            ....................................
            )                                  )
            )                                  )
            )                                  )
            )                                  )
            )                                  )
            )                                  )
            )                                  )
            )               GS03  rack         )
            )                                  )
            ....................................
```

```
Before running this part of the diagnostic, the operator will have  to
go through the following checklist ·


-  Disable the highest priority commands by :

o Placing the FORCE AB switch to the center position on all racks

o Placing all MANUAL switches in the center position on all racks


-  Remove the "2P-E16XA-05" on the unused PDP11 side.


-  Connect the "2P-E16TA-05" diag test  cable  from  the  2P-M213A-00
module to the PDP11 DZ11 in use.


-  Check that the dip switch E18-1 on the 2P-M213A-00 module is off.


-  Run the ZDZGAO diagnostic on the chosen system (select mode 0).
See 6.1.3.


-  When finished, reconfigure the system.
```

```
1.3.2 Installation test (MODE 1)

This  test  will  allow  to  check  GS03-WD  installation  and  cable
interconnection.

No modification of the installation is required to run  this  part  of
the test.



+-------------+                                  +-------------+
)             )                                  )             )
)   PDP11 A   )                                  )   PDP11 B   )
)             )                                  )             )
+-------------+                                  +-------------+
      )                                                  )
      )                                                  )
+-------------+                                  +-------------+
)             )                                  )             )
) DZ11 panel  )                                  ) DZ11 panel  )
)             )                                  )             )
+-------------+                                  +-------------+
         )                                             )
         )                                             )
         +-------------+           +-------------------+
                       )           )
                       )           )
                      +-+         +-+
                      ) )         ) )
                 +-----------------------+
                 )     J1          J2    )
                 )                       )
                 )                       )
    2P M213A-00  )                       )   Note: Green and yellow
                 )                       )         LED's are on the
                 )                       )         2P-M213A-00 module
                 +-----------------------+

           +----------------------------------+
           )                                  )
           )                                  )
           )                                  )
           )                                  )
           )                                  )
           )                GS03  rack        )
           )                                  )
           +----------------------------------+
                    The diagnostic can be run on one of the systems or on both of them  at
                    the same time.

                    It will send frames to the corresponding channel of the GS03-WD.

                    The operator will check test result by watching the LED indicators  on
                    the 2P-M213A-00 module.


                    -  Running ZDZGAO  in  mode  1  on  system  A  (system  connected  to
                    2P-M213A-00  on  J1)  will  make  the "green" LED (on 2P-M213A-00)
                    blink.


                    -  Running ZDZGAO  in  mode  1  on  system  B  (system  connected  to
                    2P-M213A-00  on  J2)  will  make the "yellow" LED (on 2P-M213A-00)
                    blink.


                    -  Running it on both systems will cause both  "green"  and  "yellow"
                    leds to blink.


                                                 CAUTION

                         This test will run continously and will
                         have to be stopped by typing "cntrl C"
                         on the console.
```

1.4 Diagnostic description :

This diagnostic will first test UNIBUS access to the DZ11 CSR's. It will then check very roughly the transmit and receive functions in maintenance loopback mode.

Depending upon the mode it is run in, the next actions taken by the diagnostic will be :

Mode 0 :

- a first try at receiving echo back from the GS03-WD on either line ;

- a test of correct switching of the GS03-WD back and forth.

Mode 1 :

Activation of the line into the GS03-WD by sending characters over it continuously.

```
2.0 Hardware requirements

The  following  hardware is required to run the static logic
tests on module GS03-WD :

Any member of the PDP-11 UNIBUS family (PDP11/24, 34, 44, 70) ;
16k memory ;
console terminal.

WARNING :
This  diagnostic  will  not  run on  any  member  of the VAX
family, although a DZ11 may be fitted on a VAX UNIBUS. It is
reminded  that a GS03-WD logic module should be connected to
a VAX through a DMF32.


3.0 Preliminary program requirements

The processor, memory  and  the  DZ11  should  be thoroughly
tested prior to running this diagnostic.


4.0 General program considerations


4.1 Diagnostic Supervisor

This  program  is  written to run under the PDP11 diagnostic
supervisor.
It requires 16k of memory to run.


4.2 Execution Time

The  total  time  required  to run the GS03-WD static  diag-
nostic ranges from about 2 minutes on the  PDP11/70 to about
4 minutes on the  PDP11/34 per  pass for each unit (with su-
pervisor version c4).


4.3 XXDP+

This  program will be loaded under XXDP+, and may  be run in
dump mode.


4.4 Memory management

Memory management is not enabled by this program.


5.0 Program load media
```

```
    425
    426                      This program can be loaded from any media supported by
    427                      XXDP+. The diagnostic supervisor will be loaded first, fol
    428                      lowed by the diagnostic program.
```

```
6.0 Operating instructions


6.1 Loading and starting procedures


6.1.1 Loading procedures

When loaded under XXDP+, the  diagnostic  supervisor will be
loaded automatically.


6.1.2 Starting procedures

The  program  starts  at  location  200.  Use  standard  DEC
procedures to start the program.


6.1.3 Steps for quick and simple execution

The  diagnostic  can  be  executed  standalone  under  XXDP+
without  reading the remainder of this document, as follows:

a) load and start diagnostic using run command .
b) receive diagnostic supervisor prompt    (DR>) ;
c) enter STA<CR> ;
d) answer hardware questions ;
e) get end of pass messages or error messages ;
f) to end execution, enter control/c.
```

```
DIAG.  RUN-TIME SERVICES
ZDZGAO-A-0
CZDZGAO GS3WD.DZ11 LGC DIAG
UNIT IS GS03WD MODULE
RESTART ADDR. 147670
DR>START

CHANGE HW (L) ? Y

# UNITS (D) ? 1

UNIT 0
CSR (0)  160100 ? 160340    ; The CSR address is 160340 (range =
                            ; 160010-163776)
VECTOR (0)  300 ? 460       ; Vector address is 460 (range = 300-777)
BR (0)  5 ? 6               ; BR interrupt level is 6 (range = 4-7)
ACTIVE LINES (0)  3 ? <CR>  ; Defines the line(s) of the DZ11 connected
                            ; to the GS03-WD (octal bitmap format :
                            ; range = 0-377)
                            ; Here (default value) : lines 0 and 1
WHICH MODE (0)  0 ? <CR>    ; mode 0 = hardware test
                            ;          caution : connect cables as
                            ;          described in the diagnostic
                            ;          header and in the option desc.
                            ; mode 1 = installation test
                            ;          with visual inspection of LED's
                            ;          caution : in this mode, the
                            ;          diagnostic will run continuous-
                            ;          ly. To stop it, type "ctrl C".
                            ; See header or option description for
                            ; more details.
Running on unit  0 in mode 0 : pass-time is 2 minutes on the PDP11/70.
Only tests 1, 2 and 3 are active in this mode.
```

Example: Running "CZDZGAO GS3WD/DZ11 LGC DIAG"

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6.2 Initial dialogue

After the program and the supervisor are loaded and the program is started , the following identification is typed:

```
DIAG.  RUN-TIME SERVICES
ZDZGA0-A-0
CZDZGA0 GS3WD.DZ11 LGC DIAG
UNIT IS GS03WD MODULE
RESTART ADDR: 147670
DR>
```

The operator then proceeds by typing one or more of the commands described in the following section 6.3.(for more detailed information, refer to the diagnostic supervisor functional specification).

6.3 Program options

6.3.1 START command

```
*********************************************************
STA(RT)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
   <FLAG-LIST>/EOP:<INCR>
*********************************************************
```

6.3.1.1 TESTS SWITCH (/TESTS:<TEST-LIST>)

<TEST-LIST> is a sequence of decimal numbers (1:2 etc.) or ranges of decimal numbers (1-5:8-10 etc.) that specify the tests to be executed. The numbers are seperated by colons. The numbers range from 1 to the largest test number in the diagnostic. They may be specified in any order. Tests will be executed in numerical order regardless of the order of specification. The default is to execute all tests. On this and all switches, the angle brackets <> are punctuation used in the definition only, and are not to be typed by the operator. See example at end of 6.3.1.5

6.3.1.2 PASS SWITCH (/PASS:<PASS-CNT>)

<PASS-CNT> is a decimal number indicating the desired number of passes. A pass is defined as the execution of the full diagnostic (all selected tests) against all units submitted. The default is non-ending execution. In this case exit from the program is accomplished either by typing a control/c or by occurence of an error with the halt on error flag being set. The exit is a return to command mode. See example at end of 6.3.1.5.

6.3.1.3 FLAGS SWITCH (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> is a sequence of elements of the form <FLAG>, <FLAG=1>, or <FLAG=0>, seperated by colons, where <FLAG> has one of the following values:

HOE	halt on error, causing command mode to be entered when an error is encountered
LOE	loop on error, causing the diagnostic to loop continuously within the smallest defined block of coding (segment, subtest, or test) containing the error
IER	inhibit error reporting
IBE	inhibit basic error reports
IXE	inhibit extended error reports

```
*  PRI   direct all messages to a line printer
   PNT   print number of test being executed
   BOE   bell on error
** UAM   run in unattended mode, bypassing manual
         intervention tests
** ISR   inhibit statistical reports
   ADR   execute autodrop code
   IDU   inhibit dropping of units by diagnostic
   LOT   loop on test
** EVL   evaluate

*  NOT TO BE USED if a line printer is not available.
** Of no use in this diagnostic.
```

The flags named or equated to 1 are set, those equated to 0 are cleared. A flag not specified is cleared. If the flags switch is not given all flags are cleared. See example at end of 6.3.1.5.

6.3.1.4 END OF PASS SWITCH (/EOP:<INCR>)

<INCR> is a decimal number indicating how often (in terms of passes) it is desired that the end of pass message be printed. The default is at the end of every pass. See example at end of 6.3.1.5.

6.3.1.5 Effect of a start command

The effect of the start command is to initiate the hardware parameter dialogue, the software parameter dialogue, and then the diagnostic tests themselves.

The hardware parameter dialogue starts with the question "# units?" to which the operator replies with a decimal number n from 1 to 16. The term "unit" refers to the device to which this series of diagnostics is dedicated. Following this are the questions whereby the p-tables themselves will be built. Each p-table is a core-resident table containing all the hardware information for one unit. The operator must supply n (number of units) values for each question. He may do this by giving one answer to each question (in which case the series of questions will be posed n times) or by giving n values, separated by commas, to each question (series will be posed once). Each question is followed by the response radix (d for decimal, b for binary, o for octal, l for yes/no) in parentheses and the default value after the parentheses.

Following the hardware questions are the software questions to build the software tables, which define the mode (quick verify etc.) that the diagnostic will execute in.

When the question "# units?" is answered, memory storage is allocated for the p-tables, and if there is not enough to accommodate them the message "TOO MANY UNITS" is issued. In this case the diagnostic must be executed more than once to test all units.

EXAMPLE:

```
STA/TESTS:1:2-4:6:8-10/PASS:3/FLAGS:IER:HOE=1:UAM:LOE
```

This command will cause three passes to be made, each pass consisting of tests 1,2,3,4,6,8,9, and 10 executed against all units. There is no difference between saying <FLAG> and saying <FLAG=1>. The notation <FLAG=0> is meaningful only on a command other than start to clear a flag that was previously set. Note that on all commands only the first three letters are scanned.

6.3.2 RESTART command

```
************************************************************
RES(TART)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
   <FLAG-LIST>/UNITS:<UNIT-LIST>
************************************************************
```

6.3.2.1 TESTS, PASS, and FLAGS switches

<TEST-L ST>, <PASS-CNT>, and <FLAG-LIST> are as in the START command.

6.3.2.2 UNITS switch (/UNITS:<UNIT-LIST>)

<UNIT-LIST> is a sequence of decimal numbers (0,1 etc.) or ranges of decimal numbers (0-5, 8-10 etc.) that specify the units to be tested. The numbers are separated by colons. The numbers may range from 0 thru n-1 (n is the number of units specified in the previous start command). The number indicates the position of the p-table as the data was entered during the hardware diaglogue. The units which are selected must not have been dropped by the drop command. See the discussion of add and drop commands below. Default is to test all units which have not been dropped by a drop command.

6.3.2.3 Effect of RESTART command

The RESTART command differs from the START command in that the p-tables from the previous start command (there must have been one) are used, instead of new ones being built. The units switch gives the ability to select a subset of these. The software dialogue may optionally be reexecuted (operator will be asked). The command can be used after command mode has been reentered in any of the three normal ways: a) the requested number of passes have been made b) an error was encountered with the halt on error flag sec c) a "control/c" was entered by the operator.

6.3.3 CONTINUE command

```
************************************************************
CON(TINUE)/PASS:<PASS-CNT>/FLAGS:<FLAG-LIST>
************************************************************
```

6.3.3.1 PASS switch (/PASS:<PASS-CNT>)

<PASS-CNT> is same as in START command, but the default is the unsatisfied pass-cnt from the previous START or RESTART. If none remains, the default is non-ending execution.

6.3.3.2 FLAG switch (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> is same as in START command, but unspecified flags retain their current value.

6.3.3.3 Effect of CONTINUE command

CONTINUE must follow a start or restart, and command mode must have been entered due to a halt on error or a control/c. The effect of the command is to go to the beginning of the test that was being executed when the halt or control/c took place. Software dialogue may optionally be reexecuted. Hardware parameters may not be changed.

6.3.4 PROCEED command

```
***********************************************************
PRO(CEED)/FLAGS:<FLAG-LIST>
***********************************************************
```

6.3.4.1 FLAGS switch (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> is as in the START command, but unspecified flags retain their current value.

6.3.4.2 Effect of PROCEED command

PROCEED must follow a START, RESTART, or CONTINUE. Command mode must have been entered via a halt on error. The effect of the command is to begin execution at the location following the error call. Neither hardware nor software parameters may be altered.

6.3.5 ADD command

```
***********************************************************
ADD/UNITS:<UNIT-LIST>
***********************************************************
```

6.3.5.1 UNITS switch (/UNITS:<UNIT-LIST>

<UNIT-LIST> is as in the RESTART command.

6.3.5.2 Effect of ADD command

The units specified are added to the test sequence. Each unit must have a p-table in memory due to an earlier hardware dialogue. This command must be followed by a RESTART or CONTINUE. The units switch must be specified. The ADD command is meaningful only for units that were previously dropped.

6.3.6 DROP command

```
***********************************************************
DRO(P)/UNITS:<UNIT-LIST>
***********************************************************
```

6.3.6.1 UNITS switch (/UNITS:<UNIT-LIST>)

<UNIT-LIST> is as in the RESTART command.

6.3.6.2 Effect of DROP command

The units specified will be dropped from testing. The units will be reselected only by the execution of an ADD or START command. The units switch must be entered. This command must be followed by a RESTART or a CONTINUE command.

6.3.7 PRINT command : NOT IMPLEMENTED

```
************************************************************
PRI(NT)
************************************************************
```

6.3.7.1 Effect of PRINT command

The total number of errors for each unit since the last start or restart command are printed. The isr (inhibit statistical reporting) flag is cleared.

6.3.8 DISPLAY command

```
************************************************************
DIS(PLAY)/UNITS:<UNIT-LIST>
************************************************************
```

6.3.8.1 UNITS switch (/UNITS:<UNIT-LIST>)

<UNIT-LIST> is as in the RESTART command.

6.3.8.2 Effect of DISPLAY command

The hardware p-tables for all units under test are printed out in the format in which they were entered. Any units that were dropped by the operator "drop" command are so designated.

6.3.9 FLAGS command

```
************************************************************
FLA(GS)
************************************************************
```

6.3.9.1 Effect of FLAGS command

The current settings of all flags are printed.

6.3.10 ZFLAGS command

```
************************************************************
ZFL(AGS)
************************************************************
```

6.3.10.1 Effect of ZFLAGS command

All flags are cleared.

6.3.11 Control Characters

A control c (c) entered during the execution of a diagnostic causes a return to command mode.

A control z (z) entered during one of the three operator dialogues -initial dialogue (see 6.2),hardware dialogue (see 6.3.1.5), or software dialogue (see 6.3.1.5)- causes the defaults to be taken for the remainder of that dialogue.

A control o (o) entered during the execution of a diagnostic causes all teletype output to be surpressed for the remainder of the diagnostic or until another control o is typed, which restores normal telutype output.

6.3.12 Hardware Parameters

The following questions will be asked on a START command. The value located to the left of the question mark is the default value that will be taken on a carriage return response.

Note :
Entering these parameters is a crucial part of running this diagnostic, which should not be overlooked.
The default values, for instance, should not be relied upon too quickly.

1. CHANGE HW (L) ?

The answer to this question has no default value.
Answering "NO" will cause all the default values to be assumed, which may be a cause for errors.

2. # UNITS (D) ?

The answer to this question has no default value either.

3. CSR (O) 160100 ?

This is the address at which the DZ11 CSR register resides on the unibus.
The allowable range is 160010..163776 (octal), and the default value is 160100.

4. VECTOR (O) 300 ?

The allowable range is 300..777, and default value is 300.

Note :
Entering a wrong value here will cause the diagnostic to stop. An "ILL INTER NN4" error message will be printed and a new value will have to be entered into the hardware p-table after issuing the "START" command again.

```
5. BR (0)  5 ?

The allowable range is 4..7 and the default value is 5.

6. ACTIVE LINES (0) 3 ?

This asks for a bitmap of the  line(s) out of the DZ11 into
the GS03-WD. When running in mode 0, two lines will be nee-
ded and when running in mode 1, only one.

The allowable range is 0..377  and  the default  value is 3
(lines 0 and 1).

Note :
The DRS, which  asks these  questions, only checks that the
number specified is in the range 0-377.
The  diagnostic initialization  code  checks that two lines
are specified for mode  0 operation and  1 line  for mode 1
operation. If an incorrect  number of  lines  is specified,
the diagnostic will report this as an error.
Such an error will mean having to issue the "START" command
again.

7. WHICH MODE (0) 0 ?

The allowable range is 0..1 and the default value is 0.
```

6.3.13 Software Parameters

No software parameter question is asked in this static logic test.

6.3.14 Extended Discussion Of P-Table Dialogue

The full capability of the hardware dialogue is revealed by the following discussion of what happens internally.

As soon as the question "# units?" is answered (with the number n, say) space in core is allocated for n p-tables. All of the p-tables are of the same format, and there is a one-to one correspondence between the hardware parameter questions and the slots in the p-table format.

On the first trip thru the questions, all of the slots in all of the p-tables are filled. If the operator types in less than n explicit values in response to a particular question, these values are placed in the p-tables (one value going into the proper slot of each p-table beginning with the first p-table) until the string of values is exhausted. The last value in the string becomes the new default and is used to fill that slot in the remaining p-tables.

On subsequent trips thru the questions, the same process is carried out, except that the earliest p-table not to have received an explicit value in any of its slots now assumes the role that table number one played in the first trip.

The series of questions is reissued until at least one question has received n explicit values from the operator.

In giving a string of values, commas without intervening values may be used to indicate a repetition of the last named value.

A string of values may be given as a range (6-10 for example). If the values represent pure numerical data, this sample range translates to the string 6,7,8,9,10 (an increment of 1). If the values are addresses, the sample range translates to the string 6,8,10 (an increment of 2).

Now let us see how we could use these capabilities to construct a set of p-tables. Assume that we have 16 units, and that there are three hardware parameters for each (three slots in the p-table, three hardware questions in the dialogue). Let the desired value for the first parameter be the number 75 for all 16 tables. Let the desired value for the second parameter be equal to the unit number (0,1,2,...,15) except for unit 12, which should receive the value 11. Let the desired value for the third parameter be the number 76 for the first 7 units and the number 77 for the last 9 units.

The following dialogue would accomplish this goal:

```
# UNITS (D) ? 16

UNIT 1
<QUESTION 1> ? 75
<QUESTION 2> ? 0-6
<QUESTION 3> ? 76

UNIT 21
<QUESTION 1> ?
<QUESTION 2> ? 7-11,,13-15
<QUESTION 3> ? 77
```

The first time the series is asked, slot one receives a 75 in all 16 tables. Slot two receives the values 0,1,2,....,6 in tables 0 thru 6 and a constant 6 in tables 7 thru 15. Slot three receives a constant 76 in all 16 tables.

The second time thru the series, tables 16 thru the end are going to be affected (note that this piece of information is printed out for the the operator in the form "unit xx" at the beginning of each series). Question 1 is responded to by a <cr>, so slot one stays at constant 75 in tables 7 thru 15, since no new exlicit values are typed in. Slot two gets the values 7,8,9,10,11 in tables 7 thru 11, and gets a 11 in slot 12, and gets the values 13,14,15 in tables 13 thru 15. Slot three gets the value 77 in tables 7 thru 15.

The dialogue is terminated when the software recognizes that 16 explicit values have been given for at least one question (namely question 2).

```
                              7.0  Tests Descriptions



                              ************************* TEST 1 *************************
                              *                                                        *
                              *       Purpose : basic test of DZ11.                    *
                              *                                                        *
                              *       Description :                                    *
                              *       - Subtest 1 : Check that DZ11 CSR can be  written *
                              *       to and read from ;                               *
                              *       - Subtest 2 : Transmit a character in maintenance *
                              *       (internal) loopback mode on the selected line(s) *
                              *       and check for proper echo.                       *
                              *                                                        *
                              *       Error messages :                                 *
                              * #0,1  - Subtest 1 : "Unsuccessful attempt to           *
                              *        write to/read DZ11 CSR at address <address>"    *
                              *                     "Check DZ11 address."              *
                              *                                                        *
                              * #2    - Subtest 2 : "DZ11 failed to reset."            *
                              *                     "Check DZ11 address."              *
                              *                     "Run DZ11 diagnostic."             *
                              *                                                        *
                              * #3    - Subtest 2 : "DZ11 internal loopback malfunction *
                              *       on line # <line number>"                         *
                              *                     "Check DZ11 address."              *
                              *                     "Run DZ11 diagnostic."             *
                              *                                                        *
                              **********************************************************
```

B3

```
***************************** TEST 2 ***************************
*                                                              *
* Test active only in mode 0 :                                 *
*                                                              *
*       Purpose : check that  characters  are echoed back      *
*                 from the GS03-WD.                            *
*                                                              *
*       Assumption :  the previous test ran successfully.      *
*                                                              *
*       Description :                                          *
*       The  two  lines  out of the DZ11  are arbitrarily      *
*       named line x and line y.                               *
*       A first  attempt will be  made  to  receive  echo      *
*       back from  the GS03-WD  on  line  x. If it is not      *
*       successful,  another  attempt  will  be  made  to      *
*       receive  echo  on  line  y. If   this  cannot  be      *
*       achieved  either, a  hard  error warning  will be      *
*       printed.                                               *
*                                                              *
*       Note :                                                 *
*       This diagnostic detects that the GS03-WD switches      *
*       to one line  by receiving  echoed characters back      *
*       from the GS03-WD on that line.                         *
*       This is why,  before  other  tests  check correct      *
*       switching, this test first checks that  echo  can      *
*       be received back from the  GS03-WD, on  at  least      *
*       one line.                                              *
*                                                              *
*       Error message :                                        *
* 04    - "No echo received back from the GS03-WD on           *
*       either line # <line number> or # <line number>"        *
*         "Check cabling and dip switch E18 (must be OFF)"     *
*                                                              *
****************************************************************
```

```
************************* TEST 3 *************************
*                                                          *
* Test active only in mode 0 :                             *
*                                                          *
*        Purpose : switch the GS03-WD back and forth.      *
*                                                          *
*        Assumptions :                                     *
*        - all previous tests ran successfully ;           *
*        - WATCHDOG FUNCTION has priority (cf. note).      *
*                                                          *
*        Description :                                     *
*        This  test is the implementation of the following *
*        algorithm :                                       *
*                                                          *
*        Repeat  twice,  swapping  lines x and y, the  se- *
*        quence :                                          *
*                - Try and switch GS03-WD to line x ;      *
*                - Try and switch GS03-WD from  line x  to *
*                line y ;                                  *
*                - Try and switch GS03-WD back from line y *
*                 to line x ;                              *
*                                                          *
*        Note :                                            *
*        This diagnostic assumes that the switches are set *
*        to  give  the  WATCHDOG  FUNCTION  priority. This *
*        means that the front panel switches should all be *
*        in  the  center  position and  the relay  modules *
*        should all be configured for  the  same  priority *
*        (see Option Description for details).             *
*                                                          *
*        IMPROPER SETTINGS  CAN  CAUSE  UNEXPECTED ERRORS, *
*        WHICH WILL NOT NECESSARILY  BE DIAGNOSED AS SUCH. *
*                                                          *
*        Error messages :                                  *
* #5     - "No echo received back from GS03-WD on line     *
*          # <line number>"                                *
*          "Check FORCE, MANUAL switches, priority         *
*          setting and cables".                            *
* #6     - "Both lines have switch priority over each      *
*          other."                                         *
*          "Check GS03 configuration."                     *
* #7     - "Echo from GS03-WD received on both lines       *
*          # <line number> and # <line number>."           *
* #8     - "GS03-WD failed to switch to line # <line       *
*          number>"                                        *
*          "No echo received back from GS03-WD on line     *
*          # <line number>"                                *
*          "Check FORCE, MANUAL switches, priority         *
*          setting and cables".                            *
* #9     - "Echo from the GS03-WD received on wrong        *
*          line # <line number> (expected : # <line        *
*          number>)."                                      *
```

```
                        *         "Echo is still being received on line #        *
                        *          <line number> when actually transmitting      *
                        *          on line # <line number> only."                *
                        *         "Check GS03 configuration."                    *
                        *                                                        *
                        **********************************************************
                        ************************* TEST 4 *************************
                        *                                                        *
                        * Test active only in mode 1 :                           *
                        *                                                        *
                        *       Purpose : installation test.                     *
                        *                                                        *
                        *       Assumption : all previous tests ran successfully. *
                        *                                                        *
                        *       Description :                                    *
                        *       This  test activates the line into the GS03-WD in *
                        *       order for the  operator to  check  that the LED's *
                        *       react correctly :                                *
                        *                                                        *
                        *       The  GREEN  or YELLOW  LED  corresponding to this *
                        *       CPU's line into the GS03-WD should  then turn on. *
                        *       The associated RED LED should turn off  after one *
                        *       full GS03-WD clock pulse after  this test  begins *
                        *       (which means that the RED  clock LED should blink *
                        *       twice at the most before this happens).          *
                        *                                                        *
                        *       Error message : none.                            *
                        *                                                        *
                        **********************************************************
```

8.0 Error Information

8.1 Error Reporting

Errors are reported by the program as they occur (if not inhibited). The report conforms to the diagnostic supervisor error report format, and consists of a description of the error, the test number, subtest number, pc of the error call, device address, and basic and extended error information.

The following examples provide typical error reports:

```
----------------------------------------------------------------
ZDZGAO DVC FTL ERR  00000 ON UNIT 00 TST 001 SUB 001 PC: 010052
BUS TIMEOUT

Unsuccessful attempt to write to DZ11 CSR at address 160100
Check DZ11 address.
----------------------------------------------------------------

----------------------------------------------------------------
ZDZGAO HRD ERR  00005 ON UNIT 00 TST 003 SUB 000 PC: 011046
NO ECHO ON ONE LINE

No echo received back from GS03-WD on line # 0
Check FORCE, MANUAL switches, priority setting and cables.
----------------------------------------------------------------

----------------------------------------------------------------
ZDZGAO HRD ERR  00008 ON UNIT 00 TST 003 SUB 000 PC: 011420
FAIL TO SWITCH TO

GS03-WD failed to switch to line # 2
No echo received back from GS03-WD on line # 2
Check FORCE, MANUAL switches, priority setting and cables.
----------------------------------------------------------------
```

For all other errors, the report may be more extensive and require additional data to be reported.

```
                    9.0     History

                       -    1rst release : JULY 84

                    @
```

```
                002000                  .=2000






                                        .MCALL  SVC
        002000                          SVC                                      ; INITIALIZE SUPERVISOR MACROS



        002000                          BGNMOD  ZDZGAO


                000000          $LSTIN= 0
                000000          $LSTTAG= 0
                000000          SVCINS= 0       ; LIST INSTRUCTIONS, SHIFTED RIGHT
                000000          SVCTST= 0       ; LIST TEST TAGS, SHIFTED RIGHT
                000000          SVCSUB= 0       ; LIST SUBTEST TAGS, SHIFTED RIGHT
                000000          SVCGBL= 0       ; LIST GLOBAL TAGS, SHIFTED RIGHT
                000000          SVCTAG= 0       ; LIST OTHER TAGS, SHIFTED RIGHT

                                ;       CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
                                ;       TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
                                ;       SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
                                ;       CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
```

```
                                        .SBTTL PROGRAM HEADER
                                 ;++
                                 ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
                                 ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
                                 ;--

 002000                                 POINTER BGNAU, BGNDU, BGNSETUP




 002000                                 HEADER  ZDZGAO, A, 0, 270., 0
 002000                          L$NAME::                       ;DIAGNOSTIC NAME
 002000      132                        .ASCII /Z/
 002001      104                        .ASCII /D/
 002002      132                        .ASCII /Z/
 002003      107                        .ASCII /G/
 002004      101                        .ASCII /A/
 002005      060                        .ASCII /0/
 002006      000                        .BYTE   0
 002007      000                        .BYTE   0
 002010                          L$REV::                        ;REVISION LEVEL
 002010      101                        .ASCII  /A/
 002011                          L$DEPO::                       ;0
 002011      060                        .ASCII  /0/
 002012                          L$UNIT::                       ;NUMBER OF UNITS
 002012   000001                        .WORD   T$PTHV
 002014                          L$TIML::                       ;LONGEST TEST TIME
 002014   000416                        .WORD   270.
 002016                          L$HPCP::                       ;POINTER TO H.W. QUES.
 002016   011562                        .WORD   L$HARD
 002020                          L$SPCP::                       ;POINTER TO S.W. QUES.
 002020   000000                        .WORD   0
 002022                          L$HPTP::                       ;PTR. TO DEF. H.W. PTABLE
 002022   002144                        .WORD   L$HW
 002024                          L$SPTP::                       ;PTR. TO S.W. PTABLE
 002024   000000                        .WORD   0
 002026                          L$LADP::                       ;DIAG. END ADDRESS
 002026   012076                        .WORD   L$LAST
 002030                          L$STA::                        ;RESERVED FOR APT STATS
 002030   000000                        .WORD   0
 002032                          L$CO::
 002032   000000                        .WORD   0
 002034                          L$DTYP::                       ;DIAGNOSTIC TYPE
 002034   000000                        .WORD   0
 002036                          L$APT::                        ;APT EXPANSION
 002036   000000                        .WORD   0
 002040                          L$DTP::                        ;PTR. TO DISPATCH TABLE
 002040   002132                        .WORD   L$DISPATCH
 002042                          L$PRIO::                       ;DIAGNOSTIC RUN PRIORITY
 002042   000000                        .WORD   0
 002044                          L$ENVI::                       ;FLAGS DESCRIBE HOW IT WAS SETUP
 002044   000000                        .WORD   0
 002046                          L$EXP1::                       ;EXPANSION WORD
 002046   000000                        .WORD   0
 002050                          L$MREV::                       ;SVC REV AND EDIT #
 002050      003                        .BYTE   C$REVISION
```

J3

```
        002051      003                   .BYTE   C$EDIT
        002052                     L$EF::                         ;DIAG. EVENT FLAGS
        002052  000000                    .WORD   0
        002054  000000                    .WORD   0
        002056                     L$SPC::
        002056  000000                    .WORD   0
        002060                     L$DEVP::                       ; POINTER TO DEVICE TYPE LIST
        002060  002324                    .WORD   L$DVTYP
        002062                     L$REPP::                       ;PTR. TO REPORT CODE
        002062  000000                    .WORD   0
        002064                     L$EXP4::
        002064  000000                    .WORD   0
        002066                     L$EXP5::
        002066  000000                    .WORD   0
        002070                     L$AUT::                        ;PTR. TO ADD UNIT CODE
        002070  007730                    .WORD   L$AU
        002072                     L$DUT::                        ;PTR. TO DROP UNIT CODE
        002072  007650                    .WORD   L$DU
        002074                     L$LUN::                        ;LUN FOR EXERCISERS TO FILL
        002074  000000                    .WORD   0
        002076                     L$DESP::                       ;POINTER TO DIAG. DESCRIPTION
        002076  002156                    .WORD   L$DESC
        002100                     L$LOAD::                       ;GENERATE SPECIAL AUTOLOAD EMT
        002100  104035                    EMT     E$LOAD
        002102                     L$ETP::                        ;POINTER TO ERRTBL
        002102  000000                    .WORD   0
        002104                     L$ICP::                        ;PTR. TO INIT CODE
        002104  005774                    .WORD   L$INIT
        002106                     L$CCP::                        ;PTR. TO CLEAN-UP CODE
        002106  007636                    .WORD   L$CLEAN
        002110                     L$ACP::                        ;PTR. TO AUTO CODE
        002110  007544                    .WORD   L$AUTO
        002112                     L$PRT::                        ;PTR. TO PROTECT TABLE
        002112  002122                    .WORD   L$PROT
        002114                     L$TEST::                       ;TEST NUMBER
        002114  000000                    .WORD   0
        002116                     L$DLY::                        ;DELAY COUNT
        002116  000000                    .WORD   0
        002120                     L$HIME::                       ;PTR. TO HIGH MEM
        002120  000000                    .WORD   0
    1359
    1360
    1371
    1372
    1373
    1374
    1375                           ;##############################################################
    1376
    1377
    1378
    1379
    1380
    1381                           ;++
    1382                           ; THIS TABLE IS USED BY THE RUNTIME SERVICES
    1383                           ; TO PROTECT THE LOAD MEDIA.
    1384                           ;--
    1385
```

K3

```
1386 002122                             BGNPROT
     002122                     L$PROT::
1387
1388 002122  000000                     0               ;OFFSET INTO P-TABLE FOR CSR ADDRESS
1389 002124  177777                     -1              ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
1390 002126  177777                     -1              ;OFFSET INTO P-TABLE FOR DRIVE NUMBER
1391
1392
1406
1407
1408 002130                             ENDPROT
1409
```

L3

```
   1412                                                .SBTTL DISPATCH TABLE
   1413
   1414                                        ;//////////////////////////////////////////////////////////////////////////////
   1415                                        ;/ THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
   1416                                        ;/ IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
   1417                                        ;//////////////////////////////////////////////////////////////////////////////
   1418
   1419 002130                                         DISPATCH 4
        002130  000004                                 .WORD   4
        002132                                 L$DISPATCH::
        002132  010006                                 .WORD   T1
        002134  010616                                 .WORD   T2
        002136  010750                                 .WORD   T3
        002140  011504                                 .WORD   T4
   1420
   1427
   1428
   1429
   1430
   1431
   1432
   1433
   1434                                        ;##############################################################################
   1435
   1436
   1437
   1438
   1439
   1440
   1441
```

```
                                  .SBTTL DEFAULT HARDWARE P-TABLE

                          ;///////////////////////////////////////////////////////////////////////////////
                          ;/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                          ;/ THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                          ;/ IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
                          ;/ AND IS USED AS A " TEMPLATE" FOR BUILDING THE P-TABLE
                          ;///////////////////////////////////////////////////////////////////////////////

                          .enabl  AMA
002142                            BGNHW   DFPTBL
002142  000005                    .WORD   L10001-L$HW/2
002144                    L$HW::
002144                    DFPTBL::



002144  160100                    .word   160100          ; DZ11 CSR address
002146  000300                    .word   300             ; DZ11 vector address
002150  000005                    .word   5               ; interrupt priority level (5)
002152  000003                    .word   3               ; bitmap of lines out of DZ11 into GS03-WD
002154  000000                    .word   0               ; diagnostic test mode (0)
                                                          ; or installation test mode (1) selector

002156                            ENDHW
002156                    L10001:

```

```
1478                                    .SBTTL  GLOBAL EQUATES SECTION
1479
1480
1481                            ;//////////////////////////////////////////////////////////////////////////////
1482                            ;/      THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
1483                            ;/      ARE USED IN MORE THAN ONE TEST.
1484                            ;//////////////////////////////////////////////////////////////////////////////
1485
1486
1487
1497
1498
1513
1514 002156                             EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
             100000             BIT15== 100000
             040000             BIT14== 40000
             020000             BIT13== 20000
             010000             BIT12== 10000
             004000             BIT11== 4000
             002000             BIT10== 2000
             001000             BIT09== 1000
             000400             BIT08== 400
             000200             BIT07== 200
             000100             BIT06== 100
             000040             BIT05== 40
             000020             BIT04== 20
             000010             BIT03== 10
             000004             BIT02== 4
             000002             BIT01== 2
             000001             BIT00== 1
                                ;
             001000             BIT9==  BIT09
             000400             BIT8==  BIT08
             000200             BIT7==  BIT07
             000100             BIT6==  BIT06
             000040             BIT5==  BIT05
             000020             BIT4==  BIT04
             000010             BIT3==  BIT03
             000004             BIT2==  BIT02
             000002             BIT1==  BIT01
             000001             BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
             000040             EF.START==      32.                     ; START COMMAND WAS ISSUED
             000037             EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
             000036             EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
             000035             EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
             000034             EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
```

```
           000340                    PRI07== 340
           000300                    PRI06== 300
           000240                    PRI05== 240
           000200                    PRI04== 200
           000140                    PRI03== 140
           000100                    PRI02== 100
           000040                    PRI01== 40
           000000                    PRI00== 0
                                     ;
                                     ;OPERATOR FLAG BITS
                                     ;
           000004                    EVL==        4
           000010                    LOT==       10
           000020                    ADR==       20
           000040                    IDU==       40
           000100                    ISR==      100
           000200                    UAM==      200
           000400                    BOE==      400
           001000                    PNT==     1000
           002000                    PRI==     2000
           004000                    IXE==     4000
           010000                    IBE==    10000
           020000                    IER==    20000
           040000                    LOE==    40000
           100000                    HOE==   100000

           000340                    MAXPRI  ==      340             ; Highest processor priority : 7

           000020                    CSRCLR  ==      000020          ; DZ11 CSR device clear bit set
           040040                    MSETIE  ==      040040          ; DZ11 CSR Master Scan Enable and Transmitter
                                                                     ; Interrupt Enable bits set
           000050                    MSEMAI  ==      000050          ; DZ11 CSR Master Scan Enable and MAIntenance
                                                                     ; loopback mode bits set
           010000                    RCVRON  ==      010000          ; DZ11 LPR Receiver On bit set

           174000                    RBUFCTL ==      174000          ; DZ11 RBUF mask to get line number after BIC

           000100                    DLAYarg ==      100             ; argument providing a rough 0.1 second delay
                                                                     ; when used with the DLAY macro on the 11/70
           177754                    DLAY2s  ==      -20.            ; 2 seconds delay to wait for echo
           177622                    DLAY11s ==      -110.           ; 11 seconds delay to wait for echo


                                     ;;*****************************************************************
                                     ;* PROGRAM EVENT FLAG DEFINITIONS
                                     ;;*****************************************************************
```

```
                                   .SBTTL  GLOBAL DATA SECTION

                         ;////////////////////////////////////////////////////////////////////////
                         ;/        THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                         ;/        IN MORE THAN ONE TEST.
                         ;/////////////////////////////////////////////////////////////////////////



                         ;;*********************************************************************
                         ;* STORAGE FOR DEVICE REGISTERS
                         ;;*********************************************************************
002156                             DESCRIPT        <CZDZGAO GS3WD.DZ11 LGC DIAG>
002156                   L$DESC::
002156     103    132    104       .ASCIZ  /CZDZGAO GS3WD.DZ11 LGC DIAG/
002161     132    107    101
002164     060    040    107
002167     123    063    127
002172     104    056    104
002175     132    061    061
002200     040    114    107
002203     103    040    104
002206     111    101    107
002211     000
                                   .EVEN




                         ;         ERRTBL




                         ;*******************************************************************
                         ;* PROGRAM CONTROL FLAGS
                         ;*******************************************************************

002212  000000            FTIME: .word   0              ; boolean to record first initialization
002214  000000            TMODE: .word   0              ; Test mode

                         ;*******************************************************************
                         ;* PROGRAM CONTROL PARAMETERS
                         ;*******************************************************************

002216  000000              UUT: .word   0              ; Unit under test

002220  000000           SWPRTY: .word   0              ; Switch priority (line x, y or none)

002222  000005           MAXERR: .word   5              ; max error count before dropping unit
002224  000000           ERRCNT: .word   0              ; error count

002226  000000           SAVE4:  .word   0              ; temporary storage for timeout trap
002230  000000           SAVE6:  .word   0              ; vector
```

```
                                 ;*****************************************************************
                                 ;* MISCELLANEOUS STORAGE
                                 ;*****************************************************************

002232  000000                   TXPSW:  .word   0              ; transmitter interrupt vector PSW

002234  000000                   DZPTY:  .word   0              ; DZ11 priority
002236  011070                   TLPR0:  .word   011070         ; predefined parameter description for lines into the
                                                                ; GS03-WD :
                                                                ;       - 8 bit characters
                                                                ;       - 1 start bit, 2 stop bits
                                                                ;       - 110 bauds or 1 character every 100 ms
                                                                ;       - receiver on

002240  000000                   TLPRx:  .word   0              ; test LPR for line x
002242  000000                   TLPRy:  .word   0              ; test LPR for line y

002244  000000                  DLAYC1:  .word   0
002246  000000                  DLAYC2:  .word   0

002250  000000                    ECHO:  .WORD   0              ; to store RBUF contents echoed back through
                                                                ; the DZ11

                                 ;;****  PRIMARY REG ADRS STORAGE FOR THIS UNIT  ******
                                 ;THESE LOCATIONS WILL BE LOADED FOR THE CURRENT UNIT, IN INIT CODE

                                 ;***********************************************************************
                                 ;* POINTERS TO DZ11 VECTORS AND REGISTERS
                                 ;***********************************************************************

 002252  000000                  DZrVCCa:.word   0       ; DZ11 receiver interrupt vector PC address
 002254  000000                  DZrVCSa:.word   0       ; DZ11 receiver interrupt vector PSW address
 002256  000000                  DZtVCCa:.word   0       ; DZ11 transmitter interrupt vector PC address
 002260  000000                  DZtVCSa:.word   0       ; DZ11 transmitter interrupt vector PSW address
 002262  000000                  DZCSRa: .word   0       ; DZ11 control status register address
 002264                          DZRBUFa:                ; DZ11 receive buffer/line parameter register
 002264  000000                  DZLPRa: .word   0       ; address
 002266  000000                  DZTCRa: .word   0       ; pointer to DZ11 transmit control register
 002270  000000                  DZTDRa: .word   0       ; pointer to DZ11 transmit data register

                                 ;***********************************************************************
                                 ;* POINTERS TO GS03-WD LINES OUT OF THE DZ11
                                 ;***********************************************************************

 002272  000000                   LNNBR: .word   0       ; Line
 002274  000000                  LNNBRx: .word   0       ; numbers
 002276  000000                  LNNBRy: .word   0       ; (0..7)
 002300  000000                   LNMAP: .word   0       ; Line
 002302  000000                  LNMAPx: .word   0       ; bitmaps
 002304  000000                  LNMAPy: .word   0       ; (0..377)


                                 ;;****  STACK USED FOR SUBROUTINE LINKAGE  *****


                                 ;***********************************************************************
                                 ;* SUBROUTINE LINKAGE PARAMETERS
                                 ;***********************************************************************

 002306  000000                   sbAOK: .WORD   0                ; Subroutine execution report

 002310  000000                  LNTSTD: .WORD   0                ; Number of line echo is to be expected on

 002312  000000                  OLDLNNB:.WORD   0                ; Number of the line the GS03-WD is switched to
                                                                  ; when calling subroutine sbSW31

 002314  000000                  NEWLNMP:.WORD   0                ; Bitmap and
 002316  000000                  NEWLNNB:.WORD   0                ; Number of the line the GS03-WD is to be
                                                                  ; switched to if subroutine sbSW31 succeeds

 002320  000000                  ADDR:    .word  0                ; Parameters
 002322  000000                  UNIT:    .word  0                ; for error reports


```

```
                                        .SBTTL  GLOBAL TEXT SECTION

                                  ;*****************************************************************
                                  ;*      THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                  ;*      MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                  ;*      MORE THAN ONE TEST.
                                  ;*****************************************************************

                                  ;;****************************************************************
                                  ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
                                  ;;****************************************************************
     002324                             DEVTYP  <GS03WD MODULE>
     002324                       L$DVTYP::
     002324      107      123      060      .ASCIZ  /GS03WD MODULE/
     002327      063      127      104
     002332      040      115      117
     002335      104      125      114
     002340      105      000
                                        .EVEN
```

```
                .SBTTL  GLOBAL SUBROUTINES

;------------------------------------------------------ ----- ---
; MACRO'S NEEDED TO CALL SUBROUTINES
;------------------------------------------------------------ ------


; macro to wait a few ms

; Call sequence :       DLAY    D               0 < D < 177777


.macro  DLAY    D
        MOV     #176630, DLAYC1
        MOV     #D, DLAYC2
        JSR     PC, sbWTG2
.endm
```

```
                                    ; Subroutine to wait for event or timeout

                                    ; Calling sequences :   JSR   PC, sbWTG1
                                    ;                       JSR   PC, sbWTG2


                                    ; Inputs parameters :   DLAYC1, DLAYC2


                                    ; subroutine sbWTG1 :
                                    ;       for I := DLAYC1 to 0 do begin end

002342  013746  002244              sbWTG1: MOV     DLAYC1, -(SP)

002346  005237  002244              loopG1: INC     DLAYC1
002352  001375                              BNE     loopG1

002354  012637  002244                      MOV     (SP)+, DLAYC1
002360  000207                              RTS     PC
                                    ; end sbWTG1


                                    ; subroutine sbWTG2 :
                                    ;       for DLAYC2 := DLAYC2 downto 0
                                    ;       do begin for J := DLAYC1 to 0
                                    ;                do
                                    ;                  ;
                                    ;

002362  004737  002342              sbWTG2: JSR     PC, sbWTG1

002366                                      BREAK
002366  104422                              TRAP    C$BRK

002370  005337  002246                      DEC     DLAYC2
002374  001372                              BNE     sbWTG2

002376  000207                              RTS     PC
                                    ; end sbWTG2



```

```
                                        ; Routine to drop unit after 5 errors

                                        ; Call sequence : JSR   PC, CHKMAX


002400                                  CHKMAX: INLOOP                          ; If looping on error
002400  104420                                  TRAP    C$INLP
002402                                          BCOMPLETE       1$              ; then exit
002402  103432                                  BCS     1$

002404                                          RFLAGS  R0                      ;
002404  104421                                  TRAP    C$RFLA
002406  032700  000040                          BIT     #IDU, R0                ; If dropping of units is inhibitted
002412  001026                                  BNE     1$                      ; then exit

002414  005237  002224                          INC     ERRCNT                  ; Update error count
002420  023737  002224  002222                  CMP     ERRCNT, MAXERR          ; If there are'nt too many errors
002426  003420                                  BLE     1$                      ; then exit

002430                                          PRINTF  #TMNYERS, MAXERR, UUT
002430  013746  002216                          MOV     UUT,-(SP)
002434  013746  002222                          MOV     MAXERR,-(SP)
002440  012746  002472                          MOV     #TMNYERS,-(SP)
002444  012746  000003                          MOV     #3,-(SP)
002450  010600                                  MOV     SP,R0
002452  104417                                  TRAP    C$PNTF
002454  062706  000010                          ADD     #10,SP
                                                                                ; else print 'Maximum error count
                                                                                ; of <maxerr> exceeded for unit <UUT>'
002460                                          DODU    UUT                     ; and drop unit
002460  013700  002216                          MOV     UUT,R0
002464  104451                                  TRAP    C$DODU

002466                                          DOCLN                           ; Abort subpass
002466  104444                                  TRAP    C$DCLN

002470  000207                          1$:     RTS     PC




                                                .nlist  BEX
002472     045     116     045          TMNYERS:.ASCIZ  /%N%AMaximum error count of %D3%A exceeded for unit %D2/
                                                .list   BEX
                                                .EVEN


```

```
   1808                                         ; service routine to transmit in interrupt mode :
   1809 002562                                  BGNSRV  svTXG1
        002562                                  svTXG1::
   1810 002562  112777  000101  177500                  MOVB    #'A, @DZTDRa    ;
   1811
   1812 002570                                  ENDSRV
        002570                                  L10002:
        002570  000002                                  RTI
   1813
```

K4

```
                                          ; subroutine to initialize DZ11 for interrupt mode transmission
                                          ;
                                          ; Calling sequence :     JSR   PC, sbIDG1
                                          ;
002572                                    sbIDG1: SETVEC  DZTVCCa, #svTXG1, TXPSW
002572  013746  002232                            MOV     TXPSW,-(SP)
002576  012746  002562                            MOV     #svTXG1,-(SP)
002602  013746  002256                            MOV     DZTVCCa,-(SP)
002606  012746  000003                            MOV     #3,-(SP)
002612  104437                                    TRAP    C$SVEC
002614  062706  000010                            ADD     #10,SP
                                                                          ;Set up transmitter interrupt vector

002620  012777  000020  177434                    MOV     #CSRCLR, @DZCSRa; Set CLR bit of DZ11 CSR

002626  032777  000020  177426    nCLDG1: BIT     #CSRCLR, @DZCSRa; Test CLR
002634                                            BREAK                   ; Authorize "control-C" abort
002634  104422                                    TRAP    C$BRK
002636  001373                                    BNE     nCLDG1          ; Wait until CSRCLR = 0

002640  000207                                    RTS     PC
                                          ; end sbIDG1
```

```
                                        ; subroutine to transmit and check for echo back from the GS03-WD
                                        ;
                                        ; Calling sequence :     JSR    PC, sbTEG1
                                        ;
                                        ; Input parameter : LNTSTD contains the number of the line on which echo
                                        ;                    is to be tested for
                                        ;
                                        ; Implicit input : DZ11 LPR register has been loaded with corresponding
                                        ;                  parameters and DZ11 TCR with the bitmap of the line(s)
                                        ;                  to be activated (i. e. : including that which was
                                        ;                  "already" active)
                                        ;
                                        ; Output parameters : if successful, return with sbAOK = 1 else with sbAOK = 0
                                        ;
002642  005037  002306                  sbTEG1: CLR     sbAOK           ;

002646  012777  040040  177406                  MOV     #MSETIE, @DZCSRa; Enable interrupt mode transmission
002654  012701  177622                          MOV     #dlay11s, R1    ; Set up 11 seconds delay

002660  105777  177376                  nRDNG1: TSTB    @DZCSRa         ; If silo empty,
002664  100014                                  BPL     WAITG1          ; then wait

002666  017737  177372  002250          nETYG1: MOV     @DZRBUFa, ECHO  ; else empty it

002674  100010                                  BPL     WAITG1          ; until it becomes empty

002676  042737  174000  002250                  BIC     #RBUFCTL, ECHO  ; or an echo
002704  123737  002251  002310                  CMPB    ECHO + 1, LNTSTD; on line "LNTSTD"
002712  001414                                  BEQ     succG1          ; is detected
002714  000764                                  BR      nETYG1

002716                                  WAITG1: DLAY    DLAYarg         ;
002736  005201                                  INC     R1              ;
002740  001347                                  BNE     nRDNG1

002742  000207                                  RTS     PC              ; When delay is elapsed, return
                                                                        ; with sbAOK = 0

002744  012737  000001  002306          succG1: MOV     #1, sbAOK       ; echo on line i means GS03-WD is switched
002752  000207                                  RTS     PC              ; to line i : return with sbAOK = 1

                                        ; end sbTEG1
```

```
                    .macro  ED$CALL XY
                            .LIST
                            ;*************************** TEST'XY' ************************
                            .NLIST
                    .endm



                    .macro  BADHEAD
                            .RADIX  10
                            ED$CALL \T$TESTNUM+1
                            .RADIX  8
                    .endm
```

N4

```
                                        .SBTTL  GLOBAL ERROR REPORT SECTION

                               ;/////////////////////////////////////////////////////////////
                               ;/       THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
                               ;/       THAT ARE USED IN MORE THAN ONE TEST.
                               ;/////////////////////////////////////////////////////////////

                                        .nlist  BEX
 002754     105     103     110 FAISWF: .ASCIZ  /ECHO ON WRONG LINE/
 002777     106     101     111 FAISWT: .ASCIZ  /FAIL TO SWITCH TO/
 003021     105     103     110 WD2ECH: .ASCIZ  /ECHO ON BOTH LINES/
 003044     120     122     111 PTYCFL: .ASCIZ  /PRIORITY CONFLICT/
 003066     116     117     040 NO1LEC: .ASCIZ  /NO ECHO ON ONE LINE/
 003112     116     117     040 NOWDEC: .ASCIZ  /NO WD ECHO/
 003125     104     132     061 DZLBER: .ASCIZ  /DZ11 INTERNAL LOOPBACK ERROR/
 003162     104     132     061 DZINER: .ASCIZ  /DZ11 INITIALIZATION FAULT/
 003214     102     125     123 BUSTIM: .ASCIZ  /BUS TIMEOUT/
                                        .EVEN

                               ;*************************************************************
                               ;* BASIC ERROR REPORTS MESSAGES :
                               ;*************************************************************

 003230     045     116     045 FSWF:   .ASCIZ  /%N%AEcho from GS03-WD received on wrong line # %D1%A (expected : # %D1%A)./
 003343     045     116     045 FSWT:   .ASCIZ  /%N%AGS03-WD failed to switch to line # %D1/
 003416     045     116     045 WD2E:   .ASCIZ  /%N%AEcho from GS03-WD received on both lines # %D1%A and # %D1/
 003515     045     116     045 PYCF:   .ASCIZ  /%N%ABoth lines have switch priority over each other./
 003602     045     116     045 N1LE:   .ASCIZ  /%N%ANo echo received back from GS03-WD on line # %D1/
 003667     045     116     045 NWDE:   .ASCIZ  /%N%ANo echo received back from GS03-WD on either line # %D1%A or # %D1/
 003776     045     116     045 DZLB:   .ASCIZ  /%N%ADZ11 internal loop back malfunction on line # %D1/
 004064     045     116     045 DZIN:   .ASCIZ  /%N%ADZ11 failed to reset./
 004116     045     116     045 CSRw:   .ASCIZ  /%N%AUnsuccessful attempt to write to DZ11 CSR at address %06/
 004213     045     116     045 CSRr:   .ASCIZ  /%N%AUnsuccessful attempt to read DZ11 CSR at address %06/
                                        .EVEN

                               ;*************************************************************
                               ;* EXTENDED ERROR REPORTS MESSAGES :
                               ;*************************************************************

 004304     045     116     045 NOEC1L: .ASCIZ  /%N%ANo echo received back from GS03-WD on line # %D1/
 004371     045     116     045 STEC1L: .ASCIZ  /%N%AEcho is still being received on line # %D1%A when actually transmitting

 004523     045     116     045 CKFMSW: .ASCIZ  /%N%ACheck FORCE, MANUAL switches, priority setting and cables./
 004622     045     116     045 CKDPSW: .ASCIZ  /%N%ACheck cabling and dip switch E18 (must be OFF)./
 004706     045     116     045 CKGSCF: .ASCIZ  /%N%ACheck GS03 configuration./
 004744     045     116     045 DZDIAG: .ASCIZ  /%N%ARun DZ11 diagnostic./
 004775     045     116     045 CKDZAD: .ASCIZ  /%N%ACheck DZ11 address./
                                        .list   BEX
                                        .EVEN
                                        ;-----------------------------------------
                                        ; MACRO'S NEEDED TO REPORT ERRORS
                                        ;-----------------------------------------



                                        ; Error # 0 report
 005026                                 BGNMSG  pCSRr                           ; CSR read error
 005026                                 pCSRr::
 005026                                 PRINTB  #CSRr, ADDR
 005026  013746  002320                         MOV     ADDR,-(SP)
 005032  012746  004213                         MOV     #CSRr,-(SP)
 005036  012746  000002                         MOV     #2,-(SP)
 005042  010600                                 MOV     SP,R0
 005044  104414                                 TRAP    C$PNTB
 005046  062706  000006                         ADD     #6,SP
 005052                                 PRINTX  #CKDZAD
 005052  012746  004775                         MOV     #CKDZAD,-(SP)
 005056  012746  000001                         MOV     #1,-(SP)
 005062  010600                                 MOV     SP,R0
 005064  104415                                 TRAP    C$PNTX
 005066  062706  000004                         ADD     #4,SP
 005072  004737  002400                         JSR     PC, CHKMAX              ; check if too many errors
 005076                                 ENDMSG
 005076                                 L10003:
 005076  104423                                 TRAP    C$MSG

                                        ; Error # 1 report
 005100                                 BGNMSG  pCSRw                           ; CSR write error
 005100                                 pCSRw::
 005100                                 PRINTB  #CSRw, ADDR
 005100  013746  002320                         MOV     ADDR,-(SP)
 005104  012746  004116                         MOV     #CSRw,-(SP)
 005110  012746  000002                         MOV     #2,-(SP)
 005114  010600                                 MOV     SP,R0
 005116  104414                                 TRAP    C$PNTB
 005120  062706  000006                         ADD     #6,SP
 005124                                 PRINTX  #CKDZAD
 005124  012746  004775                         MOV     #CKDZAD,-(SP)
 005130  012746  000001                         MOV     #1,-(SP)
 005134  010600                                 MOV     SP,R0
 005136  104415                                 TRAP    C$PNTX
 005140  062706  000004                         ADD     #4,SP
 005144  004737  002400                         JSR     PC, CHKMAX              ; check if too many errors
 005150                                 ENDMSG
 005150                                 L10004:
 005150  104423                                 TRAP    C$MSG

                                        ; Error # 2 report
 005152                                 BGNMSG  pDZIN                           ; DZ11 initialization error
 005152                                 pDZIN::
 005152                                 PRINTB  #DZIN
 005152  012746  004064                         MOV     #DZIN,-(SP)
 005156  012746  000001                         MOV     #1,-(SP)
 005162  010600                                 MOV     SP,R0
 005164  104414                                 TRAP    C$PNTB
 005166  062706  000004                         ADD     #4,SP
```

C5

```
 1979 005172                            PRINTX  @CKDZAD
      005172  012746  004775                    MOV     @CKDZAD,-(SP)
      005176  012746  000001                    MOV     #1,-(SP)
      005202  010600                            MOV     SP,R0
      005204  104415                            TRAP    C$PNTX
      005206  062706  000004                    ADD     #4,SP
 1980 005212                            PRINTX  @DZDIAG
      005212  012746  004744                    MOV     @DZDIAG,-(SP)
      005216  012746  000001                    MOV     #1,-(SP)
      005222  010600                            MOV     SP,R0
      005224  104415                            TRAP    C$PNTX
      005226  062706  000004                    ADD     #4,SP
 1981 005232  004737  002400                    JSR     PC, CHKMAX          ; check if too many errors
 1982 005236                            ENDMSG
      005236                            L10005:
      005236  104423                            TRAP    C$MSG
 1983
 1984                                   ; Error # 3 report
 1985 005240                            BGNMSG  pDZLB                       ; DZ11 loopback error
      005240                            pDZLB::
 1986 005240                            PRINTB  @DZLB, LNNBR
      005240  013746  002272                    MOV     LNNBR,-(SP)
      005244  012746  003776                    MOV     @DZLB,-(SP)
      005250  012746  000002                    MOV     #2,-(SP)
      005254  010600                            MOV     SP,R0
      005256  104414                            TRAP    C$PNTB
      005260  062706  000006                    ADD     #6,SP
 1987 005264                            PRINTX  @CKDZAD
      005264  012746  004775                    MOV     @CKDZAD,-(SP)
      005270  012746  000001                    MOV     #1,-(SP)
      005274  010600                            MOV     SP,R0
      005276  104415                            TRAP    C$PNTX
      005300  062706  000004                    ADD     #4,SP
 1988 005304                            PRINTX  @DZDIAG
      005304  012746  004744                    MOV     @DZDIAG,-(SP)
      005310  012746  000001                    MOV     #1,-(SP)
      005314  010600                            MOV     SP,R0
      005316  104415                            TRAP    C$PNTX
      005320  062706  000004                    ADD     #4,SP
 1989 005324  004737  002400                    JSR     PC, CHKMAX          ; check if too many errors
 1990 005330                            ENDMSG
      005330                            L10006:
      005330  104423                            TRAP    C$MSG
 1991
 1992                                   ; Error # 4 report
 1993 005332                            BGNMSG  pNWDE                       ; WD fail to echo error
      005332                            pNWDE::
 1994 005332                            PRINTB  @NWDE, LNNBRx, LNNBRy
      005332  013746  002276                    MOV     LNNBRy,-(SP)
      005336  013746  002274                    MOV     LNNBRx,-(SP)
      005342  012746  003667                    MOV     @NWDE,-(SP)
      005346  012746  000003                    MOV     #3,-(SP)
      005352  010600                            MOV     SP,R0
      005354  104414                            TRAP    C$PNTB
      005356  062706  000010                    ADD     #10,SP
 1995 005362                            PRINTX  @CKDPSW
      005362  012746  004622                    MOV     @CKDPSW,-(SP)
```

```
005366  012746  000001                  MOV     #1,-(SP)
005372  010600                          MOV     SP,R0
005374  104415                          TRAP    C$PNTX
005376  062706  000004                  ADD     #4,SP
005402  004737  002400                  JSR     PC, CHKMAX          ; check if too many errors
005406                          ENDMSG
005406                          L10007:
005406  104423                          TRAP    C$MSG


                                ; Error # 5 report
005410                          BGNMSG  pNILE                       ; No echo received on line x error
005410                          pNILE::
005410                          PRINTB  #NILE, LNNBRx
005410  013746  002274                  MOV     LNNBRx,-(SP)
005414  012746  003602                  MOV     #NILE,-(SP)
005420  012746  000002                  MOV     #2,-(SP)
005424  010600                          MOV     SP,R0
005426  104414                          TRAP    C$PNTB
005430  062706  000006                  ADD     #6,SP
005434                          PRINTX  #CKFMSW
005434  012746  004523                  MOV     #CKFMSW,-(SP)
005440  012746  000001                  MOV     #1,-(SP)
005444  010600                          MOV     SP,R0
005446  104415                          TRAP    C$PNTX
005450  062706  000004                  ADD     #4,SP
005454  004737  002400                  JSR     PC, CHKMAX          ; check if too many errors
005460                          ENDMSG
005460                          L10010:
005460  104423                          TRAP    C$MSG


                                ; Error # 6 report
005462                          BGNMSG  pPYCF                       ; Both lines have priority error
005462                          pPYCF::
005462                          PRINTB  #PYCF
005462  012746  003515                  MOV     #PYCF,-(SP)
005466  012746  000001                  MOV     #1,-(SP)
005472  010600                          MOV     SP,R0
005474  104414                          TRAP    C$PNTB
005476  062706  000004                  ADD     #4,SP
005502                          PRINTX  #CKGSCF
005502  012746  004706                  MOV     #CKGSCF,-(SP)
005506  012746  000001                  MOV     #1,-(SP)
005512  010600                          MOV     SP,R0
005514  104415                          TRAP    C$PNTX
005516  062706  000004                  ADD     #4,SP
005522  004737  002400                  JSR     PC, CHKMAX          ; check if too many errors
005526                          ENDMSG
005526                          L10011:
005526  104423                          TRAP    C$MSG


                                ; Error # 7 report
005530                          BGNMSG  pWD2E                       ; Echo on both lines error
005530                          pWD2E::
005530                          PRINTB  #WD2E, LNNBRx, LNNBRy
005530  013746  002276                  MOV     LNNBRy,-(SP)
005534  013746  002274                  MOV     LNNBRx,-(SP)
005540  012746  003416                  MOV     #WD2E,-(SP)
```

```
     005544  012746  000003              MOV     #3,-(SP)
     005550  010600                      MOV     SP,R0
     005552  104414                      TRAP    C$PNTB
     005554  062706  000010              ADD     #10,SP
     005560  004737  002400              JSR     PC, CHKMAX        ; check if too many errors
     005564                     ENDMSG
     005564                     L10012:
     005564  104423                      TRAP    C$MSG

                                ; Error # 8 report
     005566                     BGNMSG  pFSWT                    ; WD fail to switch to line i error
     005566                     pFSWT::
     005566                     PRINTB  #FSWT, NEWLNNB
     005566  013746  002316              MOV     NEWLNNB,-(SP)
     005572  012746  003343              MOV     #FSWT,-(SP)
     005576  012746  000002              MOV     #2,-(SP)
     005602  010600                      MOV     SP,R0
     005604  104414                      TRAP    C$PNTB
     005606  062706  000006              ADD     #6,SP
     005612                     PRINTX  #NOEC1L, NEWLNNB
     005612  013746  002316              MOV     NEWLNNB,-(SP)
     005616  012746  004304              MOV     #NOEC1L,-(SP)
     005622  012746  000002              MOV     #2,-(SP)
     005626  010600                      MOV     SP,R0
     005630  104415                      TRAP    C$PNTX
     005632  062706  000006              ADD     #6,SP
     005636                     PRINTX  #CKFMSW
     005636  012746  004523              MOV     #CKFMSW,-(SP)
     005642  012746  000001              MOV     #1,-(SP)
     005646  010600                      MOV     SP,R0
     005650  104415                      TRAP    C$PNTX
     005652  062706  000004              ADD     #4,SP
     005656  004737  002400              JSR     PC, CHKMAX        ; check if too many errors
     005662                     ENDMSG
     005662                     L10013:
     005662  104423                      TRAP    C$MSG

                                ; Error # 9 report
     005664                     BGNMSG  pFSWF                    ; WD echo on wrong line error
     005664                     pFSWF::
     005664                     PRINTB  #FSWF, OLDLNNB, NEWLNNB
     005664  013746  002316              MOV     NEWLNNB,-(SP)
     005670  013746  002312              MOV     OLDLNNB,-(SP)
     005674  012746  003230              MOV     #FSWF,-(SP)
     005700  012746  000003              MOV     #3,-(SP)
     005704  010600                      MOV     SP,R0
     005706  104414                      TRAP    C$PNTB
     005710  062706  000010              ADD     #10,SP
     005714                     PRINTX  #STEC1L, OLDLNNB, NEWLNNB
     005714  013746  002316              MOV     NEWLNNB,-(SP)
     005720  013746  002312              MOV     OLDLNNB,-(SP)
     005724  012746  004371              MOV     #STEC1L,-(SP)
     005730  012746  000003              MOV     #3,-(SP)
     005734  010600                      MOV     SP,R0
     005736  104415                      TRAP    C$PNTX
     005740  062706  000010              ADD     #10,SP
     005744                     PRINTX  #CKGSCF
```

F5

```
     005744  012746  004706                 MOV     #CKGSCF,-(SP)
     005750  012746  000001                 MOV     #1,-(SP)
     005754  010600                         MOV     SP,R0
     005756  104415                         TRAP    C$PNTX
     005760  062706  000004                 ADD     #4,SP
2032 005764  004737  002400                 JSR     PC, CHKMAX         ; check if too many errors
2033 005770                         ENDMSG
     005770                         L10014:
     005770  104423                         TRAP    C$MSG
2034
2035
2036
2037
2038
```

G5

```
2041                                      .SBTTL  REPORT CODING SECTION
2042
2043
2044                               ;++
2045                               ; THE REPORT CODING SECTION CONTAINS THE
2046                               ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
2047                               ;--
2048
2049 005772                               BGNRPT
     005772                        L$RPT::
2050
2056
2057
2064
2065 005772                               ENDRPT
     005772                        L10015:
     005772  104425                       TRAP    C$RPT
2066
2067
```

H5

```
                                          .SBTTL INITIALIZE SECTION

                                  ;//////////////////////////////////////////////////////////////////////
                                  ;/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                  ;/ AT THE BEGINNING OF EACH PASS.
                                  ;//////////////////////////////////////////////////////////////////////

     005774                               BGNINIT
     005774                       L$INIT::
```

```
                                            ; Context initialization
005774  005737  002212                              TST     FTIME           ; If this is the first pass through this
006000  001011                                      BNE     nFTMI1          ; routine,
006002  013737  000004  002226                      MOV     @#4, SAVE4      ; then the "trap through 4" vector is saved
006010  013737  000006  002230                      MOV     @#6, SAVE6      ;
006016  012737  000001  002212                      MOV     #1, FTIME       ;
006024  013737  002226  000004      nFTMI1: MOV     SAVE4, @#4      ; else it is restored
006032  013737  002230  000006              MOV     SAVE6, @#6      ;

006040                                              READEF  #EF.START       ; "START",
006040  012700  000040                              MOV     #EF.START,R0
006044  104447                                      TRAP    C$REFG
006046                                              BCOMPLETE       ftUNI1  ;
006046  103422                                      BCS     ftUNI1

006050                                              READEF  #EF.RESTART     ; "RESTART" commands,
006050  012700  000037                              MOV     #EF.RESTART,R0
006054  104447                                      TRAP    C$REFG
006056                                              BCOMPLETE       ftUNI1  ;
006056  103416                                      BCS     ftUNI1

006060                                              READEF  #EF.PWR         ;  or POWER UP :
006060  012700  000034                              MOV     #EF.PWR,R0
006064  104447                                      TRAP    C$REFG
006066                                              BCOMPLETE       ftUNI1  ;  start with first unit (# 0)
006066  103412                                      BCS     ftUNI1

006070                                              READEF  #EF.CONTINUE    ; If this a "continue" command,
006070  012700  000036                              MOV     #EF.CONTINUE,R0
006074  104447                                      TRAP    C$REFG
006076                                              BNCOMPLETE      contI1  ; then exit
006076  103002                                      BCC     contI1
006100                                              EXIT    INIT            ; (no re-initialization)
006100  104432                                      TRAP    C$EXIT
006102  001440                                      .WORD   L10016-.

006104                              contI1: READEF  #EF.NEW         ; If this is not a new pass,
006104  012700  000035                              MOV     #EF.NEW,R0
006110  104447                                      TRAP    C$REFG
006112                                              BNCOMPLETE      nxUNI1  ; then get next unit
006112  103003                                      BCC     nxUNI1

006114  012737  177777  002216      ftUNI1: MOV     #-1, UUT        ;

006122  005237  002216              nxUNI1: INC     UUT             ; Point to next unit
006126  023737  002216  002012              CMP     UUT, L$UNIT     ; If there is'nt any,
006134  002161                              BGE     aborI1          ; then end-of-pass
```

J5

```
2138                                            ; Load hardware parameters for unit under test .
2139 006136                                             GPHARD  UUT, R1         ; Call to DRS to put p-table address in R1
     006136  013700  002216                             MOV     UUT,R0
     006142  104442                                     TRAP    C$GPHRD
     006144  010001                                     MOV     R0,R1
2140 006146                                             BCOMPLETE gtPMI1        ;
     006146  103413                                     BCS     gtPMI1
2141
2142 006150                                             PRINTF  #NOTAV, UUT     ; If not available,
     006150  013746  002216                             MOV     UUT,-(SP)
     006154  012746  007316                             MOV     #NOTAV,-(SP)
     006160  012746  000002                             MOV     #2,-(SP)
     006164  010600                                     MOV     SP,R0
     006166  104417                                     TRAP    C$PNTF
     006170  062706  000006                             ADD     #6,SP
2143 006174  000752                                     BR      nxUNI1          ; then get next unit
2144
2145 006176  011137  002262                     gtPMI1: MOV     (R1), DZCSRa    ; Get address of DZ11 CSR
2146
2147 006202  011137  002264                             MOV     (R1), DZRBUFa   ; Get address of DZ11 RBUF/LPR
2148 006206  062737  000002  002264                     ADD     #2, DZRBUFa     ; (DZRBUFa = DZLPRa)
2149
2150 006214  011137  002266                             MOV     (R1), DZTCRa    ; Get address of DZ11 TCR
2151 006220  062737  000004  002266                     ADD     #4, DZTCRa
2152
2153 006226  012137  002270                             MOV     (R1) +, DZTDRa  ; Get address of DZ11 TDR
2154 006232  062737  000006  002270                     ADD     #6, DZTDRa
2155
2156 006240  011137  002252                             MOV     (R1), DZrVCCa   ; Get address of DZ11 receiver interrupt
2157 006244  011137  002254                             MOV     (R1), DZrVCSa   ; vector
2158 006250  062737  000002  002254                     ADD     #2, DZrVCSa
2159
2160 006256  011137  002256                             MOV     (R1), DZtVCCa   ; Get address of DZ11 transmitter interrupt
2161 006262  062737  000004  002256                     ADD     #4, DZtVCCa     ; vector
2162 006270  012137  002260                             MOV     (R1) +, DZtVCSa
2163 006274  062737  000006  002260                     ADD     #6, DZtVCSa
2164
2165 006302  012137  002234                             MOV     (R1) +, DZPTY   ; Get pointer to tx priority level
2166
2167 006306  012137  002300                             MOV     (R1) +, LNMAP   ; Get bitmap of active lines
2168
2169 006312  011137  002214                             MOV     (R1), TMODE     ; Get test mode
2170 006316  001025                                     BNE     MOD1I1
2171
2172 006320                                             PRINTF  #RUNG0a, UUT    ; 'Running on unit <UUT> in mode 0...'
     006320  013746  002216                             MOV     UUT,-(SP)
     006324  012746  006740                             MOV     #RUNG0a,-(SP)
     006330  012746  000002                             MOV     #2,-(SP)
     006334  010600                                     MOV     SP,R0
     006336  104417                                     TRAP    C$PNTF
     006340  062706  000006                             ADD     #6,SP
2173 006344                                             PRINTF  #RUNG0b, UUT    ; 'Only tests 1, 2 and 3 are active...'
     006344  013746  002216                             MOV     UUT,-(SP)
     006350  012746  007056                             MOV     #RUNG0b,-(SP)
     006354  012746  000002                             MOV     #2,-(SP)
     006360  010600                                     MOV     SP,R0
     006362  104417                                     TRAP    C$PNTF
```

```
      006364  062706  000006                    ADD     #6,SP
 2174 006370  000424                            BR      contI2
 2175
 2176 006372                           MOD1I1:  PRINTF  #RUNG1a, UUT     ; 'Running on unit <UUT> in mode 1...'
      006372  013746  002216                    MOV     UUT,-(SP)
      006376  012746  007141                    MOV     #RUNG1a,-(SP)
      006402  012746  000002                    MOV     #2,-(SP)
      006406  010600                            MOV     SP,R0
      006410  104417                            TRAP    C$PNTF
      006412  062706  000006                    ADD     #6,SP
 2177 006416                                    PRINTF  #RUNG1b, UUT     ; 'Only tests 1 and 4 are active...'
      006416  013746  002216                    MOV     UUT,-(SP)
      006422  012746  007236                    MOV     #RUNG1b,-(SP)
      006426  012746  000002                    MOV     #2,-(SP)
      006432  010600                            MOV     SP,R0
      006434  104417                            TRAP    C$PNTF
      006436  062706  000006                    ADD     #6,SP
 2178
```

```
                                        ; Compute program variables accordingly :
     006442  013701  002234     contI2: MOV     DZPTY, R1       ; Load DZ11
     006446  072127  000005             ASH     #5, R1          ; bus priority
     006452  010137  002232             MOV     R1, TXPSW       ; into TXPSW

     006456  005037  002224             CLR     ERRCNT          ;
     006462  004737  006506             JSR     PC, sbLNI1      ; Compute "LNNBRi" and "LNMAPi" from "LNMAP"

     006466  005737  002306             TST     sbAOK           ; If wrong "LNMAP" format,
     006472  001402                     BEQ     aborI1          ; then abort pass

     006474                             EXIT    INIT
     006474  104432                     TRAP    C$EXIT
     006476  001044                     .WORD   L10016-.

     006500                     aborI1: DOCLN                   ;CLEAN UP AND ABORT PASS
     006500  104444                     TRAP    C$DCLN
     006502                             EXIT    INIT
     006502  104432                     TRAP    C$EXIT
     006504  001036                     .WORD   L10016-.
```

```
                                          ; subroutine to compute line map, number and parameters for lines x and y out
                                          ; of the DZ11
                                          ;
                                          ; Input parameter :
                                          ;
                                          ;       LNMAP
                                          ;
                                          ; Output parameters :
                                          ;                       - sbAOK = 1 <=> successful ;
                                          ;                       - if successful, line numbers (0..7) in LNNBRx, LNNBRy
                                          ;                                       line bitmaps in LNMAP, LNMAPx, LNMAPy
                                          ;                                       line parameters TLPRx, TLPRy
                                          ; Side effects :
                                          ;                       - LNMAP is not modified ;
                                          ;                       - LNNBR is left undefined.
                                          ;
     006506  005037  002306               sbLNI1: CLR     sbAOK           ;
     006512  005037  002302                       CLR     LNMAPx
     006516  005037  002304                       CLR     LNMAPy

     006522  113702  002300                       MOVB    LNMAP, R2
     006526  112701  000001                       MOVB    #001, R1
     006532  005037  002272                       CLR     LNNBR

     006536  130102                       nxBII1: BITB    R1, R2
     006540  001005                               BNE     RLMPI1          ; If found, then store value in LNMAPx-y

     006542  005237  002272                       INC     LNNBR           ; else increment line number and
     006546  106301                               ASLB    R1              ; shift set bit in R1 left one position
     006550  103372                               BCC     nxBII1          ; as long as no overflow occurs
     006552  000424                               BR      erLMI1

     006554  040102                       RLMPI1: BIC     R1, R2          ; Clear bit in R2 that has just been found set

     006556  105737  002302                       TSTB    LNMAPx          , If LNMAPx has already been assigned a value,
     006562  001045                               BNE     RLMPI2          ; then assign one to LNMAPy now

     006564  110137  002302                       MOVB    R1, LNMAPx      ; Store
     006570  013737  002272  002274               MOV     LNNBR, LNNBRx   ; results
     006576  013737  002236  002240               MOV     TLPRO, TLPRx    ; into line x
     006604  063737  002274  002240               ADD     LNNBRx, TLPRx   ; parameters

     006612  005737  002214                       TST     TMODE           ; If mode 0 and LNMAP format was given right,
                                                                          ; then now R2 = LNMAPy.
     006616  001747                               BEQ     nxBII1          ; <- This is just to check for right format.

                                                                          ; If mode 1,
     006620  005702                               TST     R2              ; then only one line should be specified
     006622  001442                               BEQ     succI1

     006624                               erLMI1: PRINTF  #WGLMP1, LNMAP, TMODE
     006624  013746  002214                       MOV     TMODE,-(SP)
     006630  013746  002300                       MOV     LNMAP,-(SP)
     006634  012746  007357                       MOV     #WGLMP1,-(SP)
     006640  012746  000003                       MOV     #3,-(SP)
     006644  010600                               MOV     SP,R0
     006646  104417                               TRAP    C$PNTF
```

N5

INITIALIZE SECTION

```
006650  062706  000010                    ADD     #10 SP
                                                                  ; 'Wrong number of DZ11 lines...'
006654                                    PRINTF  #WGLMP2
006654  012746  007467                    MOV     #WGLMP2,-(SP)
006660  012746  000001                    MOV     #1,-(SP)
006664  010600                            MOV     SP,R0
006666  104417                            TRAP    C$PNTF
006670  062706  000004                    ADD     #4,SP
006674  000207                            RTS     PC

006676  105702                   RLMPI2:  TSTB    R2              ; Check that no more than 2 lines were
006700  001351                            BNE     erLMI1          ; specified

006702  110137  002304                    MOVB    R1, LNMAPy      ; Store
006706  013737  002272  002276            MOV     LNNBR, LNNBRy   ; results
006714  013737  002236  002242            MOV     TLPRO, TLPRy    ; into line y
006722  063737  002276  002242            ADD     LNNBRy, TLPRy   ; parameters

006730  012737  000001  002306   succI1:  MOV     #1, sbAOK       ;
006736  000207                            RTS     PC
                                 ; end sbLNI1

```

B6

```
                                              .nlist  BEX
     006740     045     116     045  RUNG0a:  .ASCIZ  /%N%ARunning on unit %D2%A in mode 0 : pass-time is 2 minutes on the PDP11 7
0.
     007056     045     116     045  RUNG0b:  .ASCIZ  /%N%AOnly tests 1, 2 and 3 are active in this mode./
     007141     045     116     045  RUNG1a:  .ASCIZ  /%N%ARunning on unit %D2%A in mode 1 : type "ctrl C" to stop./
     007236     045     116     045  RUNG1b:  .ASCIZ  /%N%AOnly tests 1 and 4 are active in this mode./
     007316     045     116     045  NOTAV:   .ASCIZ  /%N%AUnit %D2%A is not available./
     007357     045     116     045  WGLMP1:  .ASCIZ  /%N%N%AWrong number of DZ11 lines in bitmap "%O3%A" for mode %D1%A test./
     007467     045     116     045  WGLMP2:  .ASCIZ  /%N%AChange Hardware P-table to correct.%N/
                                              .list   BEX

                                              .EVEN

     007542                          ENDINIT
     007542                          L10016:
     007542  104411                           TRAP    C$INIT
```

C6

```
                                                  .SBTTL  AUTODROP SECTION

                                         ;++
                                         ; THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
                                         ; THE "ADR" FLAG WAS SET.  THE UNIT(S) UNDER TEST ARE CHECKED TO
                                         ; SEE IF THEY WILL RESPOND.  THOSE THAT DON'T ARE IMMEDIATELY
                                         ; DROPPED FROM TESTING.
                                         ;--
                                                  .EVEN
007544                                            BGNAUTO
007544                                   L$AUTO::




                                         ; Check if DZ11 responds

007544  013701  002262                            MOV     DZCSRa, R1          ;
007550  012705  000004                            MOV     #4, R5              ; 4 DZ11  registers to be tested

                                                  ; Set up timeout trap :
007554  012737  007606  000004                    MOV     #2$, @#4            ; address for timeout error trap handler
007562  012737  000340  000006                    MOV     #MAXPRI, @#6        ; priority level 7 in trap PSW to lock out
                                                                              ; other interrupts

007570  005711                                1$: TST     (R1)                ;
007572  000240                                    NOP
007574  062701  000002                            ADD     #2, R1              ; next register
007600  005305                                    DEC     R5                  ; Decrement register count
007602  001372                                    BNE     1$                  ; and branch back if not last register
007604  000405                                    BR      3$

                                                  ; time out error trap handler :
007606  062706  000004                        2$: ADD     #4,SP               ; Pop old PC, PSW
007612                                            DODU    UUT                 ; Drop unit under test
007612  013700  002216                            MOV     UUT,R0
007616  104451                                    TRAP    C$DODU

007620  013737  002226  000004                3$: MOV     SAVE4, @#4          ; Restore original timeout vector
007626  013737  002230  000006                    MOV     SAVE6, @#6          ;




007634                                            ENDAUTO
007634                                   L10017:
007634  104461                                    TRAP    C$AUTO
```

```
                                          .SBTTL  CLEANUP CODING SECTION

                                   ;//////////////////////////////////////////////////////////////////////
                                   ;/ THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
                                   ;/ AT THE END OF EACH PASS.
                                   ;//////////////////////////////////////////////////////////////////////

     007636                               BGNCLN
     007636                        L$CLEAN::




     007636                               BRESET            ; bus reset
     007636  104433                       TRAP    C$RESET
     007640                               CLRVEC  DZTVCCa ; Clear transmit interrupt vector
     007640  013700  002256               MOV     DZTVCCa,R0
     007644  104436                       TRAP    C$CVEC

     007646                               ENDCLN
     007646                        L10020:
     007646  104412                       TRAP    C$CLEAN
```

```
                                          .SBTTL  DROP UNIT SECTION

                                  ;//////////////////////////////////////////////////////////////////////////////
                                  ;/ THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                  ;/ TO NO LONGER BE TESTED.
                                  ;/////////////////////////////////////////////////////////////////////////////

 007650                                   BGNDU
 007650                           L$DU::



                                          .EVEN

 007650                                   PRINTF  #DROPD, R0        ; DRS has put # of unit to be dropped in R0
 007650  010046                           MOV     R0,-(SP)
 007652  012746  007676                   MOV     #DROPD,-(SP)
 007656  012746  000002                   MOV     #2,-(SP)
 007662  010600                           MOV     SP,R0
 007664  104417                           TRAP    C$PNTF
 007666  062706  000006                   ADD     #6,SP

 007672                                   EXIT    DU
 007672  000167                           .WORD   J$JMP
 007674  000030                           .WORD   L10021-2-.


                                          .nlist  BEX
 007676     045     116     045   DROPD:  .ASCIZ  /%N%AUnit %D2%A dropped./
                                          .list   BEX
                                          .EVEN

 007726                                   ENDDU
 007726                           L10021:
 007726  104453                           TRAP    C$DU
```

F6

```
                                               .SBTTL  ADD UNIT SECTION

                                       ;//////////////////////////////////////////////////////////////////////
                                       ;/ THE ADD-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                       ;/  TO BE (A) TESTED FOR THE FIRST TIME, OR (B) RESUMED IN TESTING.  IF
                                       ;/  "EF.AUNIT" IS SET, THE UNIT WILL BE TESTED AS A NEW UNIT.
                                       ;//////////////////////////////////////////////////////////////////////





 007730                                        BGNAU
 007730                                L$AU::
                                               .EVEN

 007730                                        PRINTF  #ADDED, RO       ; DRS has put # of unit to be added in RO
 007730  010046                                MOV     RO,-(SP)
 007732  012746  007756                        MOV     #ADDED,-(SP)
 007736  012746  000002                        MOV     #2,-(SP)
 007742  010600                                MOV     SP,RO
 007744  104417                                TRAP    C$PNTF
 007746  062706  000006                        ADD     #6,SP

 007752                                        EXIT    DU
 007752  000167                                .WORD   J$JMP
 007754  177750                                .WORD   L10021-2-.

                                               .nlist  BEX
 007756     045     116     045        ADDED:  .ASCIZ  /%N%AUnit %D2%A added./
                                               .list   BEX
                                               .EVEN

 010004                                        ENDAU
 010004                                L10022:
 010004  104452                                TRAP    C$AU
```

G6

```
2484                                          .SBTTL  HARDWARE TESTS
2485
2486
2487
2488                                 ;START OF CODE BLOCK WHICH IS USED AS DATA
2489 010006                          ROMMAP:;++
2490                                 ; TEST TO ...
2491                                 ;--
2492
2499
2505
2506                                 ;        BGNTST
2507
2513
2514                                 ;        EXIT    TST
2515
2527
2528                                          .EVEN
2529                                 ;        ENDTST
2530
2536
```

```
010006                                BADHEAD
                                      ;**************************** TEST1 ************************
                                      ;*
                                      ;*       Purpose : basic test of DZ11.
                                      ;*
                                      ;*       Description :
                                      ;*       - Subtest 1 : Check that DZ11 CSR can be  written
                                      ;*       to and read from ;
                                      ;*       - Subtest 2 : Transmit a character in maintenance
                                      ;*       (internal) loopback  mode on the selected line(s)
                                      ;*       and check for proper echo.
                                      ;*
                                      ;*       Error messages :
                                      ;* #0,1 - Subtest 1 : "Unsuccessful attempt to
                                      ;*        write to/read DZ11 CSR"
                                      ;*                    "Check DZ11 address."
                                      ;*
                                      ;* #2   - Subtest 2 : "DZ11 failed to reset."
                                      ;*                    "Check DZ11 address."
                                      ;*                    "Run DZ11 diagnostic."
                                      ;*
                                      ;* #3   - Subtest 2 : "DZ11 internal loopback malfunction
                                      ;*       on line # <line number>"
                                      ;*                    "Check DZ11 address."
                                      ;*                    "Run DZ11 diagnostic."
                                      ;*
010006                                BADHEAD
                                      ;**************************** TEST1 ************************

010006                           DGNTST
010006                           T1::
010006                           BGNSUB  ; Start of subtest 1
010006                           T1.1:
010006  104402                        TRAP    C$BSUB
010010                           BGNSEG
010010  104404                        TRAP    C$BSEG
                                      ; Set up timeout trap :
010012  012737  010040  000004        MOV     #1$, @#4        ; address for CSR write error trap handler
010020  012737  000340  000006        MOV     #340, @#6       ; priority level 7 in trap PSW to lock out
                                                              ; other interrupts

010026  012777  000020  172226        MOV     #CSRCLR, @DZCSRa; Set CLR bit of DZ11 CSR
010034  000240                        NOP
010036  000422                        BR      contD1          ;

                                      ; CSR write error trap handler : DEVICE FATAL ERROR
010040  062706  000004           1$:  ADD     #4, SP          ; Pop old PC, PSW
010044  013737  002262  002320        MOV     DZCSRa, ADDR    ; Report address location
010052                                ERRDF   0, BUSTIM, pCSRw;
010052  104455                        TRAP    C$ERDF
010054  000000                        .WORD   0
010056  003214                        .WORD   BUSTIM
010060  005100                        .WORD   pCSRw
010062  013737  002226  000004        MOV     SAVE4, @#4
010070  013737  002230  000006        MOV     SAVE6, @#6
010076                                DOCLN                   ; Abort pass
010076  104444                        TRAP    C$DCLN
```

```
 2585 010100                                ENDSEG
      010100                                10000$:
      010100  104405                                  TRAP    C$ESEG
 2586
 2587 010102                                BGNSEG
      010102  104404                                  TRAP    C$BSEG
 2588 010104  012737  010124  000004  contD1: MOV     #1$, @#4        ; address for CSR read error trap handler
 2589
 2590 010112  032777  000020  172142          BIT     #CSRCLR, @DZCSRa; Test CLR
 2591 010120  000240                          NOP
 2592 010122  000423                          BR      contD2
 2593
 2594                                         ; CSR read error handler : DEVICE FATAL ERROR
 2595 010124  062706  000004             1$: ADD     #4, SP          ; Pop old PC, PSW
 2596 010130  013737  002262  002320          MOV     DZCSRa, ADDR    ; Report address location
 2597 010136  013737  002216  002322          MOV     UUT, UNIT       ; Report unit number
 2598 010144                                  ERRDF   1, BUSTIM, pCSRr;
      010144  104455                          TRAP    C$ERDF
      010146  000001                          .WORD   1
      010150  003214                          .WORD   BUSTIM
      010152  005026                          .WORD   pCSRr
 2599 010154  013737  002226  000004          MOV     SAVE4, @#4
 2600 010162  013737  002230  000006          MOV     SAVE6, @#6
 2601 010170                                  DOCLN                   ; Abort pass
      010170  104444                          TRAP    C$DCLN
 2602
 2603 010172  013737  002226  000004  contD2: MOV     SAVE4, @#4
 2604 010200  013737  002230  000006          MOV     SAVE6, @#6
 2605 010206                                ENDSEG
      010206                                10001$:
      010206  104405                          TRAP    C$ESEG
 2606 010210                                ENDSUB
      010210                                L10024:
      010210  104403                          TRAP    C$ESUB
 2607
 2608 010212                                BGNSUB  ; Start of subtest 2
      010212                                T1.2:
      010212  104402                          TRAP    C$BSUB
 2609                                       ; Initlialize DZ11 :
 2610 010214  012777  000020  172040          MOV     #CSRCLR, @DZCSRa; Set CLR bit of DZ11 CSR
 2611 010222  012701  177754                  MOV     #DLAY2s, R1     ; Set up 2 seconds delay
 2612
 2613 010226  032777  000020  172026  nCLDD1: BIT     #CSRCLR, @DZCSRa; Wait
 2614 010234  001417                          BEQ     contD3          ; for
 2615
 2616 010236                                  DLAY    DLAYarg         ; CSR CLear bit
 2617 010256  005201                          INC     R1              ; to clear (reset complete)
 2618 010260  001362                          BNE     nCLDD1          ; If time-out
 2619 010262                                  ERRDF   2, DZINER, pDZIN; then there's a problem
      010262  104455                          TRAP    C$ERDF
      010264  000002                          .WORD   2
      010266  003162                          .WORD   DZINER
      010270  005152                          .WORD   pDZIN
 2620 010272                                  DOCLN                   ; Abort pass
      010272  104444                          TRAP    C$DCLN
 2621
 2622                                       ; test transmission on line x :
```

J6

```

010274  013777  002240  171762  contD3: MOV     TLPRx, @DZLPRe  ; Load parameters for line x
010302  113777  002302  171756          MOVB    LNMAPx, @DZTCRe ; Enable transmission on line x

010310  004737  010426                  JSR     PC, @bTED1      ; Transmit and test echo on line x

010314  005737  002306                  TST     @bAOK           ; If normal,
010320  001010                          BNE     contD4          ; then go on testing line y

010322  013737  002274  002272          MOV     LNNBRx, LNNBR   ; else report DEVICE FATAL error
010330                                  ERRDF   3, DZLBER, pDZLB;
010330  104455                          TRAP    C$ERDF
010332  000003                          .WORD   3
010334  003125                          .WORD   DZLBER
010336  005240                          .WORD   pDZLB
010340                                  DOCLN                   ; Abort pass
010340  104444                          TRAP    C$DCLN

                                ; If mode 0, then test transmission on line y, too :

010342  005737  002214          contD4: TST     TMODE
010346  001402                          BEQ     contD5
010350                                  EXIT    TST
010350  104432                          TRAP    C$EXIT
010352  000242                          .WORD   L10023-.

010354  013777  002242  171702  contD5: MOV     TLPRy, @DZLPRe
010362  113777  002304  171676          MOVB    LNMAPy, @DZTCRe

010370  004737  010426                  JSR     PC, @bTED1      ; Transmit and test echo on line y

010374  005737  002306                  TST     @bAOK           ; If normal,
010400  001402                          BEQ     contD6          ; then
010402                                  EXIT    TST             ; exit test
010402  104432                          TRAP    C$EXIT
010404  000210                          .WORD   L10023-.

010406  013737  002276  002272  contD6: MOV     LNNBRy, LNNBR   ; else report DEVICE FATAL error
010414                                  ERRDF   3, DZLBER, pDZLB;
010414  104455                          TRAP    C$ERDF
010416  000003                          .WORD   3
010420  003125                          .WORD   DZLBER
010422  005240                          .WORD   pDZLB
010424                                  DOCLN                   ; Abort pass
010424  104444                          TRAP    C$DCLN

```

K6

```
                                          ; subroutine to transmit one character in maintenance loopback mode
                                          ; and check for echo
                                          ;
                                          ; Output parameter : sbAOK = 1 <=> success
                                          ;
010426  005037  002306                    sbTED1: CLR     sbAOK           ;

010432  012777  000050  171622                    MOV     #MSEMAI, @DZCSRa; Enable maintenance loopback mode transmission
010440  012701  177754                            MOV     #DLAY2s, R1     ; Set up 2 seconds delay

010444  005777  171612                    nTRYD1: TST     @DZCSRa         ; Wait
010450  100414                                    BMI     contD7          ; for

010452                                            DLAY    DLAYarg         ; CSR Transmit ReaDY bit
010472  005201                                    INC     R1              ; to set
010474  001363                                    BNE     nTRYD1          ; If time-out
010476  000137  010610                            JMP     PBLMD1          ; then there's a problem

010502  112777  000101  171560    contD7: MOVB    #'A, @DZTDRa    ; Load character into Transmit Data Register
010510  012701  177754                            MOV     #DLAY2s, R1     ; Set up 2 seconds delay

010514  105777  171542                    nRDND1: TSTB    @DZCSRa         ; REPEAT Wait
010520  100021                                    BPL     contD8          ; UNTIL echo received

010522  017737  171536  002250                    MOV     @DZRBUFa, ECHO  ; Read received data
010530  122737  000101  002250                    CMPB    #'A, ECHO       ; If data received differs from data sent,
010536  001024                                    BNE     PBLMD1          ; then there is a problem

010540  000240                                    NOP
010542  000240                                    NOP
010544  017737  171514  002250                    MOV     @DZRBUFa, ECHO  ; Try and read more data
010552  100416                                    BMI     PBLMD1          ; If silo is not empty, there is a problem

010554  012737  000001  002306                    MOV     #1, sbAOK       ; else All is OK
010562  000207                                    RTS     PC              ;

010564                                    contD8: DLAY    DLAYarg         ; Wait
010604  005201                                    INC     R1              ; routine
010606  001342                                    BNE     nRDND1

010610  000207                            PBLMD1: RTS     PC              ; When delay is elapsed or a problem arises,
                                                                          ; return with sbAOK = 0
                                          ; end sbTED1

010612                                    ENDSUB
010612                                    L10025:
010612  104403                                    TRAP    C$ESUB

010614                                    ENDTST
010614                                    L10023:
010614  104401                                    TRAP    C$ETST
                                                  .EVEN

```

```
       010616                      BADHEAD
                                   ;************************** TEST2 ************************
                                   ;*
                                   ;* Test active only in mode 0 :
                                   ;*
                                   ;*      Purpose : check that  characters  are echoed back
                                   ;*               from the GS03-WD.
                                   ;*
                                   ;*      Assumption :  the previous test ran successfully.
                                   ;*
                                   ;*      Description :
                                   ;*      The  two  lines  out of the DZ11  are arbitrarily
                                   ;*      named line x and line y.
                                   ;*      A first  attempt will be  made  to  receive  echo
                                   ;*      back from  the GS03-WD  on  line  x. If it is not
                                   ;*      successful,  another  attempt  will  be  made  to
                                   ;*      receive  echo  on  line  y. If  this  cannot  be
                                   ;*      achieved  either, a  hard  error warning  will be
                                   ;*      printed.
                                   ;*
                                   ;*      Note :
                                   ;*      This diagnostic detects that the GS03-WD switches
                                   ;*      to one line  by receiving  echoed characters back
                                   ;*      from the GS03-WD on that line.
                                   ;*      This is why,  before  other  tests  check correct
                                   ;*      switching, this test first checks that  echo  can
                                   ;*      be received back from the  GS03-WD, on  at  least
                                   ;*      one line.
                                   ;*
                                   ;*      Error message :
                                   ;* #4   - "No echo received back from the GS03-WD on
                                   ;*      either line # <line number> or # <line number>"
                                   ;*        "Check cabling and dip switch E18 (must be OFF)."
                                   ;*
       C10616                      BADHEAD
                                   ;************************** TEST2 ************************
```

M6

```
010616                                  BGNTST
010616                                  T2::
                                        ; Initialization :
010616  005737  002214                          TST     TMODE           ; If mode 1, then skip this test
010622  001402                                  BEQ     contL1
010624                                          EXIT    TST
010624  104432                                  TRAP    C$EXIT
010626  000120                                  .WORD   L10026-.

010630  004737  002572                  contL1: JSR     PC, sbIDG1      ; Initialize DZ11 for interrupt mode
                                                                        ; transmission


                                        ; Test echo on line x :

010634  013777  002240  171422                  MOV     TLPRx, @DZLPRa  ; Load parameters for line x
010642  113777  002302  171416                  MOVB    LNMAPx, @DZTCRa ; Enable transmission on line x

010650  013737  002274  002310                  MOV     LNNBRx, LNTSTD  ; Transmit
010656  004737  002642                          JSR     PC, sbTEG1      ; and test echo on line x

010662  005737  002306                          TST     sbAOK           ; if successful
010666  001022                                  BNE     endL1           ; then shut off DZ11 and exit test

                                        ; no receive on line x : test echo on line y :

010670  013777  002242  171366                  MOV     TLPRy, @DZLPRa
010676  113777  002304  171362                  MOVB    LNMAPy, @DZTCRa

010704  013737  002276  002310                  MOV     LNNBRy, LNTSTD  ; Transmit
010712  004737  002642                          JSR     PC, sbTEG1      ; and test echo on line y

010716  005737  002306                          TST     sbAOK           ; if successful
010722  001004                                  BNE     endL1           ; then shut off DZ11 and exit test

                                        ; no receive on line y either : there is a problem

010724                                  ERRR11: ERRHRD  4, NOWDEC, pNWDE; Report error
010724  104456                                  TRAP    C$ERHRD
010726  000004                                  .WORD   4
010730  003112                                  .WORD   NOWDEC
010732  005332                                  .WORD   pNWDE

010734  012777  000020  171320           enuL1: MOV     #CSRCLR, @DZCSRa; Shut off DZ11
010742                                          ESCAPE  TST
010742  104410                                  TRAP    C$ESCAPE
010744  000002                                  .WORD   L10026-.

010746                                  ENDTST
010746                                  L10026:
010746  104401                                  TRAP    C$ETST
                                                .EVEN
```

N6

```
010750                         BADHEAD
                               ;************************** TEST3 ************************
                               ;*
                               ;* Test active only in mode 0 :
                               ;*
                               ;*      Purpose : switch the GS03-WD back and forth.
                               ;*
                               ;*      Assumptions :
                               ;*      - all previous tests ran successfully ;
                               ;*      - WATCHDOG FUNCTION has priority (cf. note).
                               ;*
                               ;*      Description :
                               ;*      This  test is the implementation of the following
                               ;*      algorithm :
                               ;*
                               ;*      Repeat  twice,  swapping  lines x and y, the  se-
                               ;*      quence :
                               ;*              - Try and switch GS03-WD to line x ;
                               ;*              - Try and switch GS03-WD from  line x  to
                               ;*              line y ;
                               ;*              - Try and switch GS03-WD back from line y
                               ;*               to line x ;
                               ;*
                               ;*      Note :
                               ;*      This diagnostic assumes that the switches are set
                               ;*      to  give  the  WATCHDOG  FUNCTION  priority. This
                               ;*      means that the front panel switches should all be
                               ;*      in  the  center  position and  the relay  modules
                               ;*      should all be configured for  the  same  priority
                               ;*      (see Option Description for details).
                               ;*
                               ;*      IMPROPER SETTINGS  CAN  CAUSE  UNEXPECTED ERRORS.
                               ;*      WHICH WILL NOT NECESSARILY  BE DIAGNOSED AS SUCH.
                               ;*
                               ;*      Error messages :
                               ;* #5   - "No echo received back from GS03-WD on line
                               ;*         # <line number>"
                               ;*        "Check FORCE, MANUAL switches, priority
                               ;*         setting and cables".
                               ;* #6   - "Both lines have switch priority over each
                               ;*         other."
                               ;*        "Check GS03 configuration."
                               ;* #7   - "Echo from GS03-WD received on both lines
                               ;*         # <line number> and # <line number>."
                               ;* #8   - "GS03-WD failed to switch to line # <line
                               ;*         number>"
                               ;*        "No echo received back from GS03-WD on line
                               ;*         # <line number>"
                               ;*        "Check FORCE, MANUAL switches, priority
                               ;*         setting and cables".
                               ;* #9   - "Echo from the GS03-WD received on wrong
                               ;*         line # <line number> (expected : # <line
                               ;*         number>)."
                               ;*        "Echo is still being received on line
                               ;*         # <line number> when actually transmitting
                               ;*         on line # <line number> only."
                               ;*        "Check GS03 configuration."
```

```
   2843                                        ;*
   2844 010750                                 BADHEAD
                                               ;************************** TESTS *************************
   2845
```

```
 010750                              BGNTST
 010750                              T3::
                                     ; Initialization :
 010750  005737  002214                      TST     TMODE           ; If mode 1, then skip this test
 010754  001402                              BEQ     contG1
 010756                                      EXIT    TST
 010756  104432                              TRAP    C$EXIT
 010760  000522                              .WORD   L10027-.

 010762  004737  002572              contG1: JSR     PC, @$IDG1      ; Initialize DZ11 for interrupt mode
                                                                     ; transmission

 010766  013777  002240  171270              MOV     TLPRx, @DZLPRa  ; Load parameters for line x
 010774  013777  002242  171262              MOV     TLPRy, @DZLPRa  ; Load parameters for line y

 011002  005037  011500                      CLR     FTIMG1

 011006  005037  002220              reptG1: CLR     SWPRTY          ; Set switch priority to none.

                                     ; Try and switch the GS03-WD to line x

 011012  113777  002302  171246              MOVB    LNMAPx, @DZTCRa ; Enable transmission on line x

 011020  013737  002274  002310              MOV     LNNBRx, LNTSTD  ; Transmit
 011026  004737  002642                      JSR     PC, @$TEG1      ; and test for echo on line x

 011032  005737  002306                      TST     @$AOK           ; If successful,
 011036  001012                              BNE     contG2          ; then go on testing

 011040  013737  002274  002272              MOV     LNNBRx, LNNBR   ; else report error
 011046                                      ERRHRD  5, NO1LEC, pN1LE; and
 011046  104456                              TRAP    C$ERHRD
 011050  000005                              .WORD   5
 011052  003066                              .WORD   NO1LEC
 011054  005410                              .WORD   pN1LE
 011056  012777  000020  171176              MOV     #CSRCLR, @DZCSRa; shut off DZ11

 011064                              contG2: ESCAPE TST
 011064  104410                              TRAP    C$ESCAPE
 011066  000414                              .WORD   L10027-.

                                     ; Try and switch the GS03-WD from line x to line y

 011070  013737  002274  002312              MOV     LNNBRx, OLDLNNB ; Load
 011076  013737  002276  002316              MOV     LNNBRy, NEWLNNB ; parameters
 011104  013737  002304  002314              MOV     LNMAPy, NEWLNMP ;

 011112  004737  011252                      JSR     PC, @$SWG1      ; and test

 011116                                      ESCAPE  TST
 011116  104410                              TRAP    C$ESCAPE
 011120  000362                              .WORD   L10027-.

                                     ; Try and switch the GS03-WD from line y to line x

 011122  013737  002276  002312              MOV     LNNBRy, OLDLNNB ; Load
 011130  013737  002274  002316              MOV     LNNBRx, NEWLNNB ; parameters
```

```
011136  013737  002302  002314             MOV     LNMAPx, NEWLNMP ;

011144  004737  011252                     JSR     PC, @#SWG1      ; and test

011150                                     ESCAPE  TST
011150  104410                             TRAP    C$ESCAPE
011152  000330                             .WORD   L10027-.

011154  005737  011500                     TST     FTIMG1
011160  001027                             BNE     endG1

                                  ; Swap lines x and y and repeat this test :
011162  013737  002274  002272             MOV     LNNBRx, LNNBR   ;
011170  013737  002276  002274             MOV     LNNBRy, LNNBRx  ;
011176  013737  002272  002276             MOV     LNNBR, LNNBRy   ;

011204  013737  002302  002272             MOV     LNMAPx, LNNBR   ; LNNBR is used as a temporary here
011212  013737  002304  002302             MOV     LNMAPy, LNMAPx  ;
011220  013737  002272  002304             MOV     LNNBR, LNMAPy   ;

011226  012737  000001  011500             MOV     #1, FTIMG1
011234  000137  011006                     JMP     reptG1

                                  ; End of test :
011240  012777  000020  171014     endG1:  MOV     #CSRCLR, @DZCSRa; Shut off DZ11
011246                                     EXIT    TST
011246  104432                             TRAP    C$EXIT
011250  000232                             .WORD   L10027-.
```

```
                                       ; subroutine to try and switch the GS03-WD from line OLDLNNB to line NEWLNNB
                                       ;
                                       ; Assumption : line OLDLNNB is already alive.
                                       ;
 011252  013777  002300  171006  sbSWG1: MOV     LNMAP, @DZTCRs  ; Enable transmission on both lines

 011260  013737  002316  002310          MOV     NEWLNNB, LNTSTD ; Start transmitting
 011266  004737  002642                  JSR     PC, sbTEG1      ; and test for echo on line NEWLNNB

 011272  005737  002306                  TST     sbAOK           ; If echo on line NEWLNNB,
 011276  001432                          BEQ     contG4          ;
                                                                 ; then
 011300  005737  002220                  TST     SWPRTY          ; begin line NEWLNNB has switch priority
 011304  001406                          BEQ     contG3          ;        so, if OLDLNNB already had it :

 011306                                  ERRHRD  6, PTYCFL, pPYCF;        'Both lines have switch priority...'
 011306  104456                          TRAP    C$ERHRD
 011310  000006                          .WORD   6
 011312  003044                          .WORD   PTYCFL
 011314  005462                          .WORD   pPYCF
                                                                 ;        'Check FORCE, MANUAL...'
 011316                                  ESCAPE  TST
 011316  104410                          TRAP    C$ESCAPE
 011320  000162                          .WORD   L10027-.

 011322  012737  000001  002220  contG3: MOV     #1, SWPRTY      ;        else record that NEWLNNB has priority

 011330  013737  002312  002310          MOV     OLDLNNB, LNTSTD ;        If there is still echo
 011336  004737  002642                  JSR     PC, sbTEG1      ;        on OLDLNNB,
 011342  005737  002306                  TST     sbAOK           ;        that means there's echo on both lines :
 011346  001406                          BEQ     contG4          ;

 011350                                  ERRHRD  7, WD2ECH, pWD2E;        'Echo from GS03-WD received on both
 011350  104456                          TRAP    C$ERHRD
 011352  000007                          .WORD   7
 011354  003021                          .WORD   WD2ECH
 011356  005530                          .WORD   pWD2E
                                                                 ;        lines.'
 011360                                  ESCAPE  TST
 011360  104410                          TRAP    C$ESCAPE
 011362  000120                          .WORD   L10027-.
                                                                 ; end

 011364  013777  002314  170674  contG4: MOV     NEWLNMP, @DZTCRs; Stop transmitting on line OLDLNNB

 011372  013737  002316  002310          MOV     NEWLNNB, LNTSTD ; If no echo
 011400  004737  002642                  JSR     PC, sbTEG1      ; on line
 011404  005737  002306                  TST     sbAOK           ; NEWLNNB,
 011410  001011                          BNE     contG5          ; then :

 011412  013737  002316  002272          MOV     NEWLNNB, LNNBR  ; 'GS03-WD fail to switch to line <NEWLNNB>'
 011420                                  ERRHRD  8, FAISWT, pFSWT; 'No echo received on line <NEWLNNB>'
 011420  104456                          TRAP    C$ERHRD
 011422  000010                          .WORD   8
 011424  002777                          .WORD   FAISWT
 011426  005566                          .WORD   pFSWT
                                                                 ; 'Check FORCE, MANUAL...
```

```
011430                                  ESCAPE  TST
011430  104410                          TRAP    C$ESCAPE
011432  000050                          .WORD   L10027-.

011434  013737  002312  002310  contGS: MOV     OLDLNNB, LNTSTD ; If there is
011442  004737  002642                  JSR     PC, sbTEG1      ; still echo
011446  005737  002306                  TST     sbAOK           ; on line
011452  001411                          BEQ     esbG1           ; OLDLNNB :

011454  013737  002312  002272          MOV     OLDLNNB, LNNBR  ; 'GS03-WD fail to switch from line <OLDLNNB>'
011462                                  ERRHRD  9, FAISWF, pFSWF; 'Echo is still being received
011462  104456                          TRAP    C$ERHRD
011464  000011                          .WORD   9
011466  002754                          .WORD   FAISWF
011470  005664                          .WORD   pFSWF
                                                                ; on line <OLDLNNB>'
                                                                ; 'Check FORCE, MANUAL...'
011472                                  ESCAPE  TST
011472  104410                          TRAP    C$ESCAPE
011474  000006                          .WORD   L10027-.

011476  000207                  esbG1:  RTS     PC
                                ; end sbSWG1
```

```
 2984
 2985 011500  000000              FTIMG1: .WORD   0               ; Boolean value to flag first run through test
 2986
 2993
 2994 011502                      ENDTST
      011502                      L10027:
      011502  104401                      TRAP    C$ETST
 2995                                     .EVEN
 2996
 011504                                  BADHEAD
                                         ;*************************** TEST4 ************************
                                         ;*
                                         ;* Test active only in mode 1 :
                                         ;*
                                         ;*      Purpose : installation test.
                                         ;*
                                         ;*      Assumption : all previous tests ran successfully.
                                         ;*
                                         ;*      Description :
                                         ;*      This  test activates the l'ne into the GS03-WD in
                                         ;*      order for the  operator to  check  that the LED's
                                         ;*      react correctly :
                                         ;*
                                         ;*      The  GREEN  or YELLOW  LED  corresponding to this
                                         ;*      CPU's line into the GS03-WD should  then turn on.
                                         ;*      The associated RED LED should turn off  after one
                                         ;*      full GS03-WD clock pulse after  this test  begins
                                         ;*      (which means that the RED  clock LED should blink
                                         ;*      twice at the most before this happens).
                                         ;*
                                         ;*      Error message : none.
                                         ;*
 011504                                  BADHEAD
                                         ;*************************** TEST4 ************************

 011504                             BGNTST
 011504                             T4::
                                    ; Initialization :
 011504  005737  002214                  TST     TMODE           ; If mode 0, then skip this test
 011510  001002                          BNE     contA1
 011512                                  EXIT    TST
 011512  104432                          TRAP    C$EXIT
 011514  000042                          .WORD   L10030-.

 011516  004737  002572             contA1: JSR  PC, sbIDG1      ; Initialize DZ11 for interrupt mode
                                                                 ; transmission

                                    ; Transmit on line x :

 011522  042737  010000  002240          BIC     #RCVRON, TLPRx  ; Receiver will not be used
 011530  013777  002240  170526          MOV     TLPRx, @DZLPRa  ; Load parameters for line x
 011536  113777  002302  170522          MOVB    LNMAPx, @DZTCRa ; Enable transmission on line x

 011544  012777  040040  170510          MOV     #MSETIE, @DZCSRa; Enable interrupt mode transmission

 011552                             loopA1: BREAK
 011552  104422                          TRAP    C$BRK
 011554  000776                          BR      loopA1

 011556                             ENDTST
 011556                             L10030:
 011556  104401                          TRAP    C$ETST
                                         .EVEN

                                         .SBTTL HARDWARE PARAMETER CODING SECTION



                                 ;/////////////////////////////////////////////////////////////////;//////////////////
                                 ;/ THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                 ;/ THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                 ;/ MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                 ;/ INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                 ;/ MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                 ;/ WITH THE OPERATOR.
                                 ;////////////////////////////////////////////////////////////////////////////////////

011560                                   BGNHRD
011560  000053                           .WORD L10031-L$HARD/2
011562                           L$HARD::

011562                                   GPRMA   CSR, 0, 0, 160010, 163776, YES
011562  000031                           .WORD   T$CODE
011564  011642                           .WORD   CSR
011566  160010                           .WORD   T$LOLIM
011570  163776                           .WORD   T$HILIM
011572                                   GPRMA   VECTOR, 2, 0, 300, 777, YES
011572  001031                           .WORD   T$CODE
011574  011646                           .WORD   VECTOR
011576  000300                           .WORD   T$LOLIM
011600  000777                           .WORD   T$HILIM
011602                                   GPRMD   PRIORTY, 4, 0, 000007, 4, 7, YES
011602  002032                           .WORD   T$CODE
011604  011655                           .WORD   PRIORTY
011606  000007                           .WORD   000007
011610  000004                           .WORD   T$LOLIM
011612  000007                           .WORD   T$HILIM
011614                                   GPRMD   ACLINES, 6, 0, 000377, 1, 377, YES
011614  003032                           .WORD   T$CODE
011616  011660                           .WORD   ACLINES
011620  000377                           .WORD   000377
011622  000001                           .WORD   T$LOLIM
011624  000377                           .WORD   T$HILIM
011626                                   GPRMD   WCHMODE, 10, 0, 177777, 0, 1, YES
011626  004032                           .WORD   T$CODE
011630  011675                           .WORD   WCHMODE
011632  177777                           .WORD   177777
011634  000000                           .WORD   T$LOLIM
011636  000001                           .WORD   T$HILIM

011640                                   EXIT    HRD
011640  024004                           .WORD   T$CODE


                                         .nlist  BEX
011642     103     123     122      CSR: .ASCIZ  /CSR/
011646     126     105     103   VECTOR: .ASCIZ  /VECTOR/
011655     102     122     000   PRIORTY:.ASCIZ  /BR/
011660     101     103     124   ACLINES:.ASCIZ  /ACTIVE LINES/
011675     127     110     111   WCHMODE:.ASCIZ  /WHICH MODE/
                                         .list   BEX
```

```
  3085                                            .EVEN
  3086
  3087 011710                                     ENDHRD
                                                  .EVEN
       011710                            L10031:
  3088
  3089
  3090
  3091
  3092
  3093
```

```
                               .sbttl  SOFTWARE PARAMETER CODING SECTION


                               ;//////////////////////////////////////////////////////////////////////
                               ;/ THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                               ;/ THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                               ;/ MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                               ;/ INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                               ;/ MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                               ;/ WITH THE OPERATOR.
                               ;/////////////////////////////////////////////////////////////////////

011710                                 BGNSFT
011710  000000                         .WORD L10032-L$SOFT/2
011712                         L$SOFT::



011712                                 ENDSFT
                                       .EVEN
011712                         L10032:
```

SOFTWARE PARAMETER CODING SECTION

```
   3131
   3132 011712                          $PATCH::
   3133 011712                                  .BLKW   70
   3140
   3141 012072                                  LASTAD
                                                .EVEN
        012072  012114                          .WORD T$FREE
        012074  000007                          .WORD T$SIZE
        012076                          L$LAST::
   3142 012076                                  ENDMOD
   3143
   3144
```

```
3146
3147
3160
3161 012076                                BGNSETUP        1
3162 012076                                BGNPTAB
     012076  000000                        .WORD   0
     012100  000005                        .WORD   L10035-./2-1
     012102                       L10033:
3163
3164 012102  160100                        .word   160100
3165 012104  000300                        .word   300
3166 012106  000005                        .word   5
3167 012110  000003                        .word   3
3168 012112  000000                        .word   0
3169
3170 012114                                ENDPTAB
     012114                       L10035:
3171 0'2114                                ENDSETUP
3172
3173
3174
3175
3176
3177         000001               .END
```

```
SYMBOL TABLE

ABORI1  006500      CSRCLR= 000020 G    DIAGMC= 000000      F$PWR = 000017      LNNBR   002272
ACLINE  011660      CSRR    004213      DLAYAR= 000100 G    F$RPT = 000012      LNNBRX  002274
ADDED   007756      CSRW    004116      DLAYC1  002244      F$SEG = 000003      LNNBRY  002276
ADDR    002320      C$AU  = 000052      DLAYC2  002246      F$SOFT= 000005      LNTSTD  002310
ADR   = 000020 G    C$AUTO= 000061      DLAY11= 177622 G    F$SRV = 000010      LOE   = 040000 G
ASSEMB= 000010      C$BRK = 000022      DLAY2S= 177754 G    F$SUB = 000002      LOOPA1  011552
BIT0  = 000001 G    C$BSEG= 000004      DROPD   007676      F$SW  = 000014      LOOPG1  002346
BIT00 = 000001 G    C$BSUB= 000002      DZCSRA  002262      F$TEST= 000001      LOT   = 000010 G
BIT01 = 000002 G    C$CEFG= 000045      DZDIAG  004744      GTPMI1  006176      L$ACP   002110 G
BIT02 = 000004 G    C$CLCK= 000062      DZIN    004064      G$CNTO= 000200      L$APT   002036 G
BIT03 = 000010 G    C$CLEA= 000012      DZINER  003162      G$DELM= 000372      L$AU    007730 G
BIT04 = 000020 G    C$CLOS= 000035      DZLB    003776      G$DISP= 000003      L$AUT   002070 G
BIT05 = 000040 G    C$CLP1= 000006      DZLBER  003125      G$EXCP= 000400      L$AUTO  007544 G
BIT06 = 000100 G    C$CVEC= 000036      DZLPRA  002264      G$HILI= 000002      L$CCP   002106 G
BIT07 = 000200 G    C$DCLN= 000044      DZPTY   002234      G$LOLI= 000001      L$CLEA  007636 G
BIT08 = 000400 G    C$DODU= 000051      DZRBUF  002264      G$NO  = 000000      L$CO    002032 G
BIT09 = 001000 G    C$DRPT= 000024      DZRVCC  002252      G$OFFS= 000400      L$DEPO  002011 G
BIT1  = 000002 G    C$DU  = 000053      DZRVCS  002254      G$OFSI= 000376      L$DESC  002156 G
BIT10 = 002000 G    C$EDIT= 000003      DZTCRA  002266      G$PRMA= 000001      L$DESP  002076 G
BIT11 = 004000 G    C$ERDF= 000055      DZTDRA  002270      G$PRMD= 000002      L$DEVP  002060 G
BIT12 = 010000 G    C$ERHR= 000056      DZTVCC  002256      G$PRML= 000000      L$DISP  002132 G
BIT13 = 020000 G    C$ERRO= 000060      DZTVCS  002260      G$RADA= 000140      L$DLY   002116 G
BIT14 = 040000 G    C$ERSF= 000054      ECHO    002250      G$RADB= 000000      L$DTP   002040 G
BIT15 = 100000 G    C$ERSO= 000057      EF.CON= 000036 G    G$RADD= 000040      L$DTYP  002034 G
BIT2  = 000004 G    C$ESCA= 000010      EF.NEW= 000035 G    G$RADL= 000120      L$DU    007650 G
BIT3  = 000010 G    C$ESEG= 000005      EF.PWR= 000034 G    G$RADO= 000020      L$DUT   002072 G
BIT4  = 000020 G    C$ESUB= 000003      EF.RES= 000037 G    G$XFER= 000004      L$DVTY  002324 G
BIT5  = 000040 G    C$ETST= 000001      EF.STA= 000040 G    G$YES = 000010      L$EF    002052 G
BIT6  = 000100 G    C$EXIT= 000032      ENDG1   011240      HELP  = 000000      L$ENVI  002044 G
BIT7  = 000200 G    C$GETB= 000026      ENDL1   010734      HOE   = 100000 G    L$ETP   002102 G
BIT8  = 000400 G    C$GETW= 000027      ERLMI1  006624      IBE   = 010000 G    L$EXP1  002046 G
BIT9  = 001000 G    C$GMAN= 000043      ERRCNT  002224      IDU   = 000040 G    L$EXP4  002064 G
BOE   = 000400 G    C$GPHR= 000042      ERRR11  010724      IER   = 020000 G    L$EXP5  002066 G
BUSTIM  003214      C$GPLO= 000030      ESBG1   011476      ISR   = 000100 G    L$HARD  011562 G
CHKMAX  002400      C$GPRI= 000040      EVL   = 000004 G    IXE   = 004000 G    L$HIME  002120 G
CKDPSW  004622      C$INIT= 000011      E$END = 002100      I$AU  = 000041      L$HPCP  002016 G
CKDZAD  004775      C$INLP= 000020      E$LOAD= 000035      I$AUTO= 000041      L$HPTP  002022 G
CKFMSW  004523      C$MANI= 000050      FAISWF  002754      I$CLN = 000041      L$HW    002144 G
CKGSCF  004706      C$MEM = 000031      FAISWT  002777      I$DU  = 000041      L$ICP   002104 G
CONTA1  011516      C$MSG = 000023      FSWF    003230      I$HRD = 000041      L$INIT  005774 G
CONTD1  010104      C$OPEN= 000034      FSWT    003343      I$INIT= 000041      L$LADP  002026 G
CONTD2  010172      C$PNTB= 000014      FTIME   002212      I$MOD = 000041      L$LAST  012076 G
CONTD3  010274      C$PNTF= 000017      FTIMG1  011500      I$MSG = 000041      L$LOAD  002100 G
CONTD4  010342      C$PNTS= 000016      FTUNI1  006114      I$PROT= 000040      L$LUN   002074 G
CONTD5  010354      C$PNTX= 000015      F$AU  = 000015      I$PTAB= 000041      L$MREV  002050 G
CONTD6  010406      C$QIO = 000377      F$AUTO= 000020      I$PWR = 000041      L$NAME  002000 G
CONTD7  010502      C$RDBU= 000007      F$BGN = 000040      I$RPT = 000041      L$PRIO  002042 G
CONTD8  010564      C$REFG= 000047      F$CLEA= 000007      I$SEG = 000041      L$PROT  002122 G
CONTG1  010762      C$RESE= 000033      F$DU  = 000016      I$SETU= 000041      L$PRT   002112 G
CONTG2  011064      C$REVI= 000003      F$END = 000041      I$SFT = 000041      L$REPP  002062 G
CONTG3  011322      C$RFLA= 000021      F$HARD= 000004      I$SRV = 000041      L$REV   002010 G
CONTG4  011364      C$RPT = 000025      F$HW  = 000013      I$SUB = 000041      L$RPT   005772 G
CONTG5  011434      C$SEFG= 000046      F$INIT= 000006      I$TST = 000041      L$SOFT  011712 G
CONTI1  006104      C$SPRI= 000041      F$JMP = 000050      J$JMP = 000167      L$SPC   002056 G
CONTI2  006442      C$SVEC= 000037      F$MOD = 000000      LNMAP   002300      L$SPCP  002020 G
CONTL1  010630      C$TPRI= 000013      F$MSG = 000011      LNMAPX  002302      L$SPTP  002024 G
CSR     011642      DFPTBL  002144 G    F$PROT= 000021      LNMAPY  002304      L$STA   002030 G
```

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```
CZDZGAO GS3WD/DZ11 LGC DIAG     MACRO M1200  03-AUG-84 15:01  PAGE 110 2
                                                                                                        SEQ 0092
SYMBOL TABLE

L$TEST  002114 G    NEWLNN  002316      PRI04 = 000200 G    TLPRO   002236      T$$DAT= 010035
L$TIML  002014 G    NFTMI1  006024      PRI05 = 000240 G    TMNYER  002472      T$$DU = 010021
L$UNIT  002012 G    NOEC1L  004304      PRI06 = 000300 G    TMODE   002214      T$$HAR= 010031
L10001  002156      NOTAV   007316      PRI07 = 000340 G    TXPSW   002232      T$$HW = 010001
L10002  002570      NOWDEC  003112      PTYCFL  003044      T$ARGC= 000002      T$$INI= 010016
L10003  005076      NO1LEC  003066      PWD2E   005530 G    T$CODE= 024004      T$$MSG= 010014
L10004  005150      NROND1  010514      PYCF    003515      T$ERRN= 000011      T$$PC = 000001
L10005  005236      NRONG1  002660      RBUFCT= 174000 G    T$EXCP= 000000      T$$PRO= 010000
L10006  005330      NTRYD1  010444      RCVRON= 010000 G    T$FLAG= 000041      T$$PTA= 010034
L10007  005406      NWOE    003667      REPTG1  011006      T$FREE= 012114      T$$RPT= 010015
L10010  005460      NXBII1  006536      RLMPI1  006554      T$GMAN= 000000      T$$SEG= 010001
L10011  005526      NXUNI1  006122      RLMPI2  006676      T$HILI= 000001      T$$SUP= 010032
L10012  005564      N1LE    003602      ROMMAP  010006      T$LAST= 000001      T$$SRV= 010002
L10013  005662      OLDLNN  002312      RUNG0A  006740      T$LOLI= 000000      T$$SUB= 010025
L10014  005770      O$APTS= 000000      RUNG0B  007056      T$LSYM= 010000      T$$TES= 010030
L10015  005772      O$AU  = 000001      RUNG1A  007141      T$LTNO= 000004      T1      010006 G
L10016  007542      O$[illegible]= 000000      RUNG1B  007236      T$NEST= 177777      T1.1    010006
L10017  007634      O$BGNS= 000000      SAVE4   002226      T$NS0 = 000000      T1.2    010212
L10020  007646      O$DU  = 000001      SAVE6   002230      T$NS1 = 000005      T2      010616 G
L10021  007726      O$ERRT= 000000      SBAOK   002306      T$NS2 = 000002      T3      010750 G
L10022  010004      O$GNSW= 000000      SBIDG1  002572      T$NS3 = 000003      T4      011504 G
L10023  010614      O$POIN= 000001      SBLNI1  006506      T$PCNT= 000000      UAM   = 000200 G
L10024  010210      O$SETU= 000001      SBSWG1  011252      T$PTAB= 010034      UNIT    002322
L10025  010612      PBLMD1  010610      SBTED1  010426      T$PTHV= 000001      UUT     002216
L10026  010746      PCSRR   005026 G    SBTEG1  002642      T$PTNU= 000001      VECTOR  011646
L10027  011502      PCSRW   005100 G    SBWTG1  002342      T$SAVL= 177777      WAITG1  002716
L10030  011556      PDZIN   005152 G    SBWTG2  002362      T$SEGL= 177777      WCHMOD  011675
L10031  011710      PDZLB   005240 G    STEC1L  004371      T$SEXO= 010001      WD2E    003416
L10032  011712      PFSWF   005664 G    SUCCG1  002744      T$SIZE= 000007      WD2ECH  003021
L10033  012102      PFSWT   005766 G    SUCCI1  006730      T$SUBN= 000000      WGLMP1  007357
L10035  012114      PNT   = 001000 G    SVCGBL= 060000      T$TAGL= 177777      WGLMP2  007467
MAXERR  002222      PNWDE   005332 G    SVCINS= 000000      T$TAGN= 010036      X$ALWA= 000000
MAXPRI= 000340 G    PN1LE   005410 G    SVCSUB= 000000      T$TEMP= 000000      X$FALS= 000040
MOD1I1  006372      PPYCF   005462 G    SVCTAG= 000000      T$TEST= 000004      X$OFFS= 000400
MSEMAI= 000050 G    PRI   = 002000 G    SVCTST= 000000      T$TSTM= 177777      X$TRUE= 000020
MSETIE= 040040 G    PRIORT  011655      SVTXG1  002562 G    T$TSTS= 000001      ZDZGAO  002000 G
NCLDD1  010226      PRI00 = 000000 G    SWPRTY  002220      T$$AU = 010022      $LSTIN= 000000
NCLDG1  002626      PRI01 = 000040 G    S$LSYM= 010000      T$$AUT= 010017      $LSTTA= 000000
NETYG1  002666      PRI02 = 000100 G    TLPRX   002240      T$$CLE= 010020      $PATCH  011712 G
NEWLNM  002314      PRI03 = 000140 G    TLPRY   002242

. ABS.  012114     000
        000000     001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  28900 WORDS  ( 113 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:02:28
ZDZGAO.BIN,ZDZGAO=[PIMASA.D.GS.PDP.SSDC]LIBA.MLB/ML,ZDZGAO
```