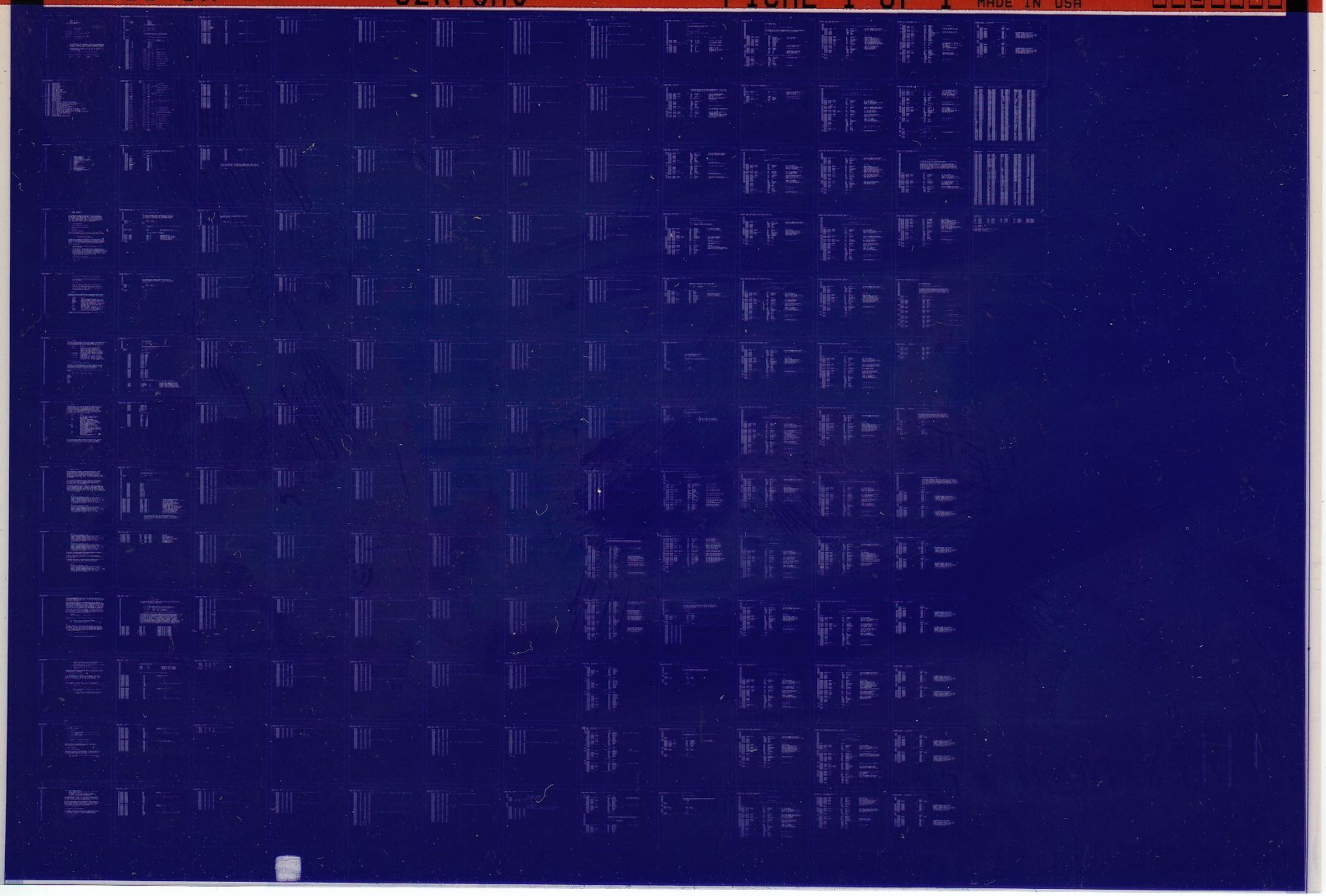
KXT11-CA KTX11-CA DIAGNOSTIC AH-T495A-MC
CZKTCA0 FICHE 1 OF 1





```
                                .ENABL  ABS,AMA
000000                          .=2000
        002000                  .NLIST  CND,MD,MEB,ME
                        .TITLE  USER DOCUMENTATION
                        .SBTTL IDENTIFICATION

                                                        .REM &

                                IDENTIFICATION
                                --------------

                        PRODUCT CODE:   AC-T494A-MC

                        PRODUCT NAME:   CZKTCA0 KXT11-CA DIAGNOSTIC

                        PRODUCT DATE:   JULY 25, 1983

                        MAINTAINER:     ISS DIAGNOSTIC SERVICES GROUP

                        AUTHOR:         JACK RICHARDSON
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1.0 GENERAL INFORMATION
1.1 PROGRAM ABSTRACT

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

1.2 SYSTEM REQUIREMENTS

1.3 RELATED DOCUMENTS AND STANDARDS

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

1.5 ASSUMPTIONS

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES. FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

## STARTING THE XXDP+ SYSTEM

THE XXDP+ TEST SOFTWARE SYSTEM CONSISTS OF THE XXDP+ MONITOR WITH VARIOUS UTILITIY SOFTWARE, THE KXT11-CA IOP TEST SOFTWARE, AND THE DIAGNOSTIC RUNTIME SERVICES (SUPERVISOR) ALL RESIDING ON A BOOTABLE MEDIUM. THE TEST SYSTEM REQUIRES DEDICATION OF THE ENTIRE HARDWARE SYSTEM, I.E., IT CANNOT SHARE WITH ANY OTHER OPERATING SYSTEM.

STARTING PROCEDURES:

1. SHUT OFF POWER TO THE SYSTEM; THIS INCLUDES ALL IOP AND ARBITER POWER.

2. FOR EACH KXT11-CA TO BE TESTED, PLACE THE BOOT/SELFTEST SWITCH TO POSITION 10. THE BOOT/SELFTEST SWITCH RESIDES ON EACH KXT11-CA MODULE. IF LESS THAN THE FULL COMPLEMENT OF KXT11-CA'S ARE TO BE TESTED WITH THIS SOFTWARE, IT IS SUFFICIENT TO CHANGE THE BOOT SWITCHES OF ONLY THE KXT11'S TO BE TESTED. IF THE THREE I/O PORTS ARE TO BE THOROUGHLY TESTED, THE DATA LOOPBACK CONNECTORS SHOULD BE INSTALLED AT THIS TIME.

3. RESTORE POWER TO THE SYSTEM.

4. PLACE THE XXDP+ STORAGE MEDIUM IN THE MAIN SYSTEM DEVICE.

5. BOOT THE SYSTEM.

6. ENTER THE DATE AND ANSWER THE LSI AND 50HZ QUESTIONS.

7. TYPE "R CZKTCA" TO LOAD THE KXT11-CA TEST SOFTWARE.

8. AFTER THE PROGRAM IS LOADED INTO ARBITER MEMORY, THE PROMPT "DS>" WILL APPEAR.

9. TYPE "START"

10. ANSWER THE QUESTION, "CHANGE HW(L)?" QUESTION WITH "Y".

11. ANSWER ALL THE HARDWARE QUESTIONS (SEE THE NEXT SECTION, 2.4, FOR VARIATIONS AND COMMANDS ASSOCIATED WITH THE DRS).

12. THE TEST SOFTWARE IS INVOKED IMMEDIATELY AFTER COMPLETING THE HARDWARE SPECIFICATION INPUT.

## 2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES (SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

| COMMAND | EFFECT |
|---|---|
| START | START THE DIAGNOSTIC FROM AN INITIAL STATE |
| RESTART | START THE DIAGNOSTIC WITHOUT INITIALIZING |
| CONTINUE | CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C) |
| PROCEED | CONTINUE FROM AN ERROR HALT |
| EXIT | RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!) |
| ADD | ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME |
| DROP | DEACTIVATE A UNIT |
| PRINT | PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0) |
| DISPLAY | TYPE A LIST OF ALL DEVICE INFORMATION |
| FLAGS | TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3) |
| ZFLAGS | CLEAR ALL FLAGS (SEE SECTION 2.3) |

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

## 2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY "DDDDD".

| SWITCH | EFFECT |
|---|---|
| /TESTS:LIST | EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS. FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN. |
| /PASS:DDDDD | EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000) |
| /FLAGS:FLGS | SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3. |
| /EOP:DDDDD | REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000) |
| /UNITS:LIST | TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-14) |

EXAMPLE OF SWITCH USAGE:

```
START/TESTS:1-5/PASS:1000/EOP:100
```

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES, AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "/TES:1-5" INSTEAD OF "/TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

| | TESTS | PASS | FLAGS | EOP | UNITS |
|---|---|---|---|---|---|
| START | X | X | X | X | X |
| RESTART | X | X | X | X | X |
| CONTINUE | | X | X | X | |
| PROCEED | | | X | | |
| DROP | | | | | X |
| ADD | | | | | X |
| PRINT | | | | | |
| DISPLAY | | | | | X |
| FLAGS | | | | | |
| ZFLAGS | | | | | |
| EXIT | | | | | |

## 2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

| FLAG | EFFECT |
|---|---|
| HOE | HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE |
| LOE | LOOP ON ERROR |
| IER* | INHIBIT ALL ERROR REPORTS |
| IBR* | INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT) |
| IXR* | INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S) |
| PRI | DIRECT MESSAGES TO LINE PRINTER |
| PNT | PRINT TEST NUMBER AS TEST EXECUTES |
| BOE | "BELL" ON ERROR |
| UAM | UNATTENDED MODE (NO MANUAL INTERVENTION) |
| ISR | INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING) |
| IDR | INHIBIT PROGRAM DROPPING OF UNITS |
| ADR | EXECUTE AUTODROP CODE |
| LOT | LOOP ON TEST |
| EVL | EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT) |

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A "BELL" ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```

## 2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL, OR SECTION 2.5 BELOW). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL). YOU WILL THEN BE ASKED QUESTIONS FOR EACH UNIT.

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THE SIMPLEST WAY TO BUILD THIS TABLE IS TO ANSWER ALL QUESTIONS FOR EACH UNIT TO BE TESTED. THIS CAN BECOME TEDIOUS, HOWEVER, SINCE THE ANSWERS FOR EACH UNIT ARE REPETITIOUS.

TO ILLUSTRATE, YOU WISH TO TEST 4 KXT11-CA'S WITH THIS PROGRAM, AND THEIR SBC NUMBERS HAPPEN TO BE 2 THROUGH 5. THERE ARE 5 PARAMETERS THAT MAY VARY AMONG THE UNITS. THESE ARE THE BUS ADDRESS, THE THREE I/O PORT LOOPBACK CONNECTORS, AND WHETHER THE USER ROM TEST SHOULD OR SHOULDN'T BE INVOKED DURING TESTING. NOTE THAT A "UNIT" NUMBER IMPLIES A UNIT UNDER TEST AND DOES NOT HAVE TO HAVE A UNIT NUMBER CORRESPONDING TO A KXT11-CA SBC NUMBER.

```
        # UNITS (D) ?  4<CR>

        UNIT 0
        SBC ID SWITCH SETTING(D) ?  2<CR>
        IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N) Y ? Y<CR>
        LOOP-BACK CONNECTOR ON SERIAL PORT #1 (L) N ? Y<CR>
        CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
        CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
        LOOP-BACK CONNECTOR ON PARALLEL PORT (L) N ? Y<CR>
        IS SLU2 SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N) N ?<CR>
        TEST USER ROM (L) N ? Y<CR>

        UNIT 1
        SBC ID SWITCH SETTING(D) ?  2<CR>
        IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N) Y ? Y<CR>
        LOOP-BACK CONNECTOR ON SERIAL PORT #1 (L) Y ? <CR>
        CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
        CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
        LOOP-BACK CONNECTOR ON PARALLEL PORT (L) Y ? <CR>
        IS SLU2 SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N) N ?<CR>
        TEST USER ROM (L) Y ? <CR>
```

IDENTIFICATION

```
                                        UNIT 2
                                        SBC ID SWITCH SETTING(D) ?  2<CR>
                                        IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N) Y ? Y<CR>
                                        LOOP-BACK CONNECTOR ON SERIAL PORT #1 (L) Y ? <CR>
                                        CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
                                        CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
                                        LOOP-BACK CONNECTOR ON PAPALLEL PORT (L) Y ? <CR>
                                        IS SLU2 SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N) N ?<CR>
                                        TEST USER ROM (L) Y ? N<CR>

                                        UNIT 3
                                        SBC ID SWITCH SETTING(D) ?  2<CR>
                                        IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N) Y ? Y<CR>
                                        LOOP-BACK CONNECTOR ON SERIAL PORT #1 (L) Y ? N <CR>
                                        CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
                                        CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? Y<CR>
                                        LOOP-BACK CONNECTOR ON PARALLEL PORT (L) Y ? N<CR>
                                        IS SLU2 SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N) N ?<CR>
                                        TEST USER ROM (L) N ? Y<CR>

                                NOTICE THAT THE DEFAULT VALUES CHANGE WHEN A NON-DEFAULT RESPONSE
                                IS GIVEN AS IN THE RESPONSES TO THE USER ROM QUESTION FOR UNITS 2 AND 3.
                                BE CAREFUL WHEN SPECIFYING MULTIPLE UNITS!

                                AS YOU CAN SEE FROM THE ABOVE EXAMPLE, THE HARDWARE PARAMETERS
                                DO NOT VARY SIGNIFICANTLY FROM UNIT TO UNIT.  THE PROCEDURE SHOWN IS
                                NOT VERY EFFICIENT.

                                THE RUNTIME SERVICES WILL ACCEPT MULTIPLE UNIT SPECIFICATIONS, HOWEVER.
                                LET'S BUILD THE SAME TABLE USING THE MULTIPLE SPECIFICATION
                                FEATURE AND ACCOMPLISH THE SAME IN ONE SINGLE UNIT ENTRY.

                                        # UNITS (D) ?  4<CR>

                                        UNIT 0
                                        SBC ID SWITCH SETTING(D) ?  2<CR>
                                        IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N) Y ? Y,,,<CR>
                                        LOOP-BACK CONNECTOR ON SERIAL PORT #1 (L) Y ? ,,,N<CR>
                                        CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? ,,,N<CR>
                                        CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2 (L) N ? ,,,N<CR>
                                        LOOP-BACK CONNECTOR ON PARALLEL PORT (L) Y? ,,,N<CR>
                                        IS SLU2 SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N) N ?,,,N<CR>
                                        TEST USER ROM (L) N ? Y,,N,Y<CR>
```

THE KEY TO REMEMBER HERE IS THAT EACH UNIT UNDER TEST MUST HAVE A CORRESPONDING RESPONSE ON EACH LINE. AS YOU CAN SEE FROM THIS EXAMPLE, NULL REPLIES (COMMAS ENCLOSING A NULL FIELD) TELL THE RUNTIME SERVICES TO REPEAT THE LAST REPLY.

THESE HARDWARE QUESTIONS MUST BE ANSWERED EACH TIME THE PROGRAM IS LOADED AND STARTED; HOWEVER, IF THE TEST CONFIGURATION RARELY OR NEVER DIFFERS FOR EACH STARTUP THE XXDP+ UTILITY "SETUP" MAY BE USED TO PERMANENTLY RETAIN THE ANSWERS TO THE HARDWARE QUESTIONS. THE USER WOULD THEN ANSWER "N" TO THE STARTUP QUESTION, "CHANGE HW?(L)". SETUP MAY BE USED TO REPLACE THE TEST PROGRAM ON THE XXDP+ MEDIUM, OR TO MAKE ADDITIONAL COPIES WITH DIFFERENT FILE NAMES AND HARDWARE CONFIGURATIONS.

TO RUN SETUP, USE THE XXDP+ "RUN" COMMAND. THE FIRST THING THAT SETUP WILL DO IS ASK FOR THE TYPE OF ENVIRONMENT YOU ARE GOING TO BE USING, XXDP+ OR ACT/SLIDE. FOR THIS TEST SOFTWARE, THE ANSWER WILL ALWAYS BE XXDP+. BELOW IS AN EXAMPLE OF STARTING SETUP:

```
.R SETUP
TARGET ENVIRONMENT:     XX(DP) OR AC(T)?  XX
*
```

SETUP IS NOW READY TO ACCEPT COMMANDS. THERE ARE ONLY THREE COMMANDS IN SETUP:

```
SETUP   BUILD TABLES FOR A SPECIFIED DIAGNOSTIC
LIST    PRINT A LIST OF DRS DIAGNOSTICS ON THE XXDP+ MEDIUM.
EXIT    RETURN CONTROL TO XXDP+
```

## 2.5 SETUP

THE SETUP COMMAND WILL CAUSE THE SPECIFIED DIAGNOSTIC TO BE LOADED INTO MEMORY. SETUP WILL THEN PROCESS THE TABLE BUILDING CODE IN THE TEST SOFTWARE MUCH THE SAME AS IF THE TEST SOFTWARE WERE LOADED AND STARTED. THE USER WILL GO THROUGH THE SAME PROCESS THAT WOULD OCCUR IF ACTUALLY RUNNING THE TEST SOFTWARE AND ISSUING A START COMMAND. THE FORMAT OF THE COMMAND IS:

```
SETUP   [DEVO:]OFILE=[DEVI:]IFILE
```

WHERE,

DEVO - DEVICE TO WHICH FILE IS TO BE WRITTEN; DEFAULT IS SYSTEM DEVICE; DEVICE MUST BE ON LINE.

OFILE - NAME OF THE OUTPUT FILE FOR THE TEST SOFTWARE THAT HAS
BEEN "SETUP" WITH .BIN OR .BIC EXTENSION.

DEVI - DEVICE FROM WHICH FILE IS TO BE READ; DEFAULT IS SYSTEM
DEVICE; DEVICE MUST BE ON LINE.

IFILE - NAME OF THE FILE FOR THE TEST SOFTWARE THAT IS TO BE
"SETUP".

THE OUTPUT FILE MAY BE GIVEN THE SAME NAME AS THE INPUT FILE; HOWEVER,
A WARNING MESSAGE WILL BE OUTPUT. THIS IS TO AVOID ACCIDENTAL LOSS OF
THE ORIGINAL FILE. FOR EXAMPLE:

DELETE IFILE? (Y/N/CR=Y)

IF "Y" OR NO ANSWER AT ALL IS TYPED, THE INPUT FILE "IFILE" WILL
BE DELETED AFTER THE SETUP PROCESS, AND THE NEW FILE WILL THEN BE
WRITTEN TO THE MEDIUM. IF "N" IS TYPED, SETUP RETURNS TO PROMPT
MODE SO THAT A NEW COMMAND OR FILE NAME MAY BE SPECIFIED.

LIST
----

THE LIST COMMAND IS USED TO OBTAIN A LIST OF ALL DRS-COMPATIBLE
TEST SOFTWARE ON THE MEDIUM. THE FORMAT OF THE COMMAND IS:

LIST [DEV:][FILE.EXT]

WHERE,

DEV - DEVICE TO SEARCH FOR DRS-COMPATIBLE FILES; DEFAULT IS
THE SYSTEM DEVICE.

FILE.EXT - FILE(S) TO SEARCH; EXTENSION MUST BE BIN OR BIC;
WILDCARD SPECIFICATIONS ARE ACCEPTED; DEFAULT IS
"*.BI?".

2.6 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE "START"
5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"
6. ANSWER ALL THE HARDWARE QUESTIONS

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 2.3 AND 2.4.

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

```
NAME  TYPE  NUMBER  ON UNIT NUMBER  TST NUMBER PC:XXXXXX
ERROR MESSAGE
```

```
                        ,WHERE; NAME = DIAGNOSTIC NAME
                                TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
                                NUMBER = ERROR NUMBER
                                UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
                                TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
                                PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

                        BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL
                        INFORMATION ABOUT THE ERROR.  THESE ARE ALWAYS PRINTED UNLESS
                        THE "IER" OR "IBR" FLAGS ARE SET (SECTION 2.3).  THESE MESSAGES
                        ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

                        EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION
                        SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA.  THESE ARE ALWAYS
                        PRINTED UNLESS THE "IER", "IBR" OR "IXR" FLAGS ARE SET (SECTION 2.3).
                        THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR
                        MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

                        3.2 SPECIFIC ERROR MESSAGES

                        4.0 PERFORMANCE AND PROGRESS REPORTS

                        AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE
                        TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED.
                        THE "EOP" SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END
                        OF PASS MESSAGE IS PRINTED.  SECTION 2.2 DESCRIBES SWITCHES.

                        5.0 DEVICE INFORMATION TABLES

                        6.0 TEST SUMMARIES
```

```
                                        .MCALL  SVC
002000                                  SVC
                000000                  SVCINS=0
                000000                  SVCGBL=0
                000000                  SVCTAG=0
                                .TITLE PROGRAM HEADER AND TABLES
                                .SBTTL IDENTIFICATION


                                .SBTTL  PROGRAM HEADER

002000                                  BGNMOD  MDHEDR
002000                          MDHEDR::

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

002000                                  POINTER BGNRPT,BGNAU,BGNDU,BGNSETUP


002000                                  HEADER  CZKTCA,A,0,120,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  132                             .ASCII /Z/
002002  113                             .ASCII /K/
002003  124                             .ASCII /T/
002004  103                             .ASCII /C/
002005  101                             .ASCII /A/
002006  000                             .BYTE   0
002007  000                             .BYTE   0
002010                          L$REV::                 ;REVISION LEVEL
002010  101                             .ASCII  /A/
002011                          L$DEPO::                ;0
002011  06C                             .ASCII  /0/
002012                          L$UNIT::                ;NUMBER OF UNITS
002012  000016                          .WORD   T$PTHV
002014                          L$TIML::                ;LONGEST TEST TIME
002014  000120                          .WORD   120
002016                          L$HPCP::                ;POINTER TO H.W. QUES.
002016  024454                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  000000                          .WORD   0
002022                          L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002162                          .WORD   L$HW
002024                          L$SPTP::                ;PTR. TO S.W. PTABLE
002024  000000                          .WORD   0
002026                          L$LADP::                ;DIAG. END ADDRESS
002026  024670                          .WORD   L$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
```

PROGRAM HEADER

```
002036                          L$APT::                 ;APT EXPANSION
002036  00000C                          .WORD   0
002040                          L$DTP::                 ;PTR. TO DISPATCH TABLE
002040  002124                          .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
002051      003                         .BYTE   C$EDIT
002052                          '$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  014422                          .WORD   L$DVTYP
002062                          L$REPP::                ;PTR. TO REPORT CODE
002062  017402                          .WORD   L$RPT
002064                          L$EXP4::
002064  000000                          .WORD   0
002066                          L$EXP5::
002066  000000                          .WORD   0
002070                          L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  020050                          .WORD   L$AU
002072                          L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  020014                          .WORD   L$DU
002074                          L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                          .WORD   0
002076                          L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  014432                          .WORD   L$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  017412                          .WORD   L$INIT
002106                          L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  020006                          .WORD   L$CLEAN
002110                          L$ACP::                 ;PTR. TO AUTO CODE
002110  017662                          .WORD   L$AUTO
002112                          L$PRT::                 ;PTR. TO PROTECT TABLE
002112  017404                          .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
567 002122                              ENDMOD
568
```

```
                                .SBTTL  DISPATCH TABLE

                                ;++
                                ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                                ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                                ;--
                                        BGNMOD  DSPCODE
002122                          DSPCODE::
                                        DISPATCH 14
002122  000016                          .WORD   14
002124                          L$DISPATCH::
002124  020056                          .WORD   T1
002126  020216                          .WORD   T2
002130  020420                          .WORD   T3
002132  020640                          .WORD   T4
002134  021074                          .WORD   T5
002136  021314                          .WORD   T6
002140  021540                          .WORD   T7
002142  021776                          .WORD   T8
002144  022256                          .WORD   T9
002146  022516                          .WORD   T10
002150  022750                          .WORD   T11
002152  023212                          .WORD   T12
002154  023474                          .WORD   T13
002156  024256                          .WORD   T14
002160                                  ENDMOD
```

```
                                .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 HARDWARE P-TABLES,
                                ; AND IS USED AS A "TEMPLATE" FOR BUILDING THE P-TABLES.
                                ;--

002160                                  BGNHW   DFPTBL
002160  000010                         .WORD   L10000-L$HW/2
002162                          L$HW::
002162                          DFPTBL::

                                        ;+
                                        ; DUMMY HARDWARE P-TABLE.  THIS JUST LETS THE DRS KNOW WHAT FORMAT
                                        ; WE WANT.
                                        ; -

002162  000000                         .WORD   0               ; SBC ID SWITCH (2 TO 15.)
002164  000001                         .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)

                                        ; FLAG FOR LOOP-BACK CONNECTORS.
                                        ; 0 = NOT INSTALLED; 1 = INSTALLED

002166  000000                         .WORD   0               ; CONNECTOR FOR SLU1
002170  000000                         .WORD   0               ; CONNECTOR FOR SLU2, CHANNEL A
002172  000000                         .WORD   0               ; CONNECTOR FOR SLU2, CHANNEL B
002174  000000                         .WORD   0               ; CONNECTOR FOR PARALLEL I/O
002176  000000                         .WORD   0               ; SLU2 DMA CONFIGURATION
002200  000000                         .WORD   0               ; FLAG FOR USER ROM TESTS (0 = DON'T TEST)

002202                                  ENDHW
002202                          L10000:
```

```
                                .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE TABLE CONTAINS VARIOUS DATA USED BY THE
                                ; PROGRAM AS OPERATIONAL PARAMETERS.  THESE PARAMETERS ARE
                                ; SET UP AT ASSEMBLY TIME AND MAY BE VARIED BY THE OPERATOR
                                ; AT RUN TIME.
                                ;--

002202                                  BGNSW   SFPTBL
002202  000000                         .WORD   L10001-L$SW/2
002204                          L$SW::
002204                          SFPTBL::


                                        ENDSW
002204                          L10001:
```

```
                                .TITLE GLOBAL AREAS
                                .SBTTL IDENTIFICATION
                                .SBTTL  GLOBAL EQUATES SECTION
                                ;++
                                ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                                ; ARE USED IN MORE THAN ONE TEST.
                                ;--
002204                                  BGNMOD  GLBEQAT
002204                          GLBEQAT::
002204                                  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
                                ;
                                ;                                       ; BIT POSITION IN SECOND STATUS WORD
                    000040      EF.START==      32.                     ; (100000) START COMMAND WAS ISSUED
                    000037      EF.RESTART==    31.                     ; (040000) RESTART COMMAND WAS ISSUED
                    000036      EF.CONTINUE==   30.                     ; (020000) CONTINUE COMMAND WAS ISSUED
                    000035      EF.NEW==        29.                     ; (010000) A NEW PASS HAS BEEN STARTED
                    000034      EF.PWR==        28.                     ; (004000) A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
                    000340      PRI07== 340
```

```
GLOBAL AREAS    MACRO M1200  26-JUL-83 08:14  PAGE 18-1
GLOBAL EQUATES SECTION

                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
    673
    688 002204                                  ENDMOD
```

GLOBAL DATA SECTION

```
                                .SBTTL  GLOBAL DATA SECTION

                                ;++
                                ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                                ; IN MORE THAN ONE TEST.
                                ;--
002204                                  BGNMOD  GLBDAT
002204                          GLBDAT::

                                ; ++
                                ;
                                ;       TWO PORT RAM Q-BUS ADDRESS OFFSETS.
                                ;
                                ; --

                        000000  DPR0==0
                        000002  DPR1==2
                        000004  DPR2==4
                        000006  DPR3==6
                        000010  DPR4==10
                        000012  DPR5==12
                        000014  DPR6==14
                        000016  DPR7==16
                        000020  DPR10==20
                        000022  DPR11==22
                        000024  DPR12==24
                        000026  DPR13==26
                        000030  DPR14==30
                        000032  DPR15==32
                        000034  DPR16==34
                        000036  DPR17==36

002204  000000  SAVEC:  .WORD   0               ; TEMP SAVE FOR VECTOR CONTENTS
002206  000000  DROPUN: .WORD   0               ; IOP UNIT DROPPED FLAG (NON-0 = DROPPED)
002210  000000  LUN:    .WORD   0               ; LOGICAL UNIT NUMBER
002212  000000  IOPN:   .WORD   0               ; SBC ID SWITCH FROM P-TABLE
002214  000000  IOPNN:  .WORD   0               ; SBC ID SWITCH RIGHT JUSTIFIED
002216  000000  QBASE:  .WORD   0               ; Q-BUS BASE ADDRESS FROM P-TABLE
002220  000000  QIRVEC: .WORD   0               ; VECTOR FOR QIR TEST
002222  000000  LOOPB1: .WORD   0               ; LOOPBACK CONN. FLAG FOR SLU1
002224  000000  LOOPB2: .WORD   0               ; LOOPBACK CONN. FLAG FOR SLU2 CHANNEL A
002226  000000  LOOPB3: .WORD   0               ; LOOPBACK CONN. FLAG FOR CHANNEL B
002230  000000  LOOPB4: .WORD   0               ; LOOPBACK CONN. FLAG FOR PL'L I/O
002232  000000  SL2DMA: .WORD   0               ; "1" SAYS SLU2 SETUP FOR DMA
002234  000000  ROMTST: .WORD   0               ; FLAG FOR USER ROM TESTS (NON-0 = TEST ROM)
002236  000000  DELCNT: .WORD   0               ; USED IN RDELAY SUBROUTINE.
002240  000000  INTFLG: .WORD   0               ; SOFTWARE FLAG FOR QIR TEST
002242  000000  HIMEM:  .WORD   0               ; BASE OF HIGHEST 4KW PAGE FROM L$HIME

                                ;
                                ;       THE FOLLOWING ARE THE DATA TO INVOKE INDIVIDUAL ROM TESTS.
                                ;       EACH XXDP+ TEST MUST WRITE ONE OF THESE WORDS INTO THE IOP'S TWO
                                ;       PORT REGISTER FILE (TWO-PORT RAM, REGISTER 0).  THE IOP BOOT
                                ;       CODE WILL INTERPRET THE CONTENTS OF DPR0 AND INVOKE THE APPROPRIATE
                                ;       IOP ROM TEST.
                                ;
002244  100001  CSR:    .WORD   100001          ; CSR TEST
```

GLOBAL DATA SECTION

```
    746 002246  100002                RAM:    .WORD   100002          ; 16KW RAM TEST
    747 002250  100004                ROM:    .WORD   100004          ; ROM TEST
    748 002252  100010                CPU:    .WORD   100010          ; IOP INSTRUCTION TEST
    749 002254  100020                BVNT:   .WORD   100020          ; BEVNT INTERRUPT TEST
    750 002256  100040                SLU1:   .WORD   100040          ; SERIAL PORT #1 TEST (CONSOLE)
    751 002260  100100                SLU2:   .WORD   100100          ; SERIAL PORT #2 TEST (MODEM)
    752 002262  100200                PLLIO:  .WORD   100200          ; PARALLEL I/O TEST
    753 002264  100400                DMA:    .WORD   100400          ; DMA CONTROLLER TEST
    754 002266  101000                QIR:    .WORD   101000          ; Q-BUS INTERRUPT TEST
    755 002270  102000                DPR:    .WORD   102000          ; TWO-PORT RAM TEST
```

GLOBAL DATA SECTION

```
                                ;
                                ;++
                                ; THE FOLLOWING ADDRESSES ARE USED TO PRINT FURTHER ERROR INFORMATION WHICH
                                ; IS PASSED FROM THE KXT11-CA ROM-RESIDENT TESTS TO XXDP+ VIA THE TWO-PORT
                                ; REGISTER 3.  THE FORMAT OF REGISTER 3 IS:
                                ;
                                ;       TTEEEE  WHERE:
                                ;
                                ;       TT =  THE TEST NUMBER WHERE THE FAILURE WAS DETECTED, AND
                                ;       EEEE = DISCRETE ERROR FLAGS IDENTIFYING THE ERROR TYPE.
                                ;
                                ;       FOR EXAMPLE:    010004 = TEST 01, ERROR BIT 2
                                ;                       120111 = TEST 12, ERROR BITS 0, 3, AND 6.
                                ;
                                ;       THIS FORMAT ALLOWS FOR 17(O) TESTS, AND 12(D) ERROR BITS PER TEST.
                                ;
                                ; THE PROGRAM MUST PRINT A MESSAGE INDICATING THE ROM TEST WHICH FAILED
                                ; (AFTER PRINTING ITS OWN MESSAGE) AND THEN A MESSAGE FOR EACH ERROR BIT
                                ; THAT IS SET.  THIS IS DONE BY FIRST STRIPPING THE TEST NUMBER FROM
                                ; BITS 15 THRU 12 AND INDEXING TO A POINTER TO THE PROPER ASCII STRING.
                                ; THE ERROR BITS (0 THRU 11) ARE THEN TESTED. FOR EACH BIT THAT IS SET, A
                                ; MESSAGE WILL BE PRINTED.  THE PROPER MESSAGE IS DERIVED BY INDEXING
                                ; TO AN ASCII STRING POINTER.  ALL THIS INVOLVES 2 TABLES -  ONE WHICH
                                ; LISTS INDIVIDUAL ADDRESSES EACH POINTING TO AN ENTRY IN THE SECOND TABLE.
                                ; THE SECOND CONTAINS A POINTER TO THE "TEST NUMBER" ASCII STRING, FOLLOWED
                                ; BY UP TO 12 POINTERS TO THE "ERROR BIT" ASCII STRINGS.  THEREFORE, THIS
                                ; SECOND TABLE WILL CONTAIN 13 ENTRIES FOR EACH OF THE ROM-RESIDENT SELFTESTS.
                                ;
                                ;--
                                ;
                                ;--

002272  002320                  T1ADR:  RT1             ; POINTER TO TEST 1 STRINGS
002274  002352                  T2ADR:  RT2             ; POINTER TO TEST 2 STRINGS
002276  002404                  T3ADR:  RT3             ; POINTER TO TEST 3 STRINGS
002300  002436                  T4ADR:  RT4             ; POINTER TO TEST 4 STRINGS
002302  002470                  T5ADR:  RT5             ; POINTER TO TEST 5 STRINGS
002304  002522                  T6ADR:  RT6             ; POINTER TC TEST 6 STRINGS
002306  002554                  T7ADR:  RT7             ; POINTER TO TEST 7 STRINGS
002310  002606                  T10ADR: RT10            ; POINTER TO TEST 10 STRINGS
002312  002640                  T11ADR: RT11            ; POINTER TO TEST 11 STRINGS
002314  002672                  T12ADR: RT12            ; POINTER TO TEST 12 STRINGS
002316  002724                  T13ADR: RT13            ; POINTER TO TEST 13 STRINGS
```

GLOBAL DATA SECTION

```
                                ;
                                ; ADD THE NEXT FOUR ADDRESSES WHEN AND IF ADDITIONAL TESTS ARE INSERTED INTO
                                ; THE ROM-RESIDENT CODE.
                                ;
                                ;T14ADR:        RT14                    ; POINTER TO TEST 14 STRINGS
                                ;T15ADR:        RT15                    ; POINTER TO TEST 15 STRINGS
                                ;T16ADR:        RT16                    ; POINTER TO TEST 16 STRINGS
                                ;T17ADR:        RT17                    ; POINTER TO TEST 17 STRINGS
                                ;


                                ;++
                                ; HERE IS THE SECOND TABLE WHICH WAS MENTIONED ABOVE.
                                ;--

002320  004721                  RT1:    ROMT1                   ; POINTER TO T1 STRING
002322  005524                          T1E0                    ; ERROR BIT:    0
002324  005570                          T1E1                    ;               1
002326  005634                          T1E2                    ;               2
002330  005700                          T1E3                    ;               3
002332  005746                          T1E4                    ;               4
002334  006016                          T1E5                    ;               5
002336  006064                          T1E6                    ;               6
002340  006132                          T1E7                    ;               7
002342  000000                          .WORD   0               ; ADD UP TO 4 MORE ERROR BIT MESSAGE POINTERS.
002344  000000                          .WORD   0
002346  000000                          .WORD   0
002350  000000                          .WORD   0

002352  004744                  RT2:    ROMT2                   ; POINTER TO T2 ASCII STRING
002354  006200                          T2E0                    ; ERROR BIT:    0
002356  006253                          T2E1                    ;               1
002360  006323                          T2E2                    ;               2
002362  006374                          T2E3                    ;               3
002364  006457                          T2E4                    ;               4
002366  006542                          T2E5                    ;               5
002370  006613                          T2E6                    ;               6
002372  006661                          T2E7                    ;               7
002374  006725                          T2E8                    ;               8
002376  007003                          T2E9                    ;               9
002400  000000                          .WORD   0               ; ADD UP TO 2 MORE ERROR BIT MESSAGE POINTERS.
002402  000000                          .WORD   0
```

GLOBAL DATA SECTION

```
842
843 002404  004767                RT3:    ROMT3                   ; POINTER TO T3 ASCII STRING
844 002406  007061                        T3E0                    ; ERROR BIT:    0
845 002410  007137                        T3E1                    ;               1
846 002412  007215                        T3E2                    ;               2
847 002414  007313                        T3E3                    ;               3
848 002416  000000                        .WORD   0               ; ADD UP TO 8 MORE ERROR BIT MESSAGE POINTERS.
849 002420  000000                        .WORD   0
850 002422  000000                        .WORD   0
851 002424  000000                        .WORD   0
852 002426  000000                        .WORD   0
853 002430  000000                        .WORD   0
854 002432  000000                        .WORD   0
855 002434  000000                        .WORD   0
856
857 002436  005023                RT4:    ROMT4                   ; POINTER TO T4 ASCII STRING
858 002440  000000                        .WORD   0               ;       ***T4 NOT INSTALLED AS YET***
859 002442  000000                        .WORD   0
860 002444  000000                        .WORD   0
861 002446  000000                        .WORD   0
862 002450  000000                        .WORD   0
863 002452  000000                        .WORD   0
864 002454  000000                        .WORD   0
865 002456  000000                        .WORD   0
866 002460  000000                        .WORD   0
867 002462  000000                        .WORD   0
868 002464  000000                        .WORD   0
869 002466  000000                        .WORD   0
```

GLOBAL DATA SECTION

```
    871
    872 002470  005062                RT5:    ROMT5                   ; POINTER TO T5 ASCII STRING
    873 002472  007411                        T5E0                    ; ERROR BIT:    0
    874 002474  007471                        T5E1                    ;               1
    875 002476  007544                        T5E2                    ;               2
    876 002500  007607                        T5E3                    ;               3
    877 002502  000000                        .WORD   0               ; ADD UP TO 8 MORE ERROR BIT MESSAGE POINTERS
    878 002504  000000                        .WORD   0
    879 002506  000000                        .WORD   0
    880 002510  000000                        .WORD   0
    881 002512  000000                        .WORD   0
    882 002514  000000                        .WORD   0
    883 002516  000000                        .WORD   0
    884 002520  000000                        .WORD   0
    885
    886 002522  005117                RT6:    ROMT6                   ; POINTER TO T6 ASCII STRING
    887 002524  007647                        T6E0                    ; ERROR BIT:    0
    888 002526  007745                        T6E1                    ;               1
    889 002530  010025                        T6E2                    ;               2
    890 002532  010074                        T6E3                    ;               3
    891 002534  010154                        T6E4                    ;               4
    892 002536  010223                        T6E5                    ;               5
    893 002540  010266                        T6E6                    ;               6
    894 002542  000000                        .WORD   0               ; ADD UP TO 5 MORE ERROR BIT MESSAGE POINTERS.
    895 002544  000000                        .WORD   0
    896 002546  000000                        .WORD   0
    897 002550  000000                        .WORD   0
    898 002552  000000                        .WORD   0
```

GLOBAL DATA SECTION

```
900
901 002554  000000G                RT7:    ROMT7           ; POINTER TO T7 ASCII STRING
902 002556  010337                          T7E0            ; ERROR BIT:    0
903 002560  010417                          T7E1            ;               1
904 002562  010504                          T7E2            ;               2
905 002564  010560                          T7E3            ;               3
906 002566  010634                          T7E4            ;               4
907 002570  010707                          T7E5            ;               5
908 002572  010775                          T7E6            ;               6
909 002574  011054                          T7E7            ;               7
910 002576  011132                          T7E8            ;               8
911 002600  011227                          T7E9            ;               9
912 002602  011320                          T7E10           ;               10
913 002604  011412                          T7E11           ;               11
914
915 002606  005267                RT10:   ROMT10          ; POINTER TO T10 ASCII STRING
916 002610  011477                          T10E0           ; ERROR BIT:    0
917 002612  011560                          T10E1           ;               1
918 002614  011621                          T10E2           ;               2
919 002616  011657                          T10E3           ;               3
920 002620  011714                          T10E4           ;               4
921 002622  011767                          T10E5           ;               5
922 002624  012037                          T10E6           ;               6
923 002626  012116                          T10E7           ;               7
924 002630  000000                          .WORD   0       ; ADD UP TO 4 MORE ERROR BIT MESSAGE POINTERS.
925 002632  000000                          .WORD   0
926 002634  000000                          .WORD   0
927 002636  000000                          .WORD   0
```

GLOBAL DATA SECTION

```
    929
    930 002640  005317                RT11:   ROMT11          ; POINTER TO T11 ASCII STRING
    931 002642  012161                        T11E0           ; ERROR BIT:    0
    932 002644  012260                        T11E1           ;               1
    933 002646  012365                        T11E2           ;               2
    934 002650  012437                        T11E3           ;               3
    935 002652  012524                        T11E4           ;               4
    936 002654  012573                        T11E5           ;               5
    937 002656  000000                        .WORD   0       ; ADD UP TO 6 MORE ERROR BIT MESSAGE POINTERS
    938 002660  000000                        .WORD   0
    939 002662  000000                        .WORD   0
    940 002664  000000                        .WORD   0
    941 002666  000000                        .WORD   0
    942 002670  000000                        .WORD   0
    943
    944 002672  005462                RT12:   ROMT12          ; POINTER TO T12 ASCII STRING
    945 002674  012625                        T12E0           ; ERROR BIT:    0
    946 002676  012721                        T12E1           ;               1
    947 002700  012771                        T12E2           ;               2
    948 002702  013052                        T12E3           ;               3
    949 002704  013132                        T12E4           ;               4
    950 002706  013205                        T12E5           ;               5
    951 002710  013262                        T12E6           ;               6
    952 002712  000000                        .WORD   0       ; ADD UP TO 5 MORE ERROR BIT MESSAGE POINTERS.
    953 002714  000000                        .WORD   0
    954 002716  000000                        .WORD   0
    955 002720  000000                        .WORD   0
    956 002722  000000                        .WORD   0
```

```
GLOBAL AREAS    MACRO M1200  26-JUL-83 08:14  PAGE 26
GLOBAL DATA SECTION

    958
    959 002724  005507                    RT13:   ROMT13              ; POINTER TO T13 ASCII STRING
    960 002726  013336                            T13E0               ; ERROR BIT:    0
    961 002730  013404                            T13E1               ;               1
    962 002732  013460                            T13E2               ;               2
    963 002734  013545                            T13E3               ;               3
    964 002736  013653                            T13E4               ;               4
    965 002740  013727                            T13E5               ;               5
    966 002742  014005                            T13E6               ;               6
    967 002744  014105                            T13E7               ;               7
    968 002746  014161                            T13E8               ;               8
    969 002750  014227                            T13E9               ;               9
    970 002752  014277                            T13E10              ;               10
    971 002754  014350                            T13E11              ;               11
    972
    973
    974                                     ;
    975                                     ; IF (UP TO) 4 MORE TESTS ARE ADDED TO THE ROM-RESIDENT CODE, PLACE THE
    976                                     ; MESSAGE POINTERS HERE.  USE IDENTICAL FORMAT AS FOR 1 THRU 13, ABOVE.
    977                                     ; DON'T FORGET TO MODIFY THE TABLE IMMEDIATELY PRECEEDING THIS ONE, ALSO.
    978                                     ;
    979
    980 002756                                      ENDMOD
    981
```

```
    983                                 .SBTTL  GLOBAL TEXT SECTION
    984
    985                                 ;++
    986                                 ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
    987                                 ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
    988                                 ; MORE THAN ONE TEST.
    989                                 ;--
    990
    991                                 ; ++
    992                                 ;
    993                                 ;       GLOBAL MESSAGES -- ERROR AND OTHERWISE
    994                                 ;
    995                                 ; --
    996
    997 002756      114     123     111 NOIOP:  .ASCIZ  /LSI-11 BUS TIMEOUT - NO IOP PRESENT, OR KXT11 INTERFACE ERROR/
        002761      055     061     061
        002764      040     102     125
        002767      123     040     124
        002772      111     115     105
        002775      117     125     124
        003000      040     055     040
        003003      116     117     040
        003006      111     117     120
        003011      040     120     122
        003014      105     123     105
        003017      116     124     054
        003022      040     117     122
        003025      040     113     130
        003030      124     061     061
        003033      040     111     116
        003036      124     105     122
        003041      106     101     103
        003044      105     040     105
        003047      122     122     117
        003052      122     000
    998 003054      116     117     040 NORES:  .ASCIZ  /NO RESPONSE FROM ROM SELFTEST/
        003057      122     105     123
        003062      120     117     116
        003065      123     105     040
        003070      106     122     117
        003073      115     040     122
        003076      117     115     040
        003101      123     105     114
        003104      106     124     105
        003107      123     124     000
```

GLOBAL TEXT SECTION

```
   1000 003112      105      122      122  ROMD:   .ASCIZ  /ERROR DETECTED BY IOP SELFTEST/
        003115      117      122      040
        003120      104      105      124
        003123      105      103      124
        003126      105      104      040
        003131      102      131      040
        003134      111      117      120
        003137      040      123      105
        003142      114      106      124
        003145      105      123      124
        003150      000
   1001 003151      102      117      117  BADSW:  .ASCIZ  'BOOT/SELFTEST SWITCH NOT SETUP PROPERLY''
        003154      124      057      123
        003157      105      114      106
        003162      124      105      123
        003165      124      040      123
        003170      127      111      124
        003173      103      110      040
        003176      116      117      124
        003201      040      123      105
        003204      124      125      120
        003207      040      120      122
        003212      117      120      105
        003215      122      114      131
        003220      000
```

GLOBAL TEXT SECTION

```
1003 003221  124  105  123  CMND:   .ASCIZ  /TEST COMMAND STATUS ERROR FROM IOP/
     003224  124  040  103
     003227  117  115  115
     003232  101  116  104
     003235  040  123  124
     003240  101  124  125
     003243  123  040  105
     003246  122  122  117
     003251  122  040  106
     003254  122  117  115
     003257  040  111  117
     003262  120  000
1004 003264  124  120  122  NOTRDY: .ASCIZ  /TPRO NOT = 000000; IOP IS NOT READY TO ACCEPT COMMANDS/
     003267  060  040  116
     003272  117  124  040
     003275  075  040  060
     003300  060  060  060
     003303  060  060  073
     003306  040  111  117
     003311  120  040  111
     003314  123  040  116
     003317  117  124  040
     003322  122  105  101
     003325  104  131  040
     003330  124  117  040
     003333  101  103  103
     003336  105  120  124
     003341  040  103  117
     003344  115  115  101
     003347  116  104  123
     003352  000
```

GLOBAL TEXT SECTION

```
  1006 003353      120      117      123  NOTPR:  .ASCIZ  /POSSIBLE FATAL IOP ERROR DETECTED/
       003356      123      111      102
       003361      114      105      040
       003364      106      101      124
       003367      101      114      040
       003372      111      117      120
       003375      040      105      122
       003400      122      117      122
       003403      040      104      105
       003406      124      105      103
       003411      124      105      104
       003414      000
  1007 003415      123      102      103  CCPU:   .ASCIZ  /SBC ID SWITCH SETTING/
       003420      040      111      104
       003423      040      123      127
       003426      111      124      103
       003431      110      040      123
       003434      105      124      124
       003437      111      116      107
       003442      000
```

GLOBAL TEXT SECTION

```
   1009 003443     111     123     040  BASE:   .ASCIZ  "IS IOP'S LSI-11 BUS ADDRESS IN THE LOW ADDRESS RANGE(Y/N)"
        003446     111     117     120
        003451     047     123     040
        003454     114     123     111
        003457     055     061     061
        003462     040     102     125
        003465     123     040     101
        003470     104     104     122
        003473     105     123     123
        003476     040     111     116
        003501     040     124     110
        003504     105     040     114
        003507     117     127     040
        003512     101     104     104
        003515     122     105     123
        003520     123     040     122
        003523     101     116     107
        003526     105     050     131
        003531     057     116     051
        003534     000
   1010 003535     114     117     117  LOOP1:  .ASCIZ  /LOOP-BACK CONNECTOR ON SERIAL PORT #1 (CONSOLE PORT)/
        003540     120     055     102
        003543     101     103     113
        003546     040     103     117
        003551     116     116     105
        003554     103     124     117
        003557     122     040     117
        003562     116     040     123
        003565     105     122     111
        003570     101     114     040
        003573     120     117     122
        003576     124     040     043
        003601     061     040     050
        003604     103     117     116
        003607     123     117     114
        003612     105     040     120
        003615     117     122     124
        003620     051     000
```

GLOBAL TEXT SECTION

```
   1012 003622     103     110     101  LOOP2:  .ASCIZ  /CHANNEL A LOOP-BACK CONNECTOR ON SERIAL PORT #2/
        003625     116     116     105
        003630     114     040     101
        003633     040     114     117
        003636     117     120     055
        003641     102     101     103
        003644     113     040     103
        003647     117     116     116
        003652     105     103     124
        003655     117     122     040
        003660     117     116     040
        003663     123     105     122
        003666     111     101     114
        003671     040     120     117
        003674     122     124     040
        003677     043     062     000
   1013 003702     103     110     101  LOOP3:  .ASCIZ  /CHANNEL B LOOP-BACK CONNECTOR ON SERIAL PORT #2/
        003705     116     116     105
        003710     114     040     102
        003713     040     114     117
        003716     117     120     055
        003721     102     101     103
        003724     113     040     103
        003727     117     116     116
        003732     105     103     124
        003735     117     122     040
        003740     117     116     040
        003743     123     105     122
        003746     111     101     114
        003751     040     120     117
        003754     122     124     040
        003757     043     062     000
```

GLOBAL TEXT SECTION

```
   1015 003762     114     117     117  LOOP4:  .ASCIZ  /LOOP-BACK CONNECTOR ON PARALLEL PORT/
        003765     120     055     102
        003770     101     103     113
        003773     040     103     117
        003776     116     116     105
        004001     103     124     117
        004004     122     040     117
        004007     116     040     120
        004012     101     122     101
        004015     114     114     105
        004020     114     040     120
        004023     117     122     124
        004026     000
   1016 004027     111     123     040  SLU2CF: .ASCIZ  "IS SLU2 CHANNEL A SERIAL PORT CONFIGURED FOR DMA OPERATION(Y/N)"
        004032     123     114     125
        004035     062     040     103
        004040     110     101     116
        004043     116     105     114
        004046     040     101     040
        004051     123     105     122
        004054     111     101     114
        004057     040     120     117
        004062     122     124     040
        004065     103     117     116
        004070     106     111     107
        004073     125     122     105
        004076     104     040     106
        004101     117     122     040
        004104     104     115     101
        004107     040     117     120
        004112     105     122     101
        004115     124     111     117
        004120     116     050     131
        004123     057     116     051
        004126     000
```

GLOBAL TEXT SECTION

```
   1018 004127      124      105      123  UROM:   .ASCIZ  /TEST USER ROM/
        004132      124      040      125
        004135      123      105      122
        004140      040      122      117
        004143      115      000
   1019
   1020 004145      103      123      122  CSRT:   .ASCIZ  /CSR/
        004150      000
```

```
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GLOBAL TEXT SECTION

   1022 004151      061      066      113  RAMT:   .ASCIZ  /16KW LOCAL RAM/
        004154      127      040      114
        004157      117      103      101
        004162      114      040      122
        004165      101      115      000
   1023 004170      122      117      115  ROMT:   .ASCIZ  /ROM/
        004173      000
```

GLOBAL TEXT SECTION

```
   1025 004174      102      105      126  BEVNT:  .ASCIZ  /BEVNT/
        004177      116      124      000
   1026 004202      103      117      116  SLU1T:  .ASCIZ  /CONSOLE SERIAL PORT (SLU1)/
        004205      123      117      114
        004210      105      040      123
        004213      105      122      111
        004216      101      114      040
        004221      120      117      122
        004224      124      040      050
        004227      123      114      125
        004232      061      051      000
   1027 004235      123      105      122  SLU2A:  .ASCIZ  /SERIAL PORT (SLU2), CHANNEL A/
        004240      111      101      114
        004243      040      120      117
        004246      122      124      040
        004251      050      123      114
        004254      125      062      051
        004257      054      040      103
        004262      110      101      116
        004265      116      105      114
        004270      040      101      000
```

GLOBAL TEXT SECTION

```
1029 004273  123  105  122  SLU2B:  .ASCIZ  /SERIAL PORT (SLU2), CHANNEL B/
     004276  111  101  114
     004301  040  120  117
     004304  122  124  040
     004307  050  123  114
     004312  125  062  051
     004315  054  040  103
     004320  110  101  116
     004323  116  105  114
     004326  040  102  000
1030 004331  120  101  122  PLLP:   .ASCIZ  'PARALLEL I/O PORT''
     004334  101  114  114
     004337  105  114  040
     004342  111  057  117
     004345  040  120  117
     004350  122  124  000
```

GLOBAL TEXT SECTION

```
1032 004353  104  115  101  DMAL:   .ASCIZ  /DMA CONTROLLER (LOCAL IOP ONLY)/
     004356  040  103  117
     004361  116  124  122
     004364  117  114  114
     004367  105  122  040
     004372  050  114  117
     004375  103  101  114
     004400  040  111  117
     004403  120  040  117
     004406  116  114  131
     004411  051  000
1033 004413  104  115  101  DMAT:   .ASCIZ  /DMA CONTROLLER (LSI-11 BUS DMA)/
     004416  040  103  117
     004421  116  124  122
     004424  117  114  114
     004427  105  122  040
     004432  050  114  123
     004435  111  055  061
     004440  061  040  102
     004443  125  123  040
     004446  104  115  101
     004451  051  000
```

GLOBAL TEXT SECTION

```
   1035 004453     114     123     111  QIRT:   .ASCIZ  /LSI-11 BUS INTERRUPT/
        004456     055     061     061
        004461     040     102     125
        004464     123     040     111
        004467     116     124     105
        004472     122     122     125
        004475     120     124     000
   1036 004500     116     117     040  QIRT1:  .ASCIZ  /NO IOP INTERRUPT FROM FIRST OF 2 ATTEMPTS/
        004503     111     117     120
        004506     040     111     116
        004511     124     105     122
        004514     122     125     120
        004517     124     040     106
        004522     122     117     115
        004525     040     106     111
        004530     122     123     124
        004533     040     117     106
        004536     040     062     040
        004541     101     124     124
        004544     105     115     120
        004547     124     123     000
```

```
GLOBAL AREAS    MACRO M1200  26-JUL-83 08:14  PAGE 40
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   1038 004552      116      117      040  QIRT2:  .ASCIZ  /NO IOP INTERRUPT FROM SECOND OF 2 ATTEMPTS./
        004555      111      117      120
        004560      040      111      116
        004563      124      105      122
        004566      122      125      120
        004571      124      040      106
        004574      122      117      115
        004577      040      123      105
        004602      103      117      116
        004605      104      040      117
        004610      106      040      062
        004613      040      101      124
        004616      124      105      115
        004621      120      124      123
        004624      056      000
   1039 004626      124      127      117  DPRT:   .ASCIZ  /TWO-PORT RAM/
        004631      055      120      117
        004634      122      124      040
        004637      122      101      115
        004642      000
```

GLOBAL TEXT SECTION

```
   1041 004643     103     120     125  CPUT:   .ASCIZ  /CPU INSTRUCTION/
        004646     040     111     116
        004651     123     124     122
        004654     125     103     124
        004657     111     117     116
        004662     000
   1042 004663     126     105     122  TST1:   .ASCIZ  /VERIFY THE IOP IS ADDRESSABLE/
        004666     111     106     131
        004671     040     124     110
        004674     105     040     111
        004677     117     120     040
        004702     111     123     040
        004705     101     104     104
        004710     122     105     123
        004713     123     101     102
        004716     114     105     000
```

GLOBAL TEXT SECTION

```
   1044 004721      111      057      117  ROMT1:  .ASCIZ  "I/O REGISTER CHECK"
        004724      040      122      105
        004727      107      111      123
        004732      124      105      122
        004735      040      103      110
        004740      105      103      113
        004743      000
   1045 004744      116      101      124  ROMT2:  .ASCIZ  /NATIVE OR USER RAM/
        004747      111      126      105
        004752      040      117      122
        004755      040      125      123
        004760      105      122      040
        004763      122      101      115
        004766      000
```

GLOBAL TEXT SECTION

```
   1047 004767     116     101     124  ROMT3:  .ASCIZ  /NATIVE OR USER ROM CHECKSUM/
        004772     111     126     105
        004775     040     117     122
        005000     040     125     123
        005003     105     122     040
        005006     122     117     115
        005011     040     103     110
        005014     105     103     113
        005017     123     125     115
        005022     000
   1048 005023     124     061     061  ROMT4:  .ASCIZ  /T11 CPU INSTRUCTIONS AND TRAPS/
        005026     040     103     120
        005031     125     040     111
        005034     116     123     124
        005037     122     125     103
        005042     124     111     117
        005045     116     123     040
        005050     101     116     104
        005053     040     124     122
        005056     101     120     123
        005061     000
```

GLOBAL TEXT SECTION

```
   1050 005062      114      111      116  ROMT5:  .ASCIZ  /LINE CLOCK (BEVNT) INTERRUPT/
        005065      105      040      103
        005070      114      117      103
        005073      113      040      050
        005076      102      105      126
        005101      116      124      051
        005104      040      111      116
        005107      124      105      122
        005112      122      125      120
        005115      124      000
   1051 005117      103      117      116  ROMT6:  .ASCIZ  /CONSOLE SERIAL PORT DC319/
        005122      123      117      114
        005125      105      040      123
        005130      105      122      111
        005133      101      114      040
        005136      120      117      122
        005141      124      040      104
        005144      103      063      061
        005147      071      000
```

GLOBAL TEXT SECTION

```
1053 005151  123  105  103  ROMT7A: .ASCIZ  /SECOND SERIAL PORT NEC7201 (CHANNEL A)/
     005154  117  116  104
     005157  040  123  105
     005162  122  111  101
     005165  114  040  120
     005170  117  122  124
     005173  040  116  105
     005176  103  067  062
     005201  060  061  040
     005204  050  103  110
     005207  101  116  116
     005212  105  114  040
     005215  101  051  000
1054 005220  123  105  103  ROMT7B: .ASCIZ  /SECOND SERIAL PORT NEC7201 (CHANNEL B)/
     005223  117  116  104
     005226  040  123  105
     005231  122  111  101
     005234  114  040  120
     005237  117  122  124
     005242  040  116  105
     005245  103  067  062
     005250  060  061  040
     005253  050  103  110
     005256  101  116  116
     005261  105  114  040
     005264  102  051  000
```

GLOBAL TEXT SECTION

```
   1056 005267      120      101      122  ROMT10: .ASCIZ  'PARALLEL I/O PORT Z8036''
        005272      101      114      114
        005275      105      114      040
        005300      111      057      117
        005303      040      120      117
        005306      122      124      040
        005311      132      070      060
        005314      063      066      000
   1057 005317      104      115      101  ROMT11: .ASCIZ  /DMA CONTROLLER AMZ8016/
        005322      040      103      117
        005325      116      124      122
        005330      117      114      114
        005333      105      122      040
        005336      101      115      132
        005341      070      060      061
        005344      066      000
```

GLOBAL TEXT SECTION

```
   1059 005346      104      115      101  ROM11A: .ASCIZ  /DMA CONTROLLER AMZ8016 (LOCAL IOP ONLY)/
        005351      040      103      117
        005354      116      124      122
        005357      117      114      114
        005362      105      122      040
        005365      101      115      132
        005370      070      060      061
        005373      066      040      050
        005376      114      117      103
        005401      101      114      040
        005404      111      117      120
        005407      040      117      116
        005412      114      131      051
        005415      000
   1060 005416      104      115      101  ROM11B: .ASCIZ  /DMA CONTROLLER AMZ8016 (LSI-11 BUS)/
        005421      040      103      117
        005424      116      124      122
        005427      117      114      114
        005432      105      122      040
        005435      101      115      132
        005440      070      060      061
        005443      066      040      050
        005446      114      123      111
        005451      055      061      061
        005454      040      102      125
        005457      123      051      000
```

GLOBAL TEXT SECTION

```
   1062 005462     114     123     111  ROMT12: .ASCIZ  /LSI-11 BUS INTERRUPT/
        005465     055     061     061
        005470     040     102     125
        005473     123     040     111
        005476     116     124     105
        005501     122     122     125
        005504     120     124     000
   1063 005507     124     127     117  ROMT13: .ASCIZ  /TWO-PORT RAM/
        005512     055     120     117
        005515     122     124     040
        005520     122     101     115
        005523     000
```

```
   1065 005524      105      122      122  T1E0:   .ASCIZ  /ERROR #0 - BUS ERROR AT CSR ADDRESS/
        005527      117      122      040
        005532      043      060      040
        005535      055      040      102
        005540      125      123      040
        005543      105      122      122
        005546      117      122      040
        005551      101      124      040
        005554      103      123      122
        005557      040      101      104
        005562      104      122      105
        005565      123      123      000
   1066 005570      105      122      122  T1E1:   .ASCIZ  /ERROR #1 - BUS ERROR AT QIR ADDRESS/
        005573      117      122      040
        005576      043      061      040
        005601      055      040      102
        005604      125      123      040
        005607      105      122      122
        005612      117      122      040
        005615      101      124      040
        005620      121      111      122
        005623      040      101      104
        005626      104      122      105
        005631      123      123      000
```

GLOBAL TEXT SECTION

```
   1068 005634      105      122      122  T1E2:    .ASCIZ  /ERROR #2 - BUS ERROR AT TPR ADDRESS/
        005637      117      122      040
        005642      043      062      040
        005645      055      040      102
        005650      125      123      040
        005653      105      122      122
        005656      117      122      040
        005661      101      124      040
        005664      124      120      122
        005667      040      101      104
        005672      104      122      105
        005675      123      123      000
   1069 005700      105      122      122  T1E3:    .ASCIZ  /ERROR #3 - BUS ERROR AT DC319 ADDRESS/
        005703      117      122      040
        005706      043      063      040
        005711      055      040      102
        005714      125      123      040
        005717      105      122      122
        005722      117      122      040
        005725      101      124      040
        005730      104      103      063
        005733      061      071      040
        005736      101      104      104
        005741      122      105      123
        005744      123      000
```

GLOBAL TEXT SECTION

```
1071 005746  105  122  122  T1E4:   .ASCIZ  /ERROR #4 - BUS ERROR AT NEC7201 ADDRESS/
     005751  117  122  040
     005754  043  064  040
     005757  055  040  102
     005762  125  123  040
     005765  105  122  122
     005770  117  122  040
     005773  101  124  040
     005776  116  105  103
     006001  067  062  060
     006004  061  040  101
     006007  104  104  122
     006012  105  123  123
     006015  000
1072 006016  105  122  122  T1E5:   .ASCIZ  /ERROR #5 - BUS ERROR AT I8254 ADDRESS/
     006021  117  122  040
     006024  043  065  040
     006027  055  040  102
     006032  125  123  040
     006035  105  122  122
     006040  117  122  040
     006043  101  124  040
     006046  111  070  062
     006051  065  064  040
     006054  101  104  104
     006057  122  105  123
     006062  123  000
```

GLOBAL TEXT SECTION

```
1074 006064     105     122     122  T1E6:   .ASCIZ  /ERROR #6 - BUS ERROR AT Z8036 ADDRESS/
     006067     117     122     040
     006072     043     066     040
     006075     055     040     102
     006100     125     123     040
     006103     105     122     122
     006106     117     122     040
     006111     101     124     040
     006114     132     070     060
     006117     063     066     040
     006122     101     104     104
     006125     122     105     123
     006130     123     000
1075 006132     105     122     122  T1E7:   .ASCIZ  /ERROR #7 - BUS ERROR AT Z8016 ADDRESS/
     006135     117     122     040
     006140     043     067     040
     006143     055     040     102
     006146     125     123     040
     006151     105     122     122
     006154     117     122     040
     006157     101     124     040
     006162     132     070     060
     006165     061     066     040
     006170     101     104     104
     006173     122     105     123
     006176     123     000
```

GLOBAL TEXT SECTION

```
1077 006200  105  122  122  T2E0:   .ASCIZ  /ERROR #0 - BUS ERROR AT NATIVE RAM ADDRESS/
     006203  117  122  040
     006206  043  060  040
     006211  055  040  102
     006214  125  123  040
     006217  105  122  122
     006222  117  122  040
     006225  101  124  040
     006230  116  101  124
     006233  111  126  105
     006236  040  122  101
     006241  115  040  101
     006244  104  104  122
     006247  105  123  123
     006252  000
1078 006253  105  122  122  T2E1:   .ASCIZ  /ERROR #1 - WRITE-READ ERROR, NATIVE RAM/
     006256  117  122  040
     006261  043  061  040
     006264  055  040  127
     006267  122  111  124
     006272  105  055  122
     006275  105  101  104
     006300  040  105  122
     006303  122  117  122
     006306  054  040  116
     006311  101  124  111
     006314  126  105  040
     006317  122  101  115
     006322  000
```

GLOBAL TEXT SECTION

```
1080 006323  105  122  122  T2E2:   .ASCIZ  /ERROR #2 - READ-MODIFY-WRITE, NATIVE RAM/
     006326  117  122  040
     006331  043  062  040
     006334  055  040  122
     006337  105  101  104
     006342  055  115  117
     006345  104  111  106
     006350  131  055  127
     006353  122  111  124
     006356  105  054  040
     006361  116  101  124
     006364  111  126  105
     006367  040  122  101
     006372  115  000
1081 006374  105  122  122  T2E3:   .ASCIZ  /ERROR #3 - READ-MODIFY-WRITE (LO BYTE), NATIVE RAM/
     006377  117  122  040
     006402  043  063  040
     006405  055  040  122
     006410  105  101  104
     006413  055  115  117
     006416  104  111  106
     006421  131  055  127
     006424  122  111  124
     006427  105  040  050
     006432  114  117  040
     006435  102  131  124
     006440  105  051  054
     006443  040  116  101
     006446  124  111  126
     006451  105  040  122
     006454  101  115  000
```

GLOBAL TEXT SECTION

```
   1083 006457     105     122     122  T2E4:   .ASCIZ  /ERROR #4 - READ-MODIFY-WRITE (HI BYTE), NATIVE RAM/
        006462     117     122     040
        006465     043     064     040
        006470     055     040     122
        006473     105     101     104
        006476     055     115     117
        006501     104     111     106
        006504     131     055     127
        006507     122     111     124
        006512     105     040     050
        006515     110     111     040
        006520     102     131     124
        006523     105     051     054
        006526     040     116     101
        006531     124     111     126
        006534     105     040     122
        006537     101     115     000
   1084 006542     105     122     122  T2E5:   .ASCIZ  /ERROR #5 - BUS ERROR AT USER RAM ADDRESS/
        006545     117     122     040
        006550     043     065     040
        006553     055     040     102
        006556     125     123     040
        006561     105     122     122
        006564     117     122     040
        006567     101     124     040
        006572     125     123     105
        006575     122     040     122
        006600     101     115     040
        006603     101     104     104
        006606     122     105     123
        006611     123     000
```

GLOBAL TEXT SECTION

```
   1086 006613     105     122     122  T2E6:   .ASCIZ  /ERROR #6 - WRITE-READ ERROR, USER RAM/
        006616     117     122     040
        006621     043     066     040
        006624     055     040     127
        006627     122     111     124
        006632     105     055     122
        006635     105     101     104
        006640     040     105     122
        006643     122     117     122
        006646     054     040     125
        006651     123     105     122
        006654     040     122     101
        006657     115     000
   1087 006661     105     122     122  T2E7:   .ASCIZ  /ERROR #7 - READ-MOD-WRITE, USER RAM/
        006664     117     122     040
        006667     043     067     040
        006672     055     040     122
        006675     105     101     104
        006700     055     115     117
        006703     104     055     127
        006706     122     111     124
        006711     105     054     040
        006714     125     123     105
        006717     122     040     122
        006722     101     115     000
```

GLOBAL TEXT SECTION

```
1089 006725  105  122  122  T2E8:   .ASCIZ  /ERROR #8 - READ-MOD-WRITE (LO BYTE), USER RAM/
     006730  117  122  040
     006733  043  070  040
     006736  055  040  122
     006741  105  101  104
     006744  055  115  117
     006747  104  055  127
     006752  122  111  124
     006755  105  040  050
     006760  114  117  040
     006763  102  131  124
     006766  105  051  054
     006771  040  125  123
     006774  105  122  040
     006777  122  101  115
     007002  000
1090 007003  105  122  122  T2E9:   .ASCIZ  /ERROR #9 - READ-MOD-WRITE (HI BYTE), USER RAM/
     007006  117  122  040
     007011  043  071  040
     007014  055  040  122
     007017  105  101  104
     007022  055  115  117
     007025  104  055  127
     007030  122  111  124
     007033  105  040  050
     007036  110  111  040
     007041  102  131  124
     007044  105  051  054
     007047  040  125  123
     007052  105  122  040
     007055  122  101  115
     007060  000
```

GLOBAL TEXT SECTION

```
1092 007061  105  122  122  T3E0:   .ASCIZ  /ERROR #0 - LO BYTE CHECKSUM ERROR, NATIVE ROM/
     007064  117  122  040
     007067  043  060  040
     007072  055  040  114
     007075  117  040  102
     007100  131  124  105
     007103  040  103  110
     007106  105  103  113
     007111  123  125  115
     007114  040  105  122
     007117  122  117  122
     007122  054  040  116
     007125  101  124  111
     007130  126  105  040
     007133  122  117  115
     007136  000
1093 007137  105  122  122  T3E1:   .ASCIZ  /ERROR #1 - HI BYTE CHECKSUM ERROR, NATIVE ROM/
     007142  117  122  040
     007145  043  061  040
     007150  055  040  110
     007153  111  040  102
     007156  131  124  105
     007161  040  103  110
     007164  105  103  113
     007167  123  125  115
     007172  040  105  122
     007175  122  117  122
     007200  054  040  116
     007203  101  124  111
     007206  126  105  040
     007211  122  117  115
     007214  000
```

GLOBAL TEXT SECTION

```
1095 007215  105  122  122  T3E2:   .ASCIZ  /ERROR #2 - USER ROM LO BYTE CHECKSUM ERROR OR ROM NOT PRESENT/
     007220  117  122  040
     007223  043  062  040
     007226  055  040  125
     007231  123  105  122
     007234  040  122  117
     007237  115  040  114
     007242  117  040  102
     007245  131  124  105
     007250  040  103  110
     007253  105  103  113
     007256  123  125  115
     007261  040  105  122
     007264  122  117  122
     007267  040  117  122
     007272  040  122  117
     007275  115  040  116
     007300  117  124  040
     007303  120  122  105
     007306  123  105  116
     007311  124  000
1096 007313  105  122  122  T3E3:   .ASCIZ  /ERROR #3 - USER ROM HI BYTE CHECKSUM ERROR OR ROM NOT PRESENT/
     007316  117  122  040
     007321  043  063  040
     007324  055  040  125
     007327  123  105  122
     007332  040  122  117
     007335  115  040  110
     007340  111  040  102
     007343  131  124  105
     007346  040  103  110
     007351  105  103  113
     007354  123  125  115
     007357  040  105  122
     007362  122  117  122
     007365  040  117  122
     007370  040  122  117
     007373  115  040  116
     007376  117  124  040
     007401  120  122  105
     007404  123  105  116
     007407  124  000
```

GLOBAL TEXT SECTION

```
   1098 007411      052      052      040  T5E0:   .ASCIZ  /** ROM IN VECTOR SPACE - SELFTEST #5 SKIPPED **/
        007414      122      117      115
        007417      040      111      116
        007422      040      126      105
        007425      103      124      117
        007430      122      040      123
        007433      120      101      103
        007436      105      040      055
        007441      040      123      105
        007444      114      106      124
        007447      105      123      124
        007452      040      043      065
        007455      040      123      113
        007460      111      120      120
        007463      105      104      040
        007466      052      052      000
   1099 007471      105      122      122  T5E1:   .ASCIZ  /ERROR #1 - CLOCK INTERRUPT LEVEL INCORRECT/
        007474      117      122      040
        007477      043      061      040
        007502      055      040      103
        007505      114      117      103
        007510      113      040      111
        007513      116      124      105
        007516      122      122      125
        007521      120      124      040
        007524      114      105      126
        007527      105      114      040
        007532      111      116      103
        007535      117      122      122
        007540      105      103      124
        007543      000
```

GLOBAL TEXT SECTION

```
1101 007544     105     122     122  T5E2:   .ASCIZ  /ERROR #2 - CLOCK DOESN'T INTERRUPT/
     007547     117     122     040
     007552     043     062     040
     007555     055     040     103
     007560     114     117     103
     007563     113     040     104
     007566     117     105     123
     007571     116     047     124
     007574     040     111     116
     007577     124     105     122
     007602     122     125     120
     007605     124     000
1102 007607     105     122     122  T5E3:   .ASCIZ  /ERROR #3 - CAN'T SHUT CLOCK OFF/
     007612     117     122     040
     007615     043     063     040
     007620     055     040     103
     007623     101     116     047
     007626     124     040     123
     007631     110     125     124
     007634     040     103     114
     007637     117     103     113
     007642     040     117     106
     007645     106     000
```

```
1104 007647  052  052  040  T6E0:   .ASCIZ  /** SELFTEST #6 INTERRUPTS NOT TESTED - ROM IN VECTOR SPACE **/
     007652  123  105  114
     007655  106  124  105
     007660  123  124  040
     007663  043  066  040
     007666  111  116  124
     007671  105  122  122
     007674  125  120  124
     007677  123  040  116
     007702  117  124  040
     007705  124  105  123
     007710  124  105  104
     007713  040  055  040
     007716  122  117  115
     007721  040  111  116
     007724  040  126  105
     007727  103  124  117
     007732  122  040  123
     007735  120  101  103
     007740  105  040  052
     007743  052  000
1105 007745  105  122  122  T6E1:   .ASCIZ  /ERROR #1 - XMTR INTERRUPT NOT MASKED AT LEVEL 4/
     007750  117  122  040
     007753  043  061  040
     007756  055  040  130
     007761  115  124  122
     007764  040  111  116
     007767  124  105  122
     007772  122  125  120
     007775  124  040  116
     010000  117  124  040
     010003  115  101  123
     010006  113  105  104
     010011  040  101  124
     010014  040  114  105
     010017  126  105  114
     010022  040  064  000
```

GLOBAL TEXT SECTION

```
1107 010025  105  122  122  T6E2:   .ASCIZ  /ERROR #2 - XMTR INTERRUPT NOT RECEIVED/
     010030  117  122  040
     010033  043  062  040
     010036  055  040  130
     010041  115  124  122
     010044  040  111  116
     010047  124  105  122
     010052  122  125  120
     010055  124  040  116
     010060  117  124  040
     010063  122  105  103
     010066  105  111  126
     010071  105  104  000
1108 010074  105  122  122  T6E3:   .ASCIZ  /ERROR #3 - RCVR INTERRUPT NOT MASKED AT LEVEL 4/
     010077  117  122  040
     010102  043  063  040
     010105  055  040  122
     010110  103  126  122
     010113  040  111  116
     010116  124  105  122
     010121  122  125  120
     010124  124  040  116
     010127  117  124  040
     010132  115  101  123
     010135  113  105  104
     010140  040  101  124
     010143  040  114  105
     010146  126  105  114
     010151  040  064  000
```

GLOBAL TEXT SECTION

```
   1110 010154      105      122      122  T6E4:    .ASCIZ  /ERROR #4 - RCVR INTERRUPT NOT RECEIVED/
        010157      117      122      040
        010162      043      064      040
        010165      055      040      122
        010170      103      126      122
        010173      040      111      116
        010176      124      105      122
        010201      122      125      120
        010204      124      040      116
        010207      117      124      040
        010212      122      105      103
        010215      105      111      126
        010220      105      104      000
   1111 010223      105      122      122  T6E5:    .ASCIZ  /ERROR #5 - RECEIVED DATA INCORRECT/
        010226      117      122      040
        010231      043      065      040
        010234      055      040      122
        010237      105      103      105
        010242      111      126      105
        010245      104      040      104
        010250      101      124      101
        010253      040      111      116
        010256      103      117      122
        010261      122      105      103
        010264      124      000
```

GLOBAL TEXT SECTION

```
1113 010266     105     122     122  T6E6:   .ASCIZ  /ERROR #6 - NO RCVR DONE -- LOOPBACK OPEN/
     010271     117     122     040
     010274     043     066     040
     010277     055     040     116
     010302     117     040     122
     010305     103     126     122
     010310     040     104     117
     010313     116     105     040
     010316     055     055     040
     010321     114     117     117
     010324     120     102     101
     010327     103     113     040
     010332     117     120     105
     010335     116     000
1114 010337     052     052     040  T7E0:   .ASCIZ  /** ROM IN VECTOR SPACE - SELFTEST #7 SKIPPED **/
     010342     122     117     115
     010345     040     111     116
     010350     040     126     105
     010353     103     124     117
     010356     122     040     123
     010361     120     101     103
     010364     105     040     055
     010367     040     123     105
     010372     114     106     124
     010375     105     123     124
     010400     040     043     067
     010403     040     123     113
     010406     111     120     120
     010411     105     104     040
     010414     052     052     000
```

GLOBAL TEXT SECTION

```
1116 010417  105  122  122  T7E1:   .ASCIZ  /ERROR #1 - 18254 TIMER #2 (800 HZ) DOESN'T INTERRUPT/
     010422  117  122  040
     010425  043  061  040
     010430  055  040  111
     010433  070  062  065
     010436  064  040  124
     010441  111  115  105
     010444  122  040  043
     010447  062  040  050
     010452  070  060  060
     010455  040  110  132
     010460  051  040  104
     010463  117  105  123
     010466  116  047  124
     010471  040  111  116
     010474  124  105  122
     010477  122  125  120
     010502  124  000
1117 010504  105  122  122  T7E2:   .ASCIZ  /ERROR #2 - ASYNC MODE, DATA XFER INCOMPLETE/
     010507  117  122  040
     010512  043  062  040
     010515  055  040  101
     010520  123  131  116
     010523  103  040  115
     010526  117  104  105
     010531  054  040  104
     010534  101  124  101
     010537  040  130  106
     010542  105  122  040
     010545  111  116  103
     010550  117  115  120
     010553  114  105  124
     010556  105  000
```

```
1119 010560  105  122  122  T7E3:   .ASCIZ  /ERROR #3 - SYNC MODE, EOF-SDLC NOT RECEIVED/
     010563  117  122  040
     010566  043  063  040
     010571  055  040  123
     010574  131  116  103
     010577  040  115  117
     010602  104  105  054
     010605  040  105  117
     010610  106  055  123
     010613  104  114  103
     010616  040  116  117
     010621  124  040  122
     010624  105  103  105
     010627  111  126  105
     010632  104  000
1120 010634  105  122  122  T7E4:   .ASCIZ  /ERROR #4 - SYNC MODE, DATA XFER INCOMPLETE/
     010637  117  122  040
     010642  043  064  040
     010645  055  040  123
     010650  131  116  103
     010653  040  115  117
     010656  104  105  054
     010661  040  104  101
     010664  124  101  040
     010667  130  106  105
     010672  122  040  111
     010675  116  103  117
     010700  115  120  114
     010703  105  124  105
     010706  000
```

GLOBAL TEXT SECTION

```
   1122 010707     105     122     122  T7E5:   .ASCIZ  'ERROR #5 - SYNC/ASYNC MODES - RECEIVED DATA INCORRECT''
        010712     117     122     040
        010715     043     065     040
        010720     055     040     123
        010723     131     116     103
        010726     057     101     123
        010731     131     116     103
        010734     040     115     117
        010737     104     105     123
        010742     040     055     040
        010745     122     105     103
        010750     105     111     126
        010753     105     104     040
        010756     104     101     124
        010761     101     040     111
        010764     116     103     117
        010767     122     122     105
        010772     103     124     000
   1123 010775     105     122     122  T7E6:   .ASCIZ  /ERROR #6 - DMA MODE - DATA TRANSFER INCOMPLETE/
        011000     117     122     040
        011003     043     066     040
        011006     055     040     104
        011011     115     101     040
        011014     115     117     104
        011017     105     040     055
        011022     040     104     101
        011025     124     101     040
        011030     124     122     101
        011033     116     123     106
        011036     105     122     040
        011041     111     116     103
        011044     117     115     120
        011047     114     105     124
        011052     105     000
```

GLOBAL TEXT SECTION

```
1125 011054  105  122  122  T7E7:   .ASCIZ  /ERROR #7 - DMA MODE - RECEIVED DATA INCORRECT/
     011057  117  122  040
     011062  043  067  040
     011065  055  040  104
     011070  115  101  040
     011073  115  117  104
     011076  105  040  055
     011101  040  122  105
     011104  103  105  111
     011107  126  105  104
     011112  040  104  101
     011115  124  101  040
     011120  111  116  103
     011123  117  122  122
     011126  105  103  124
     011131  000
1126 011132  105  122  122  T7E8:   .ASCIZ  /ERROR #8 - STATUS WRONG OR NO INTERRUPT WITH REQ-TO-SEND SET/
     011135  117  122  040
     011140  043  070  040
     011143  055  040  123
     011146  124  101  124
     011151  125  123  040
     011154  127  122  117
     011157  116  107  040
     011162  117  122  040
     011165  116  117  040
     011170  111  116  124
     011173  105  122  122
     011176  125  120  124
     011201  040  127  111
     011204  124  110  040
     011207  122  105  121
     011212  055  124  117
     011215  055  123  105
     011220  116  104  040
     011223  123  105  124
     011226  000
```

GLOBAL TEXT SECTION

```
1128 011227  105  122  122  T7E9:   .ASCIZ  'ERROR #9 - STATUS WRONG OR NO INTERRUPT WITH TT:08/2 SET''
     011232  117  122  040
     011235  043  071  040
     011240  055  040  123
     011243  124  101  124
     011246  125  123  040
     011251  127  122  117
     011254  116  107  040
     011257  117  122  040
     011262  116  117  040
     011265  111  116  124
     011270  105  122  122
     011273  125  120  124
     011276  040  127  111
     011301  124  110  040
     011304  124  124  061
     011307  060  070  057
     011312  062  040  123
     011315  105  124  000
1129 011320  105  122  122  T7E10:  .ASCIZ  /ERROR #10 - STATUS WRONG OR NO INT. WITH TERM-IN-SERV SET/
     011323  117  122  040
     011326  043  061  060
     011331  040  055  040
     011334  123  124  101
     011337  124  125  123
     011342  040  127  122
     011345  117  116  107
     011350  040  117  122
     011353  040  116  117
     011356  040  111  116
     011361  124  056  040
     011364  127  111  124
     011367  110  040  124
     011372  105  122  115
     011375  055  111  116
     011400  055  123  105
     011403  122  126  040
     011406  123  105  124
     011411  000
```

GLOBAL TEXT SECTION

```
1131 011412  105  122  122  T7E11:  .ASCIZ  /ERROR #11 - STATUS WRONG WITH ALL OPTIONS DESELECTED/
     011415  117  122  040
     011420  043  061  061
     011423  040  055  040
     011426  123  124  101
     011431  124  125  123
     011434  040  127  122
     011437  117  116  107
     011442  040  127  111
     011445  124  110  040
     011450  101  114  114
     011453  040  117  120
     011456  124  111  117
     011461  116  123  040
     011464  104  105  123
     011467  105  114  105
     011472  103  124  105
     011475  104  000
1132 011477  052  052  040  T10E0:  .ASCIZ  /** ROM IN VECTOR SPACE - SELFTEST #10 SKIPPED **/
     011502  122  117  115
     011505  040  111  116
     011510  040  126  105
     011513  103  124  117
     011516  122  040  123
     011521  120  101  103
     011524  105  040  055
     011527  040  123  105
     011532  114  106  124
     011535  105  123  124
     011540  040  043  061
     011543  060  040  123
     011546  113  111  120
     011551  120  105  104
     011554  040  052  052
     011557  000
```

GLOBAL TEXT SECTION

```
1134 011560     105     122     122  T10E1:  .ASCIZ  /ERROR #1 - RESET STATE INCORRECT/
     011563     117     122     040
     011566     043     061     040
     011571     055     040     122
     011574     105     123     105
     011577     124     040     123
     011602     124     101     124
     011605     105     040     111
     011610     116     103     117
     011613     122     122     105
     011616     103     124     000
1135 011621     105     122     122  T10E2:  .ASCIZ  /ERROR #2 - TIMER DIDN'T START/
     011624     117     122     040
     011627     043     062     040
     011632     055     040     124
     011635     111     115     105
     011640     122     040     104
     011643     111     104     116
     011646     047     124     040
     011651     123     124     101
     011654     122     124     000
```

GLOBAL TEXT SECTION

```
  1137 011657     105     122     122  T10E3:  .ASCIZ  /ERROR #3 - TIMER NEVER STOPS/
       011662     117     122     040
       011665     043     063     040
       011670     055     040     124
       011673     111     115     105
       011676     122     040     116
       011701     105     126     105
       011704     122     040     123
       011707     124     117     120
       011712     123     000
  1138 011714     105     122     122  T10E4:  .ASCIZ  /ERROR #4 - INTERRUPT NOT MASKED AT LEVEL 4/
       011717     117     122     040
       011722     043     064     040
       011725     055     040     111
       011730     116     124     105
       011733     122     122     125
       011736     120     124     040
       011741     116     117     124
       011744     040     115     101
       011747     123     113     105
       011752     104     040     101
       011755     124     040     114
       011760     105     126     105
       011763     114     040     064
       011766     000
```

GLOBAL TEXT SECTION

```
   1140 011767     105     122     122  T10E5:  .ASCIZ  /ERROR #5 - TIMER INTERRUPT NOT RECEIVED/
        011772     117     122     040
        011775     043     065     040
        012000     055     040     124
        012003     111     115     105
        012006     122     040     111
        012011     116     124     105
        012014     122     122     125
        012017     120     124     040
        012022     116     117     124
        012025     040     122     105
        012030     103     105     111
        012033     126     105     104
        012036     000
   1141 012037     105     122     122  T10E6:  .ASCIZ  /ERROR #6 - LOOP TIME-OUT, DATA XFER INCOMPLETE/
        012042     117     122     040
        012045     043     066     040
        012050     055     040     114
        012053     117     117     120
        012056     040     124     111
        012061     115     105     055
        012064     117     125     124
        012067     054     040     104
        012072     101     124     101
        012075     040     130     106
        012100     105     122     040
        012103     111     116     103
        012106     117     115     120
        012111     114     105     124
        012114     105     000
```

GLOBAL TEXT SECTION

```
   1143 012116      105      122      122  T10E7:  .ASCIZ  /ERROR #7 - RECEIVED DATA INCORRECT/
        012121      117      122      040
        012124      043      067      040
        012127      055      040      122
        012132      105      103      105
        012135      111      126      105
        012140      104      040      104
        012143      101      124      101
        012146      040      111      116
        012151      103      117      122
        012154      122      105      103
        012157      124      000
   1144 012161      052      052      040  T11E0:  .ASCIZ  /** SELFTEST #11 INTERRUPTS NOT TESTED - ROM IN VECTOR SPACE **/
        012164      123      105      114
        012167      106      124      105
        012172      123      124      040
        012175      043      061      061
        012200      040      111      116
        012203      124      105      122
        012206      122      125      120
        012211      124      123      040
        012214      116      117      124
        012217      040      124      105
        012222      123      124      105
        012225      104      040      055
        012230      040      122      117
        012233      115      040      111
        012236      116      040      126
        012241      105      103      124
        012244      117      122      040
        012247      123      120      101
        012252      103      105      040
        012255      052      052      000
```

GLOBAL TEXT SECTION

```
  1146 012260  052  052  040  T11E1:  .ASCIZ  /** SELFTEST #11 LSI-11 BUS ACCESS NOT TESTED - NO ADDRESS DEFINED **/
       012263  123  105  114
       012266  106  124  105
       012271  123  124  040
       012274  043  061  061
       012277  040  114  123
       012302  111  055  061
       012305  061  040  102
       012310  125  123  040
       012313  101  103  103
       012316  105  123  123
       012321  040  116  117
       012324  124  040  124
       012327  105  123  124
       012332  105  104  040
       012335  055  040  116
       012340  117  040  101
       012343  104  104  122
       012346  105  123  123
       012351  040  104  105
       012354  106  111  116
       012357  105  104  040
       012362  052  052  000
  1147 012365  105  122  122  T11E2:  .ASCIZ  /ERROR #2 - CHANNEL INTERRUPT NOT RECEIVED/
       012370  117  122  040
       012373  043  062  040
       012376  055  040  103  -
       012401  110  101  116
       012404  116  105  114
       012407  040  111  116
       012412  124  105  122
       012415  122  125  120
       012420  124  040  116
       012423  117  124  040
       012426  122  105  103
       012431  105  111  126
       012434  105  104  000
```

GLOBAL TEXT SECTION

```
1149 012437      105      122      122  T11E3:  .ASCIZ  /ERROR #3 - DMA CHANNEL HUNG (TC,EOP BITS BOTH CLEAR)/
     012442      117      122      040
     012445      043      063      040
     012450      055      040      104
     012453      115      101      040
     012456      103      110      101
     012461      116      116      105
     012464      114      040      110
     012467      125      116      107
     012472      040      050      124
     012475      103      054      105
     012500      117      120      040
     012503      102      111      124
     012506      123      040      102
     012511      117      124      110
     012514      040      103      114
     012517      105      101      122
     012522      051      000
1150 012524      105      122      122  T11E4:  .ASCIZ  /ERROR #4 - DMA ABORTED (EOP = 1 = NXM)/
     012527      117      122      040
     012532      043      064      040
     012535      055      040      104
     012540      115      101      040
     012543      101      102      117
     012546      122      124      105
     012551      104      040      050
     012554      105      117      120
     012557      040      075      040
     012562      061      040      075
     012565      040      116      130
     012570      115      051      000
```

GLOBAL TEXT SECTION

```
1152 012573  105  122  122  T11E5:  .ASCIZ  /ERROR #5 - DMA DATA ERROR/
     012576  117  122  040
     012601  043  065  040
     012604  055  040  104
     012607  115  101  040
     012612  104  101  124
     012615  101  040  105
     012620  122  122  117
     012623  122  000
1153 012625  052  052  040  T12E0:  .ASCIZ  /** LSI-11 BUS ADDRESS NOT DEFINED - SELFTEST #12 SKIPPED **/
     012630  114  123  111
     012633  055  061  061
     012636  040  102  125
     012641  123  040  101
     012644  104  104  122
     012647  105  123  123
     012652  040  116  117
     012655  124  040  104
     012660  105  106  111
     012663  116  105  104
     012666  040  055  040
     012671  123  105  114
     012674  106  124  105
     012677  123  124  040
     012702  043  061  062
     012705  040  123  113
     012710  111  120  120
     012713  105  104  040
     012716  052  052  000
```

GLOBAL TEXT SECTION

```
   1155 012721      105      122      122  T12E1:  .ASCIZ  /ERROR #1 - BREQ (CSR<14>) NEVER GOT SET/
        012724      117      122      040
        012727      043      061      040
        012732      055      040      102
        012735      122      105      121
        012740      040      050      103
        012743      123      122      074
        012746      061      064      076
        012751      051      040      116
        012754      105      126      105
        012757      122      040      107
        012762      117      124      040
        012765      123      105      124
        012770      000
   1156 012771      052      052      040  T12E2:  .ASCIZ  /** SELFTEST #12 SKIPPED - ROM IN VECTOR SPACE **/
        012774      123      105      114
        012777      106      124      105
        013002      123      124      040
        013005      043      061      062
        013010      040      123      113
        013013      111      120      120
        013016      105      104      040
        013021      055      040      122
        013024      117      115      040
        013027      111      116        0
        013032      126      105      103
        013035      124      117      122
        013040      040      123      120
        013043      101      103      105
        013046      040      052      052
        013051      000
```

```
1158 013052  105  122  122  T12E3:  .ASCIZ  /ERROR #3 - INTERRUPT-ON-BIACK NOT MASKED AT PR5/
     013055  117  122  040
     013060  043  063  040
     013063  055  040  111
     013066  116  124  105
     013071  122  122  125
     013074  120  124  055
     013077  117  111  055
     013102  102  111  101
     013105  103  113  040
     013110  116  117  124
     013113  040  115  101
     013116  123  113  105
     013121  104  040  101
     013124  124  040  120
     013127  122  065  000
1159 013132  105  122  122  T12E4:  .ASCIZ  /ERROR #4 - INTERRUPT-ON-BIACK NOT RECEIVED/
     013135  117  122  040
     013140  043  064  040
     013143  055  040  111
     013146  116  124  105
     013151  122  122  125
     013154  120  124  055
     013157  117  116  055
     013162  102  111  101
     013165  103  113  040
     013170  116  117  124
     013173  040  122  105
     013176  103  105  111
     013201  126  105  104
     013204  000
```

GLOBAL TEXT SECTION

```
  1161 013205  105  122  122  T12E5:  .ASCIZ  /ERROR #5 - BIACK DIDN'T CLEAR BREQ (CSR<14>)/
       013210  117  122  040
       013213  043  065  040
       013216  055  040  102
       013221  111  101  103
       013224  113  040  104
       013227  111  104  116
       013232  047  124  040
       013235  103  114  105
       013240  101  122  040
       013243  102  122  105
       013246  121  040  050
       013251  103  123  122
       013254  074  061  064
       013257  076  051  000
  1162 013262  105  122  122  T12E6:  .ASCIZ  /ERROR #6 - BRESET TRAP THRU 24 DIDN'T OCCUR/
       013265  117  122  040
       013270  043  066  040
       013273  055  040  102
       013276  122  105  123
       013301  105  124  040
       013304  124  122  101
       013307  120  040  124
       013312  110  122  125
       013315  040  062  064
       013320  040  104  111
       013323  104  116  047
       013326  124  040  117
       013331  103  103  125
       013334  122  000
```

GLOBAL TEXT SECTION

```
1164 013336      105      122      122  T13E0:  .ASCIZ  /ERROR #0 - LOCAL TPR WRITE-READ ERROR/
     013341      117      122      040
     013344      043      060      040
     013347      055      040      114
     013352      117      103      101
     013355      114      040      124
     013360      120      122      040
     013363      127      122      111
     013366      124      105      055
     013371      122      105      101
     013374      104      040      105
     013377      122      122      117
     013402      122      000
1165 013404      105      122      122  T13E1:  .ASCIZ  /ERROR #1 - BUS ERROR ON LSI-11 BUS TPR READ/
     013407      117      122      040
     013412      043      061      040
     013415      055      040      102
     013420      125      123      040
     013423      105      122      122
     013426      117      122      040
     013431      117      116      040
     013434      114      123      111
     013437      055      061      061
     013442      040      102      125
     013445      123      040      124
     013450      120      122      040
     013453      122      105      101
     013456      104      000
```

GLOBAL TEXT SECTION

```
   1167 013460      105      122      122  T13E2:  .ASCIZ  /ERROR #2 - NON-ZERO DATA RETURNED ON LSI-11 BUS READ/
        013463      117      122      040
        013466      043      062      040
        013471      055      040      116
        013474      117      116      055
        013477      132      105      122
        013502      117      040      104
        013505      101      124      101
        013510      040      122      105
        013513      124      125      122
        013516      116      105      104
        013521      040      117      116
        013524      040      114      123
        013527      111      055      061
        013532      061      040      102
        013535      125      123      040
        013540      122      105      101
        013543      104      000
   1168 013545      052      052      040  T13E3:  .ASCIZ  "** TEST #13 BUS WRITES/INTERRUPTS NOT TESTED - ROM IN VECTOR SPACE **"
        013550      124      105      123
        013553      124      040      043
        013556      061      063      040
        013561      102      125      123
        013564      040      127      122
        013567      111      124      105
        013572      123      057      111
        013575      116      124      105
        013600      122      122      125
        013603      120      124      123
        013606      040      116      117
        013611      124      040      124
        013614      105      123      124
        013617      105      104      040
        013622      055      040      122
        013625      117      115      040
        013630      111      116      040
        013633      126      105      103
        013636      124      117      122
        013641      040      123      120
        013644      101      103      105
        013647      040      052      052
        013652      000
```

```
   1170 013653     105     122     122  T13E4:  .ASCIZ  /ERROR #4 - BUS ERROR ON WRITE TO TPR WORD 0/
        013656     117     122     040
        013661     043     064     040
        013664     055     040     102
        013667     125     123     040
        013672     105     122     122
        013675     117     122     040
        013700     117     116     040
        013703     127     122     111
        013706     124     105     040
        013711     124     117     040
        013714     124     120     122
        013717     040     127     117
        013722     122     104     040
        013725     060     000
   1171 013727     105     122     122  T13E5:  .ASCIZ  /ERROR #5 - TPR COMMAND INTERRUPT DIDN'T OCCUR/
        013732     117     122     040
        013735     043     065     040
        013740     055     040     124
        013743     120     122     040
        013746     103     117     115
        013751     115     101     116
        013754     104     040     111
        013757     116     124     105
        013762     122     122     125
        013765     120     124     040
        013770     104     111     104
        013773     116     047     124
        013776     040     117     103
        014001     103     125     122
        014004     000
```

GLOBAL TEXT SECTION

```
 1173 014005  105  122  122  T13E6:  .ASCIZ  'ERROR #6 - LSI-11 BUS WRITE AND/OR INTERRUPTS WITH TPR DISABLED''
      014010  117  122  040
      014013  043  066  040
      014016  055  040  114
      014021  123  111  055
      014024  061  061  040
      014027  102  125  123
      014032  040  127  122
      014035  111  124  105
      014040  040  101  116
      014043  104  057  117
      014046  122  040  111
      014051  116  124  105
      014054  122  122  125
      014057  120  124  123
      014062  040  127  111
      014065  124  110  040
      014070  124  120  122
      014073  040  104  111
      014076  123  101  102
      014101  114  105  104
      014104  000
 1174 014105  105  122  122  T13E7:  .ASCIZ  /ERROR #7 - LSI-11 BUS WRITE DIDN'T TIME OUT/
      014110  117  122  040
      014113  043  067  040
      014116  055  040  114
      014121  123  111  055
      014124  061  061  040
      014127  102  125  123
      014132  040  127  122
      014135  111  124  105
      014140  040  104  111
      014143  104  116  047
      014146  124  040  124
      014151  111  115  105
      014154  040  117  125
      014157  124  000
```

GLOBAL TEXT SECTION

```
1176 014161  105  122  122  T13E8:  .ASCIZ  /ERROR #8 - LSI-11 BUS WRITE TIMED OUT/
     014164  117  122  040
     014167  043  070  040
     014172  055  040  114
     014175  123  111  055
     014200  061  061  040
     014203  102  125  123
     014206  040  127  122
     014211  111  124  105
     014214  040  124  111
     014217  115  105  104
     014222  040  117  125
     014225  124  000
1177 014227  105  122  122  T13E9:  .ASCIZ  /ERROR #9 - TPR INTERRUPT 4 NOT RECEIVED/
     014232  117  122  040
     014235  043  071  040
     014240  055  040  124
     014243  120  122  040
     014246  111  116  124
     014251  105  122  122
     014254  125  120  124
     014257  040  064  040
     014262  116  117  124
     014265  040  122  105
     014270  103  105  111
     014273  126  105  104
     014276  000
```

```
1179 014277  105  122  122  T13E10: .ASCIZ  /ERROR #10 - TPR INTERRUPT 8 NOT RECEIVED/
     014302  117  122  040
     014305  043  061  060
     014310  040  055  040
     014313  124  120  122
     014316  040  111  116
     014321  124  105  122
     014324  122  125  120
     014327  124  040  070
     014332  040  116  117
     014335  124  040  122
     014340  105  103  105
     014343  111  126  105
     014346  104  000
1180 014350  105  122  122  T13E11: .ASCIZ  /ERROR #11 - TPR INTERRUPT 12 NOT RECEIVED/
     014353  117  122  040
     014356  043  061  061
     014361  040  055  040
     014364  124  120  122
     014367  040  111  116
     014372  124  105  122
     014375  122  125  120
     014400  124  040  061
     014403  062  040  116
     014406  117  124  040
     014411  122  105  103
     014414  105  111  126
     014417  105  104  000
```

GLOBAL TEXT SECTION

```
1182
1183                                    ;
1184                                    ; NAMES OF DEVICES SUPPORTED BY PROGRAM
1185                                    ;
1186 014422                                     DEVTYP  <KXT11CA>
     014422                             L$DVTYP::
     014422  113     130     124                .ASCIZ  %KXT11CA%
     014425  061     061     103
     014430  101     000
                                                .EVEN
1187
1193
1194                                    ; TEST DESCRIPTION
1195                                    ;
1196 014432                                     DESCRIPT        <CZKTCA KXT11-CA LSI-11 BUS DIAGNOSTIC>
     014432                             L$DESC::
     014432  103     132     113                .ASCIZ  /CZKTCA KXT11-CA LSI-11 BUS DIAGNOSTIC/
     014435  124     103     101
     014440  040     113     130
     014443  124     061     061
     014446  055     103     101
     014451  040     114     123
     014454  111     055     061
     014457  061     040     102
     014462  125     123     040
     014465  104     111     101
     014470  107     116     117
     014473  123     124     111
     014476  103     000
                                                .EVEN
1197
1204
```

GLOBAL TEXT SECTION

```
1206
1207                                    ;
1208                                    ; FORMAT STATEMENTS USED IN PRINT CALLS
1209                                    ;
1210 014500  045  116  045  NOREG:  .ASCIZ  /%N%ANXM ADDRESS IS %O6%N/
     014503  101  116  130
     014506  115  040  101
     014511  104  104  122
     014514  105  123  123
     014517  040  111  123
     014522  040  045  117
     014525  066  045  116
     014530  000
1211 014531  045  116  045  ROMSG:  .ASCIZ  /%N%T%A ERROR(S):%N%N/
     014534  124  045  101
     014537  040  105  122
     014542  122  117  122
     014545  050  123  051
     014550  072  045  116
     014553  045  116  000
1212 014556  045  101  040  ROMETX: .ASCIZ  /%A   %T%N/
     014561  040  040  045
     014564  124  045  116
     014567  000
1213 014570  045  116  045  TESTID: .ASCIZ  /%N%ATHE %T%A TEST DID NOT COMPLETE ON IOP #%Z2%N%N/
     014573  101  124  110
     014576  105  040  045
     014601  124  045  101
     014604  040  124  105
     014607  123  124  040
     014612  104  111  104
     014615  040  116  117
     014620  124  040  103
     014623  117  115  120
     014626  114  105  124
     014631  105  040  117
     014634  116  040  111
     014637  117  120  040
     014642  043  045  132
     014645  062  045  116
     014650  045  116  000
```

GLOBAL TEXT SECTION

```
1215 014653  045  124  045  TSTERR: .ASCIZ  /%T%A TEST FAILED ON IOP #%Z2%N/
     014656  101  040  124
     014661  105  123  124
     014664  040  106  101
     014667  111  114  105
     014672  104  040  117
     014675  116  040  111
     014700  117  120  040
     014703  043  045  132
     014706  062  045  116
     014711  000
1216 014712  045  116  045  NOINFO: .ASCIZ  /%N%A   <NO FURTHER ERROR INFORMATION AVAILABLE>%N/
     014715  101  011  074
     014720  116  117  040
     014723  106  125  122
     014726  124  110  105
     014731  122  040  105
     014734  122  122  117
     014737  122  040  111
     014742  116  106  117
     014745  122  115  101
     014750  124  111  117
     014753  116  040  101
     014756  126  101  111
     014761  114  101  102
     014764  114  105  076
     014767  045  116  000
```

GLOBAL TEXT SECTION

```
   1218 014772     045     116     045  DROP:   .ASCIZ  /%N%A   KXT11-CA #%Z2%A DROPPED FROM TESTING.%N/
        014775     101     011     113
        015000     130     124     061
        015003     061     055     103
        015006     101     040     043
        015011     045     132     062
        015014     045     101     040
        015017     104     122     117
        015022     120     120     105
        015025     104     040     106
        015030     122     117     115
        015033     040     124     105
        015036     123     124     111
        015041     116     107     056
        015044     045     116     000
   1219 015047     045     116     045  SWITCH: .ASCIZ  '%N%ABOOT/SELFTEST SWITCH ON IOP #%Z2%A NOT SET FOR XXDP+%N''
        015052     101     102     117
        015055     117     124     057
        015060     123     105     114
        015063     106     124     105
        015066     123     124     040
        015071     123     127     111
        015074     124     103     110
        015077     040     117     116
        015102     040     111     117
        015105     120     040     043
        015110     045     132     062
        015113     045     101     040
        015116     116     117     124
        015121     040     123     105
        015124     124     040     106
        015127     117     122     040
        015132     130     130     104
        015135     120     053     045
        015140     116     000
```

```
   1221 015142      045      116      045  CMNDR:  .ASCIZ  /%N%ACOMMAND STATUS ERROR FROM IOP #%Z2%A AFTER LAST COMMAND%N/
        015145      101      103      117
        015150      115      115      101
        015153      116      104      040
        015156      123      124      101
        015161      124      125      123
        015164      040      105      122
        015167      122      117      122
        015172      040      106      122
        015175      117      115      040
        015200      111      117      120
        015203      040      043      045
        015206      132      062      045
        015211      101      040      101
        015214      106      124      105
        015217      122      040      114
        015222      101      123      124
        015225      040      103      117
        015230      115      115      101
        015233      116      104      045
        015236      116      000
   1222 015240      045      116      045  NOTST:  .ASCIZ  /%N%AIOP #%Z2%A %T%N/
        015243      101      111      117
        015246      120      040      043
        015251      045      132      062
        015254      045      101      040
        015257      045      124      045
        015262      116      000
```

GLOBAL TEXT SECTION

```
1224 015264     045     101     123  SETSW:  .ASCIZ  /%ASET SWITCH TO POSITION 10./
     015267     105     124     040
     015272     123     127     111
     015275     124     103     110
     015300     040     124     117
     015303     040     120     117
     015306     123     111     124
     015311     111     117     116
     015314     040     061     060
     015317     056     000
1225 015321     045     116     045  NOTCLR: .ASCIZ  /%N%AIOP #%Z2%A NOT READY TO ACCEPT COMMANDS%N/
     015324     101     111     117
     015327     120     040     043
     015332     045     132     062
     015335     045     101     040
     015340     116     117     124
     015343     040     122     105
     015346     101     104     131
     015351     040     124     117
     015354     040     101     103
     015357     103     105     120
     015362     124     040     103
     015365     117     115     115
     015370     101     116     104
     015373     123     045     116
     015376     000
```

GLOBAL TEXT SECTION

```
1227 015377  045  116  045  TPR:    .ASCIZ  /%N%ATWO-PORT RAM ON IOP #%Z2%A IS DISABLED./
     015402  101  124  127
     015405  117  055  120
     015410  117  122  124
     015413  040  122  101
     015416  115  040  117
     015421  116  040  111
     015424  117  120  040
     015427  043  045  132
     015432  062  045  101
     015435  040  111  123
     015440  040  104  111
     015443  123  101  102
     015446  114  105  104
     015451  056  000
1228 015453  045  116  045  TPR1:   .ASCIZ  /%N%ACHECK LEDS ON IOP #%Z2%A FOR ERROR CODE.%N/
     015456  101  103  110
     015461  105  103  113
     015464  040  114  105
     015467  104  123  040
     015472  117  116  040
     015475  111  117  120
     015500  040  043  045
     015503  132  062  045
     015506  101  040  106
     015511  117  122  040
     015514  105  122  122
     015517  117  122  040
     015522  103  117  104
     015525  105  056  045
     015530  116  000
```

GLOBAL TEXT SECTION

```
1230 015532  045 116 045  SLOT:   .ASCIZ  /%N%AENSURE BACKPLANE DMA GRANT CONTINUITY%N/
     015535  101 105 116
     015540  123 125 122
     015543  105 040 102
     015546  101 103 113
     015551  120 114 101
     015554  116 105 040
     015557  104 115 101
     015562  040 107 122
     015565  101 116 124
     015570  040 103 117
     015573  116 124 111
     015576  116 125 111
     015601  124 131 045
     015604  116 000
1231 015606  045 116 045  INTACK: .ASCIZ  /%N%AENSURE BACKPLANE INTERRUPT ACKNOWLEDGE CONTINUITY%N/
     015611  101 105 116
     015614  123 125 122
     015617  105 040 102
     015622  101 103 113
     015625  120 114 101
     015630  116 105 040
     015633  111 116 124
     015636  105 122 122
     015641  125 120 124
     015644  040 101 103
     015647  113 116 117
     015652  127 114 105
     015655  104 107 105
     015660  040 103 117
     015663  116 124 111
     015666  116 125 111
     015671  124 131 045
     015674  116 000
```

GLOBAL TEXT SECTION

```
1233 015676  045  116  045  INITNG: .ASCIZ  /%N%A    ....REINITIALIZING IOP #%Z2%A.  PLEASE WAIT%N%N/
     015701  101  011  056
     015704  056  056  056
     015707  122  105  111
     015712  116  111  124
     015715  111  101  114
     015720  111  132  111
     015723  116  107  040
     015726  111  117  120
     015731  040  043  045
     015734  132  062  045
     015737  101  056  040
     015742  040  120  114
     015745  105  101  123
     015750  105  040  127
     015753  101  111  124
     015756  045  116  045
     015761  116  000
1234 015763  045  101  011  INITOK: .ASCIZ  /%A      INITIALIZATION COMPLETE... STARTING TESTS.%N%N/
     015766  111  116  111
     015771  124  111  101
     015774  114  111  132
     015777  101  124  111
     016002  117  116  040
     016005  103  117  115
     016010  120  114  105
     016013  124  105  056
     016016  056  056  040
     016021  123  124  101
     016024  122  124  111
     016027  116  107  040
     016032  124  105  123
     016035  124  123  056
     016040  045  116  045
     016043  116  000
1235 016045  045  101  040  TSTNO:  .ASCIZ  /%A %T%A - IOP #%Z2/
     016050  045  124  045
     016053  101  040  055
     016056  040  111  117
     016061  120  040  043
     016064  045  132  062
     016067  000
1236                          .EVEN
1237
1248
1249
```

GLOBAL ERROR REPORT SECTION

```
                                        .SBTTL  GLOBAL ERROR REPORT SECTION

                                        ;++
                                        ; THE GLOBAL ERROR REPORT SECTION CONTAINS MESSAGE PRINTING AREAS
                                        ; USED BY MORE THAN ONE TEST TO OUTPUT ADDITIONAL ERROR INFORMATION.  PRINTB
                                        ; (BASIC) AND PRINTX (EXTENDED) CALLS ARE USED TO CALL PRINT SERVICES.
                                        ;--


                                                BGNMSG  RTERR
016070                                  RTERR::
016070  013704  002214                          MOV     IOPNN,R4                ; GET SBC ID SWITCH NUMBER
016074                                          PRINTB  #TSTERR,R2,R4           ; PRINT TEST IDENTIFICATION
016074  010446                                  MOV     R4,-(SP)
016076  010246                                  MOV     R2,-(SP)
016100  012746  014653                          MOV     #TSTERR,-(SP)
016104  012746  000003                          MOV     #3,-(SP)
016110  010600                                  MOV     SP,R0
016112  104414                                  TRAP    C$PNTB
016114  062706  000010                          ADD     #10,SP
016120  032703  007777                          BIT     #7777,R3                ; CHECK FOR EXTENDED INFO
016124  001507                                  BEQ     7$                      ; BRANCH, IF NO EXTENDED INFO
016126  010304                                  MOV     R3,R4                   ; SAVE ROM TEST # AND ERROR BITS
016130  042704  007777                          BIC     #7777,R4                ; STRIP OFF THE TEST #
016134  012702  177772                          MOV     #-6,R2                  ; SETUP COUNTER FOR TEST NUMBER
016140  006104                          1$:     ROL     R4                      ; PUT TEST NUMBER IN BITS 3 - 0
016142  005202                                  INC     R2
016144  001375                                  BNE     1$                      ; BRANCH, IF NOT DONE SHIFTING

016146  022704  000022                  2$:     CMP     #22,R4                  ; IS THE FAILING TEST 'TEST #11'?
016152  001010                                  BNE     3$                      ; BRANCH, IF NOT TEST 11 (DMA TEST)
016154                                          PRINTX  #SLOT                   ; PRINT DMA CONTINUITY MESSAGE
016154  012746  015532                          MOV     #SLOT,-(SP)
016160  012746  000001                          MOV     #1,-(SP)
016164  010600                                  MOV     SP,R0
016166  104415                                  TRAP    C$PNTX
016170  062706  000004                          ADD     #4,SP

016174  022704  000024                  3$:     CMP     #24,R4                  ; IS THE FAILING TEST 'TEST #12'?
016200  001010                                  BNE     4$                      ; BRANCH, IF NOT TEST 12 (QIR TEST)
016202                                          PRINTX  #INTACK                 ; PRINT INTERRUPT ACK CONTINUITY MESSAGE
016202  012746  015606                          MOV     #INTACK,-(SP)
016206  012746  000001                          MOV     #1,-(SP)
016212  010600                                  MOV     SP,R0
016214  104415                                  TRAP    C$PNTX
016216  062706  000004                          ADD     #4,SP
```

```
1287 016222  062704  002270          4$:     ADD     #T1ADR-2,R4             ; COMPUTE TEST # ASCII STRING ADDRESS
1288 016226  017405  000000                  MOV     @(R4),R5                ; GET STRING ADDRESS AND PUT IN R5
1289 016232                                  PRINTX  #ROMSG,R5               ; PRINT "ERROR(S):" MESSAGE
     016232  010546                          MOV     R5,-(SP)
     016234  012746  014531                  MOV     #ROMSG,-(SP)
     016240  012746  000002                  MOV     #2,-(SP)
     016244  010600                          MOV     SP,R0
     016246  104415                          TRAP    C$PNTX
     016250  062706  000006                  ADD     #6,SP
1290 016254  011405                          MOV     (R4),R5                 ; SETUP R5 FOR LATER USE
1291 016256  010304                          MOV     R3,R4                   ; GET TEST # AND ERROR BITS AGAIN
1292 016260  042704  170000                  BIC     #170000,R4              ; STRIP OFF ERROR BITS
1293 016264  012703  000001                  MOV     #1,R3                   ; SETUP FOR BIT TESTING
1294 016270  012702  000001                  MOV     #1,R2                   ; SETUP BIT POSITION COUNTER
1295
1296 016274  030304                  5$:     BIT     R3,R4                   ; CHECK FOR AN ERROR BIT SET
1297 016276  001414                          BEQ     6$                      ; BR, IF NONE IN THIS POSITION
1298 016300  010201                          MOV     R2,R1                   ; PUT BIT POSITION COUNT IN R1
1299 016302  006301                          ASL     R1                      ; MAKE IT WORD ADDRESSABLE
1300 016304  060501                          ADD     R5,R1                   ; INDEX TO ERROR BIT MESSAGE ADDRESS
1301 016306                                  PRINTX  #ROMETX,(R1)            ; PRINT ERROR NUMBER AND I.D.
     016306  011146                          MOV     (R1),-(SP)
     016310  012746  014556                  MOV     #ROMETX,-(SP)
     016314  012746  000002                  MOV     #2,-(SP)
     016320  010600                          MOV     SP,R0
     016322  104415                          TRAP    C$PNTX
     016324  062706  000006                  ADD     #6,SP
1302
1303 016330  006303                  6$:     ASL     R3                      ; SHIFT TO NEXT POSITION..AND
1304 016332  005202                          INC     R2                      ; INCREMENT BIT POSITION COUNT
1305 016334  020227  000015                  CMP     R2,#13.                 ; CHECK FOR ALL BITS CHECKED.
1306 016340  001355                          BNE     5$                      ; BRANCH, IF NOT ALL 12 BITS CHECKED
1307 016342  000410                          BR      8$                      ; EXIT THE PRINT ROUTINE
1308
1309 016344                          7$:     PRINTX  #NOINFO                 ; PRINT NO MORE INFO AVAILABLE
     016344  012746  014712                  MOV     #NOINFO,-(SP)
     016350  012746  000001                  MOV     #1,-(SP)
     016354  010600                          MOV     SP,R0
     016356  104415                          TRAP    C$PNTX
     016360  062706  000004                  ADD     #4,SP
1310 016364                          8$:     ENDMSG
     016364                          L10002:
     016364  104423                          TRAP    C$MSG
```

GLOBAL ERROR REPORT SECTION

```
1312
1313 016366                                    BGNMSG  NXM
     016366                              NXM::
1314 016366                                    PRINTB  #NOREG,R1
     016366  010146                            MOV     R1,-(SP)
     016370  012746  014500                    MOV     #NOREG,-(SP)
     016374  012746  000002                    MOV     #2,-(SP)
     016400  010600                            MOV     SP,R0
     016402  104414                            TRAP    C$PNTB
     016404  062706  000006                    ADD     #6,SP
1315 016410                                    ENDMSG
     016410                              L10003:
     016410  104423                            TRAP    C$MSG
1316
1317 016412                                    BGNMSG  NRES
     016412                              NRES::
1318 016412  013704  002214                    MOV     IOPNN,R4
1319 016416                                    PRINTB  #TESTID,R2,R4
     016416  010446                            MOV     R4,-(SP)
     016420  010246                            MOV     R2,-(SP)
     016422  012746  014570                    MOV     #TESTID,-(SP)
     016426  012746  000003                    MOV     #3,-(SP)
     016432  010600                            MOV     SP,R0
     016434  104414                            TRAP    C$PNTB
     016436  062706  000010                    ADD     #10,SP
1320 016442                                    ENDMSG
     016442                              L10004:
     016442  104423                            TRAP    C$MSG
1321
1322 016444                                    BGNMSG  GENMSG
     016444                              GENMSG::
1323 016444  013704  002214                    MOV     IOPNN,R4
1324 016450                                    PRINTB  #TSTERR,R2,R4
     016450  010446                            MOV     R4,-(SP)
     016452  010246                            MOV     R2,-(SP)
     016454  012746  014653                    MOV     #TSTERR,-(SP)
     016460  012746  000003                    MOV     #3,-(SP)
     016464  010600                            MOV     SP,R0
     016466  104414                            TRAP    C$PNTB
     016470  062706  000010                    ADD     #10,SP
1325 016474                                    PRINTX  #ROMETX,R3
     016474  010346                            MOV     R3,-(SP)
     016476  012746  014556                    MOV     #ROMETX,-(SP)
     016502  012746  000002                    MOV     #2,-(SP)
     016506  010600                            MOV     SP,R0
     016510  104415                            TRAP    C$PNTX
     016512  062706  000006                    ADD     #6,SP
1326 016516                                    ENDMSG
     016516                              L10005:
     016516  104423                            TRAP    C$MSG
```

```
1328 016520                                    BGNMSG  SOFT
     016520                              SOFT::
1329 016520  013704  002214                    MOV     IOPNN,R4            ; GET CURRENT IOP NUMBER
1330 016524                                    PRINTB  #SWITCH,R4
     016524  010446                            MOV     R4,-(SP)
     016526  012746  015047                    MOV     #SWITCH,-(SP)
     016532  012746  000002                    MOV     #2,-(SP)
     016536  010600                            MOV     SP,R0
     016540  104414                            TRAP    C$PNTB
     016542  062706  000006                    ADD     #6,SP
1331 016546                                    PRINTX  #SETSW
     016546  012746  015264                    MOV     #SETSW,-(SP)
     016552  012746  000001                    MOV     #1,-(SP)
     016556  010600                            MOV     SP,R0
     016560  104415                            TRAP    C$PNTX
     016562  062706  000004                    ADD     #4,SP
1332 016566                                    ENDMSG
     016566                              L10006:
     016566  104423                            TRAP    C$MSG
1333
1334 016570                                    BGNMSG  CMDERR
     016570                              CMDERR::
1335 016570  013704  002214                    MOV     IOPNN,R4            ; GET CURRENT IOP NUMBER
1336 016574                                    PRINTB  #CMNDR,R4
     016574  010446                            MOV     R4,-(SP)
     016576  012746  015142                    MOV     #CMNDR,-(SP)
     016602  012746  000002                    MOV     #2,-(SP)
     016606  010600                            MOV     SP,R0
     016610  104414                            TRAP    C$PNTB
     016612  062706  000006                    ADD     #6,SP
1337 016616                                    ENDMSG
     016616                              L10007:
     016616  104423                            TRAP    C$MSG
1338
1339 016620                                    BGNMSG  NON0
     016620                              NON0::
1340 016620  013704  002214                    MOV     IOPNN,R4            ; GET CURRENT IOP NUMBER
1341 016624                                    PRINTB  #NOTCLR,R4
     016624  010446                            MOV     R4,-(SP)
     016626  012746  015321                    MOV     #NOTCLR,-(SP)
     016632  012746  000002                    MOV     #2,-(SP)
     016636  010600                            MOV     SP,R0
     016640  104414                            TRAP    C$PNTB
     016642  062706  000006                    ADD     #6,SP
1342 016646                                    ENDMSG
     016646                              L10010:
     016646  104423                            TRAP    C$MSG
```

```
1344
1345 016650                                    BGNMSG  TPRDIS
     016650                              TPRDIS::
1346 016650  013704  002214                    MOV     IOPNN,R4                ; GET CURRENT IOP NUMBER
1347 016654                                    PRINTB  #TPR,R4                 ; PRINT TWO-PORT RAM DISABLED
     016654  010446                            MOV     R4,-(SP)
     016656  012746  015377                    MOV     #TPR,-(SP)
     016662  012746  000002                    MOV     #2,-(SP)
     016666  010600                            MOV     SP,R0
     016670  104414                            TRAP    C$PNTB
     016672  062706  000006                    ADD     #6,SP
1348 016676                                    PRINTX  #TPR1,R4                ; PRINT CHECK THE LEDS
     016676  010446                            MOV     R4,-(SP)
     016700  012746  015453                    MOV     #TPR1,-(SP)
     016704  012746  000002                    MOV     #2,-(SP)
     016710  010600                            MOV     SP,R0
     016712  104415                            TRAP    C$PNTX
     016714  062706  000006                    ADD     #6,SP
1349 016720                                    ENDMSG
     016720                              L10011:
     016720  104423                            TRAP    C$MSG
1350
1351                                           ;++
1352                                           ;
1353                                           ;       SUBROUTINE TO PRINT MESSAGES FOR TESTS THAT ARE SKIPPED.
1354                                           ;       THESE MESSAGES ARE NOT ERROR MESSAGES; FOR INFO ONLY.
1355                                           ;
1356                                           ;       CALL:
1357                                           ;               MOV     #MSGADDRESS,R2
1358                                           ;               JSR     R5,SKIPED
1359                                           ;
1360                                           ;--
1361
1362 016722  013704  002214              SKIPED: MOV     IOPNN,R4                ; GET CURRENT IOP NUMBER
1363 016726                                    PRINTB  #NOTST,R4,R2
     016726  010246                            MOV     R2,-(SP)
     016730  010446                            MOV     R4,-(SP)
     016732  012746  015240                    MOV     #NOTST,-(SP)
     016736  012746  000003                    MOV     #3,-(SP)
     016742  010600                            MOV     SP,R0
     016744  104414                            TRAP    C$PNTB
     016746  062706  000010                    ADD     #10,SP
1364 016752  000205                            RTS     R5                      ; RETURN
1365
```

```
                                .SBTTL  GLOBAL SUBROUTINES SECTION

                                ;++
                                ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                                ; THAT ARE USED IN MORE THAN ONE TEST.
                                ;--

                                ;++
                                ;
                                ; FUNCTIONAL DESCRIPTION:
                                ;
                                ;    SUBROUTINE TO DELAY IN MILLISECONDS.
                                ;
                                ;       CALL:
                                ;
                                ;       JSR     R5,RDELAY
                                ;       N.                      ; DELAY IN MILLISECONDS
                                ;--

016754  010146          RDELAY: MOV     R1,-(SP)                ; SAVE REGS 1 & 2 ON STACK
016756  010246                  MOV     R2,-(SP)
016760  012502                  MOV     (R5)+,R2                ; GET MILLISECOND ARGUMENT
016762  012737  000144  002236  1$:     MOV     #100.,DELCNT            ; SETUP COUNT FOR 1 MS LOOP

016770  013701  002236          2$:     MOV     DELCNT,R1               ; SETUP R1 FOR 1 MS LOOP
016774                          BREAK                           ; ALLOWS <CTRL-C> RECOGNITION
016774  104422                  TRAP    C$BRK
016776  005301          3$:     DEC     R1                      ; START OF 1 MS LOOP
017000  001376                  BNE     3$                      ; BRANCH, IF < 1 MS
017002  005302                  DEC     R2                      ; DECREMENT MULTIPLIER (WHICH YOU WANT)
017004  001371                  BNE     2$                      ; DO ANOTHER MS, IF BRANCH
017006  012602                  MOV     (SP)+,R2                ; RESTORE R1 AND R2
017010  012601                  MOV     (SP)+,R1
017012  000205                  RTS     R5                      ; RETURN
```

```
                                        ;++
                                        ;       SUBROUTINE TO CHECK FOR THE CURRENT IOP BEING READY.  THIS IS DONE
                                        ;       BY READING REGISTER 0 OF THE IOP'S TWO-PORT RAM.  IF IT IS ALL 0'S,
                                        ;       THE IOP IS CONSIDERED READY; NOT READY/DEVICE FATAL IF TPR0 IS NON-0.
                                        ;--

017014  013701  002216          CKTPR0: MOV     @BASE,R1                ; GET LSI-11 BASE BUS ADDRESS
017020  004537  016754                  JSR     R5,RDELAY               ; DELAY A BIT BEFORE READING TPR0
017024  000372                          250.                            ; ABOUT 250 MILLISECONDS
017026  016102  000000                  MOV     DPR0(R1),R2             ; READ TPR0
017032  001416                          BEQ     1$                      ; BR, IF IOP IS ALL SET FOR TESTING.
017034  004537  017210                  JSR     R5,REINIT               ; RE-INITIALIZE THE CURRENT IOP
017040  000413                          BR      1$                      ; SUCCESS RETURN

017042                                  ERRDF   3,NOTRDY,NON0           ; PRINT DEVICE FATAL
017042  104455                          TRAP    C$ERDF
017044  000003                          .WORD   3
017046  003264                          .WORD   NOTRDY
017050  016620                          .WORD   NON0
017052                                  DODU    LUN                     ; DROP THE UNIT FROM TESTING
017052  013700  002210                  MOV     LUN,R0
017056  104451                          TRAP    C$DODU
017060  012737  177777  002206          MOV     #-1,DROPUN              ; SET THE DROPPED UNIT FLAG AND GET OUT
017066                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
017066  104444                          TRAP    C$DCLN

017070  016102  000002          1$:     MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
017074  042702  177770                  BIC     #-10,R2                 ; CLEAR ALL BUT BITS 2-0.
017100  022702  000002                  CMP     #002,R2                 ; CHECK BOOT SWITCH..IF SET FOR XXDP+,
                                                                        ; ..COMMAND REGISTER SHOULD = 000002
017104  001434                          BEQ     3$                      ; BR, IF THE SWITCH IS CORRECT
017106  004537  017210                  JSR     R5,REINIT               ; RE-INITIALIZE THE CURRENT IOP
017112  000431                          BR      3$                      ; SUCCESS RETURN
```

```
1444
1445 017114  016102  000002                    MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
1446 017120  001413                            BEQ     2$                      ; BR, IF TPR IS DISABLED (ERROR)
1447 017122                                    ERRSOFT 1,BADSW,SOFT            ; SOFT ERROR.   INT IT, AND THEN
     017122  104457                            TRAP    C$ERSOFT
     017124  000001                            .WORD   1
     017126  003151                            .WORD   BADSW
     017130  016520                            .WORD   SOFT
1448 017132                                    DODU    LUN                     ; DROP THIS UNIT
     017132  013700  002210                    MOV     LUN,R0
     017136  104451                            TRAP    C$DODU
1449 017140  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
1450 017146                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     017146  104444                            TRAP    C$DCLN
1451
1452 017150                            2$:     ERRDF   4,NOTPR,TPRDIS          ; FATAL ERROR.  TPR IS DISABLED
     017150  104455                            TRAP    C$ERDF
     017152  000004                            .WORD   4
     017154  003353                            .WORD   NOTPR
     017156  016650                            .WORD   TPRDIS
1453 017160                                    DODU    LUN                     ; DROP THIS UNIT
     017160  013700  002210                    MOV     LUN,R0
     017164  104451                            TRAP    C$DODU
1454 017166  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
1455 017174                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     017174  104444                            TRAP    C$DCLN
1456
1457 017176  005061  000004            5$:     CLR     DPR2(R1)                ; CLEAR SELFTEST ERROR REGISTER
1458 017202  005061  000006                    CLR     DPR3(R1)                ; CLEAR SELFTEST EXTENDED ERROR REGISTER
1459 017206  000205                    4$:     RTS     R5                      ; EXIT
```

```
1461
1462                                    ;++
1463                                    ;       SUBROUTINE REINIT
1464                                    ;
1465                                    ;       CALLED WHENEVER TPR0 OR TPR1 ARE NOT SETUP PROPERLY.
1466                                    ;
1467                                    ;       CALL:   JSR     R5,REINIT
1468                                    ;
1469                                    ;       RETURN: RETURN+4 IF ERROR IN INITIALIZING
1470                                    ;               RETURN+2 IF SUCCESSFUL INITIALIZATION
1471                                    ;
1472                                    ;--
1473
1474 017210  013704  002214            REINIT: MOV     IOPNN,R4                ; GET CURRENT IOP NUMBER
1475 017214  013701  002216                    MOV     QBASE,R1                ; GET Q-BUS BASE ADDRESS
1476 017220                                    PRINTF  #INITNG,R4              ; PRINT "...RE-INITIALIZING"
     017220  010446                            MOV     R4,-(SP)
     017222  012746  015676                    MOV     #INITNG,-(SP)
     017226  012746  000002                    MOV     #2,-(SP)
     017232  010600                            MOV     SP,R0
     017234  104417                            TRAP    C$PNTF
     017236  062706  000006                    ADD     #6,SP
1477 017242  012761  000010  000006           MOV     #10,DPR3(R1)            ; SETUP SOFTWARE BOOTSELECT CODE
1478 017250  012761  000004  000000           MOV     #4,DPR0(R1)             ; SEND INITIALIZE COMMAND
1479 017256  004537  016754                    JSR     R5,RDELAY               ; DELAY ABOUT 5 SECONDS
1480 017262  013560                            6000.
1481 017264  016102  000000                    MOV     DPR0(R1),R2             ; READ TPR0
1482 017270  001402                            BEQ     2$                      ; TPR0 SHOULD NOW BE ALL 0'S
1483
1484 017272  005725                    1$:     TST     (R5)+                   ; SETUP FOR ERROR RETURN
1485 017274  000205                            RTS     R5                      ; ERROR RETURN
1486
1487 017276  016102  000002            2$:     MOV     DPR1(R1),R2             ; READ TPR1
1488 017302  042702  177770                    BIC     #-10,R2                 ; CLEAR ALL BUT BITS 2-0.
1489 017306  022702  000002                    CMP     #2,R2                   ; TPR1 SHOULD SAY Q-BUS TESTING MODE.
1490 017312  001367                            BNE     1$                      ; BRANCH, IF NOT SETUP FOR XXDP+ (ERROR)
1491 017314                                    PRINTF  #INITOK                 ; PRINT "INITIALIZATION COMPLETE..."
     017314  012746  015763                    MOV     #INITOK,-(SP)
     017320  012746  000001                    MOV     #1,-(SP)
     017324  010600                            MOV     SP,R0
     017326  104417                            TRAP    C$PNTF
     017330  062706  000004                    ADD     #4,SP
1492 017334  000205                            RTS     R5                      ; SUCCESS RETURN
```

```
1494
1495                                    ;++
1496                                    ;
1497                                    ;       SUBROUTINE TO APPEND TEST TITLES TO TEST NUMBER IF
1498                                    ;       OPERATOR HAS SET THE "PNT" FLAG AT START TIME.
1499                                    ;
1500                                    ;       CALL:   MOV     #STRING,R2      ; TEST TITLE ADDRESS
1501                                    ;               JSR     R5,PNTFLG
1502                                    ;
1503                                    ;--
1504
1505 017336                            PNTFLG: RFLAGS  R4                      ; READ DRS FLAGS
     017336  104421                             TRAP    C$RFLA
     017340  010004                             MOV     R0,R4
1506 017342  032704  001000                     BIT     #BIT9,R4                ; CHECK DRS BIT 9 FLAG (PNT)
1507 017346  001414                             BEQ     1$                      ; RETURN, IF PNT NOT SET
1508 017350  013704  002214                     MOV     IOPNN,R4                ; GET CURRENT IOP NUMBER
1509 017354                                     PRINTF  #TSTNO,R2,R4            ; PRINT TITLE, IOP # AFTER TEST NUMBER
     017354  010446                             MOV     R4,-(SP)
     017356  010246                             MOV     R2,-(SP)
     017360  012746  016045                     MOV     #TSTNO,-(SP)
     017364  012746  000003                     MOV     #3,-(SP)
     017370  010600                             MOV     SP,R0
     017372  104417                             TRAP    C$PNTF
     017374  062706  000010                     ADD     #10,SP
1510 017400  000205                     1$:     RTS     R5                      ; RETURN TO TEST
1511
```

```
 1513
 1520
 1526
 1533
 1539
 1546
 1552
 1560
 1569
 1576
 1582                                .TITLE MISCELLANEOUS SECTIONS
 1583                                .SBTTL  IDENTIFICATION
 1589                                .SBTTL  REPORT CODING SECTION
 1590
 1591                                ;++
 1592                                ; THE REPORT CODING SECTION CONTAINS THE
 1593                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
 1594                                ;--
 1595
 1596 017402                                BGNRPT
      017402                        L$RPT::
 1597
 1609
 1621
 1622                                        .EVEN
 1623
 1624 017402                                ENDRPT
      017402                        L10012:
      017402  104425                        TRAP    C$RPT
```

```
MISCELLANEOUS SECTIONS  MACRO M1200  26-JUL-83 08:14  PAGE 108
PROTECTION TABLE

   1626                                 .SBTTL  PROTECTION TABLE
   1627
   1628                                 ;++
   1629                                 ; THIS TABLE IS USED BY THE RUNTIME SERVICES
   1630                                 ; TO PROTECT THE LOAD MEDIA.
   1631                                 ;--
   1632
   1633 017404                                  BGNPROT
        017404                          L$PROT::
   1634
   1635 017404  177777                          -1              ;OFFSET INTO P-TABLE FOR CSR ADDRESS
   1636 017406  177777                          -1              ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
   1637 017410  177777                          -1              ;OFFSET INTO P-TABLE FOR DRIVE NUMBER
   1638
   1639 017412                                  ENDPROT
   1640
```

```
                                .SBTTL  INITIALIZE SECTION

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

                                        BGNINIT
                                L$INIT::

                                        READEF  #EF.CONTINUE            ; CHECK FOR CONTINUED
017412  012700  000036                  MOV     #EF.CONTINUE,R0
017416  104447                          TRAP    C$REFG
                                        BCOMPLETE       END             ; BRANCH, IF CONTINUED.
017420  103517                          BCS     END

                                        CLR     DROPUN                  ; CLEAR THE DROPPED IOP FLAG
                                        READEF  #EF.PWR                 ; CHECK FOR POWER FAIL RESTART
017426  012700  000034                  MOV     #EF.PWR,R0
017432  104447                          TRAP    C$REFG
                                        BCOMPLETE       ABORT           ; ABORT - NO SENSE TRYING TO GO ON.
017434  103510                          BCS     ABORT
                                        READEF  #EF.NEW                 ; CHECK FOR THIS PASS BEING A FIRST
017436  012700  000035                  MOV     #EF.NEW,R0
017442  104447                          TRAP    C$REFG
                                        BNCOMPLETE      NEXT            ; BRANCH, IF NOT FIRST PASS
017444  103011                          BCC     NEXT
017446  013737  002120  002242          MOV     L$HIME,HIMEM            ; GET HIGHEST 4KW PAGE FROM DRS.
017454  162737  000377  002242          SUB     #377,HIMEM              ; ADJUST IT TO = START OF PAGE BEFORE..
                                                                        ; ...THE I/O PAGE.
017462  012737  177777  002210          MOV     #-1,LUN                 ; SETUP UNIT NUMBER FOR #0 MINUS 1

017470  005237  002210          NEXT:   INC     LUN                     ; INCREMENT IOP CPU NUMBER
017474  023737  002210  002012          CMP     LUN,L$UNIT              ; CHECK CURRENT AS LAST UNIT + 1
017502  001465                          BEQ     ABORT                   ; BRANCH, IF DONE ALL IOPS.
                                        GPHARD  LUN,R1                  ; GET HW P-TABLE ADDRESS
017504  013700  002210                  MOV     LUN,R0
017510  104442                          TRAP    C$GPHRD
017512  010001                          MOV     R0,R1
                                        BNCOMPLETE      NEXT            ; BRANCH, IF NO PTABLE FOR THIS LUN
017514  103365                          BCC     NEXT
```

INITIALIZE SECTION

```
1707 017516  012137  002212            MOV     (R1)+,IOPN          ; GET IOP CPU NUMBER
1708 017522  001455                    BEQ     ABORT               ; BRANCH, IF THIS IS UNIT 0.
1709 017524  013737  002212  002214    MOV     IOPN,IOPNN          ; SAVE FOR PRINTOUTS
1710 017532  012702  177773            MOV     #-5,R2              ; SETUP SHIFT COUNTER
1711
1712 017536  006237  002214      1$:   ASR     IOPNN               ; SHIFT 5 RIGHT FOR PRINTOUTS
1713 017542  005202                    INC     R2
1714 017544  001374                    BNE     1$                  ; BRANCH, IF NOT DONE SHIFTING
1715 017546  023727  002212  000340    CMP     IOPN,#340           ; SEE IF IOP NO. IS GREATER THAN 7
1716 017554  003004                    BGT     2$                  ; BRANCH IF NO. IS 8 OR MORE
1717 017556  012737  160000  002216    MOV     #160000,QBASE       ; SET BASE ADDRESS FOR UNITS 0-7
1718 017564  000406                    BR      3$                  ; THEN ADD IN IOP NUMBER
1719
1720 017566  012737  175400  002216  2$:   MOV     #175400,QBASE       ; SET BASE ADDRESS TO UNITS 8-15
1721 017574  042737  000400  002212        BIC     #400,IOPN           ; CLEAR BIT 8 OF NUMBER INPUT
1722
1723 017602  063737  002212  002216  3$:   ADD     IOPN,QBASE          ; COMBINE IOP # AND BASE ADDRESS
1724 017610  005721                        TST     (R1)+               ; CHECK IF HIGH OR LOW RANGE WANTED
1725 017612  001003                        BNE     4$                  ; BRANCH, IF LOW RANGE WANTED
1726 017614  062737  002000  002216        ADD     #BIT10,QBASE        ; ADD IN 2000 TO GET HIGH RANGE
1727
1728 017622  012137  002222      4$:   MOV     (R1)+,LOOPB1        ; GET LOOP CONN FLAG FOR SLU1
1729 017626  012137  002224            MOV     (R1)+,LOOPB2        ; GET LOOP CONN FLAG FOR SLU2 CHANNEL A
1730 017632  012137  002226            MOV     (R1)+,LOOPB3        ; GET LOOP CONN FLAG FOR CHANNEL B
1731 017636  012137  002230            MOV     (R1)+,LOOPB4        ; GET LOOP CONN FLAG FOR PARALLEL I/O
1732 017642  012137  002232            MOV     (R1)+,SL2DMA        ; GET SLU2 DMA CONFIGURATION
1733 017646  011137  002234            MOV     (R1),ROMTST         ; GET FLAG FOR USER ROM TEST
1734 017652                            EXIT    INIT                ; EXIT THE INIT CODE
     017652  104432                    TRAP    C$EXIT
     017654  000004                    .WORD   L10014-.
1735
1736 017656                    ABORT:  DOCLN                       ; EXECUTE CLEANUP CODE
     017656  104444                    TRAP    C$DCLN
1737 017660                    END:
1738
1750
1751 017660                            ENDINIT
     017660                    L10014:
     017660  104411                    TRAP    C$INIT
```

```
                                .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 IMMFDIATELY
                                ; DROPPED FROM TESTING.
                                ;--

017662                                  BGNAUTO
017662                          L$AUTO::

                                        ; THIS SECTION IS NOT USED.  RUN XXDP+ TEST 1 TO CHECK FOR RESPONSE.

017662                                  PRINTF  #NOSEC
017662  012746  017704                   MOV     #NOSEC,-(SP)
017666  012746  000001                   MOV     #1,-(SP)
017672  010600                           MOV     SP,R0
017674  104417                           TRAP    C$PNTF
017676  062706  000004                   ADD     #4,SP

017702                                  ENDAUTO
017702                          L10015:
017702  104461                          TRAP    C%AUTO

017704  045  116  045  NOSEC:  .ASCIZ  /%N%A"ADR" SWITCH NOT SUPPORTED.  RUN TEST 1 FOR RESPONSE CHECK.%N/
017707  101  042  101
017712  104  122  042
017715  040  123  127
017720  111  124  103
017723  110  040  116
017726  117  124  040
017731  123  125  120
017734  120  117  122
017737  124  105  104
017742  056  040  040
017745  122  125  116
017750  040  124  105
017753  123  124  040
017756  061  040  106
017761  117  122  040
017764  122  105  123
017767  120  117  116
017772  123  105  040
017775  103  110  105
020000  103  113  056
020003  045  116  000
```

```
   1778                                 .SBTTL  CLEANUP CODING SECTION
   1779
   1780                                 ;++
   1781                                 ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
   1782                                 ; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.
   1783                                 ;--
   1784
   1785 020006                                  BGNCLN
        020006                          L$CLEAN::
   1786
   1795
   1796 020006                                  EXIT    CLN
        020006  104432                          TRAP    C$EXIT
        020010  000002                          .WORD   L10016-.
   1797
   1809
   1810                                         .EVEN
   1811
   1812 020012                                  ENDCLN
        020012                          L10016:
        020012  104412                          TRAP    C$CLEAN
```

```
1814                                    .SBTTL  DROP UNIT SECTION
1815
1816                                    ;++
1817                                    ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
1818                                    ; TO NO LONGER BE TESTED.
1819                                    ;--
1820
1821 020014                                     BGNDU
     020014                             L$DU::
1822
1823 020014  013701  002214                     MOV     IOPNN,R1                ; GET IOP NUMBER
1824 020020                                     PRINTF  #DROP,R1                ; PRINT IOP #N DROPPED
     020020  010146                             MOV     R1,-(SP)
     020022  012746  014772                     MOV     #DROP,-(SP)
     020026  012746  000002                     MOV     #2,-(SP)
     020032  010600                             MOV     SP,R0
     020034  104417                             TRAP    C$PNTF
     020036  062706  000006                     ADD     #6,SP
1825
1826 020042                                     EXIT    DU
     020042  000167                             .WORD   J$JMP
     020044  000000                             .WORD   L10017-2-.
1827
1839
1840                                            .EVEN
1841
1842 020046                                     ENDDU
     020046                             L10017:
     020046  104453                             TRAP    C$DU
```

ADD UNIT SECTION

```
                                .SBTTL  ADD UNIT SECTION

                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
                                ;  TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
                                ;  TO THE TEST CYCLE.
                                ;--

020050                                  BGNAU
020050                          L$AU::

                                        EXIT    AU
020050  000167                          .WORD   J$JMP
020052  000000                          .WORD   L10020-2-.

                                        .EVEN

                                        ENDAU
020054                          L10020:
020054  104452                          TRAP    C$AU
```

```
                                .TITLE HARDWARE TESTS
                                .SBTTL  IDENTIFICATION


                                .SBTTL  TEST 1: VERIFY THAT THE IOP(S) IS ADDRESSABLE

                                ;++
                                ; THE CURRENT IOP IS CHECKED FOR BEING PRESENT ON THE Q BUS BY REFERENCING
                                ; ITS I/O PAGE ADDRESS.  THE I/O ADDRESS IS THE LSI-11 BUS BASE ADDRESS PLUS
                                ; THE IOP NUMBER.  AN NXM WILL OCCUR IF THE IOP IS NOT PRESENT.
                                ;--

                 000004         NXMVEC=4

020056                                  BGNTST
020056  012702  004663                  MOV     #TST1,R2                ; GET TITLE ADDRESS
020062  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
020066                          1$:     SETVEC  #NXMVEC,#3$,#PRI07      ; SETUP NXM VECTOR
020066  012746  000340                  MOV     #PRI07,-(SP)
020072  012746  020142                  MOV     #3$,-(SP)
020076  012746  000004                  MOV     #NXMVEC,-(SP)
020102  012746  000003                  MOV     #3,-(SP)
020106  104437                          TRAP    C$SVEC
020110  062706  000010                  ADD     #10,SP
020114  012702  177760                  MOV     #-20,R2                 ; SETUP TPR REGISTER COUNTER
020120  013701  002216                  MOV     QBASE,R1                ; IOP BASE ADDRESS TO R1

020124                          2$:     SETPRI  #PRI00                  ; LOWER PRIORITY FOR NXM
020124  012700  000000                  MOV     #PRI00,R0
020130  104441                          TRAP    C$SPRI
020132  005721                  TST     (R1)+                   ; REFERENCE AN IOP REGISTER
020134  005202                  INC     R2                      ; INCR. COUNTER...NO NXM AS YET
020136  001372                  BNE     2$                      ; BRANCH, IF NOT DONE
020140  000414                  BR      4$                      ; ALL REGISTERS ARE THERE.

                                ; A NXM INTERRUPT WILL END UP HERE FROM THE TRAP TO 4.

020142  022626                  3$:     CMP     (SP)+,(SP)+             ; FIX THE STACK, SINCE NO RTI ISSUED
020144                                  ERRDF   1,NOIOP,NXM             ; FATAL DEVICE ERROR
020144  104455                          TRAP    C$ERDF
020146  000001                          .WORD   1
020150  002756                          .WORD   NOIOP
020152  016366                          .WORD   NXM
020154                                  DODU    ;UN                     ; DROP THIS IOP
020154  013700  002210                  MOV     LUN,R0
020160  104451                          TRAP    C$DODU
020162  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
020170                                  DOCLN                           ; EXIT TEST
020170  104444                          TRAP    C$DCLN
```

```
HARDWARE TESTS  MACRO M1200  26-JUL-83 08:14  PAGE 116
TEST 1: VERIFY THAT THE IOP(S) IS ADDRESSABLE

   1922                                 ;
   1923                                 ; NOW MAKE SURE BOOT/SELFTEST SWITCH IS SET PROPERLY.
   1924                                 ;
   1925
   1926 020172  004537  017210          4$:     JSR     R5,REINIT               ; INITIALIZE THE CURRENT IOP
   1927 020176  000240                          NOP                             ; NORMALLY A SUCCESS RETURN...WE DON'T
   1928                                                                         ; CARE IN THIS CASE.
   1929 020200  004537  017014                  JSR     R5,CKTPRO               ; NOW SEE IF THE IOP IS READY
   1930
   1931 020204                          5$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
        020204  104406                          TRAP    C$CLP1
   1932 020206                                  CLRVEC  #NXMVEC                 ; CLEAR AND RESTORE NXM VECTOR
        020206  012700  000004                  MOV     #NXMVEC,R0
        020212  104436                          TRAP    C$CVEC
   1933 020214                                  ENDTST                          ; DONE
        020214                          L10021:
        020214  104401                          TRAP    C$ETST
   1934
```

```
                                .SBTTL  TEST 2: INVOKE ROM - RESIDENT TEST OF THE KXT11'S CSR REGS.

                                ;++
                                ;
                                ;               IOP SELFTEST #1.
                                ;
                                ; THE ROM TEST VERIFIES THAT THE INTERNAL KXT11 CSRA,B & C REGISTERS
                                ; RESPOND.
                                ;
                                ;--

020216                                  BGNTST
020216  012702  004721                  MOV     #ROMT1,R2               ; GET TITLE ADDRESS
020222  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
020226  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
020232  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
020234                                  DOCLN                           ; THIS ONE IS DROPPED. FORGET IT.
020234  104444                          TRAP    C$DCLN

020236  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
020242  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
020246  013761  002244  000000          MOV     CSR,DPRO(R1)            ; SEND COMMAND TO DPRO

020254  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
020260  005761  000000          2$:     TST     DPRO(R1)                ; TEST THE IOP'S DPRO REG.
020264  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
020266  004537  016754                  JSR     R5,RDELAY       .       ; DELAY ABOUT 1 MS
020272  000001                          1
020274  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
020276  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
020300  012702  004145                  MOV     #CSRT,R2                ; SETUP FOR ERROR REPORTING
020304                                  ERRDF   2,NORES,NRES            ; FATAL ERROR. NO RESPONSE FROM TEST.
020304  104455                          TRAP    C$ERDF
020306  000002                          .WORD   2
020310  003054                          .WORD   NORES
020312  016412                          .WORD   NRES
020314                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
020314  104406                          TRAP    C$CLP1
020316                                  DODU    LUN                     ; DROP THIS IOP
020316  013700  002210                  MOV     LUN,R0
020322  104451                          TRAP    C$DODU
020324  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
020332                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
020332  104444                          TRAP    C$DCLN
```

```
1974
1975                                    ;
1976                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
1977                                    ;
1978
1979 020334  016102  000002        4$:  MOV     DPR1(R1),R2          ; READ BOOT COMMAND STATUS REGISTER
1980 020340  100005                     BPL     5$                   ; BR, IF NO COMMAND STATUS ERROR
1981 020342                             ERRHRD  3,CMND,CMDERR        ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     020342  104456                     TRAP    C$ERHRD
     020344  000003                     .WORD   3
     020346  003221                     .WORD   CMND
     020350  016570                     .WORD   CMDERR
1982 020352  000420                     BR      6$                   ; EXIT TEST
1983
1984 020354  016102  000004        5$:  MOV     DPR2(R1),R2          ; READ IOP DPR2
1985 020360  033702  002244             BIT     CSR,R2               ; CHECK FOR ERROR IN CSR TEST
1986 020364  001413                     BEQ     6$                   ; BRANCH, IF SUCCESSFUL TEST
1987 020366  043761  002244  000004     BIC     CSR,DPR2(R1)         ; CLEAR THE ERROR BIT FOR THIS TIME.
1988 020374  016103  000006             MOV     DPR3(R1),R3          ; READ DPR3 FOR EXTENDED INFO
1989 020400  012702  004145             MOV     #CSRT,R2             ; ERROR MESSAGE POINTER
1990 020404                             ERRHRD  4,ROMD,RTERR         ; CSR TEST FAILED
     020404  104456                     TRAP    C$ERHRD
     020406  000004                     .WORD   4
     020410  003112                     .WORD   ROMD
     020412  016070                     .WORD   RTERR
1991
1992 020414                        6$:  CKLOOP                       ; CHECK FOR LOOP ON TEST
     020414  104406                     TRAP    C$CLP1
1993
1994 020416                             ENDTST
     020416                  L10022:
     020416  104401                     TRAP    C$ETST
```

```
                                .SBTTL  TEST 3: INVOKE ROM TEST OF THE IOP 16KW LOCAL RAM

                                ;++
                                ;
                                ;               IOP SELFTEST #2.
                                ;
                                ; THE 16KW RAM IN THE IOP WILL BE TESTED.
                                ;

020420                                  BGNTST

020420  012702  004744                  MOV     #ROMT2,R2               ; GET TITLE ADDRESS
020424  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
020430  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
020434  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
020436                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
020436  104444                          TRAP    C$DCLN

020440  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
020444  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
020450  013761  002246  000000          MOV     RAM,DPR0(R1)            ; SEND COMMAND TO DPR0

020456  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
020462  005761  000000          2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
020466  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
020470  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
020474  000001                          1
020476  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
020500  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
020502  012702  004151                  MOV     #RAMT,R2                ; SETUP FOR ERROR REPORTING
020506                                  ERRDF   5,NORES,NRES            ; FATAL ERROR. NO RESPONSE FROM TEST.
020506  104455                          TRAP    C$ERDF
020510  000005                          .WORD   5
020512  003054                          .WORD   NORES
020514  016412                          .WORD   NRES
020516                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
020516  104406                          TRAP    C$CLP1
020520                                  DODU    LUN                     ; DROP THIS UNIT
020520  013700  002210                  MOV     LUN,R0
020524  104451                          TRAP    C$DODU
020526  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
020534                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
020534  104444                          TRAP    C$DCLN
```

```
2033
2034                                    ;
2035                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2036                                    ;
2037
2038 020536  016102  000002      4$:    MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
2039 020542  100005                     BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
2040 020544                             ERRHRD  6,CMND,CMDERR           ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     020544  104456                     TRAP    C$ERHRD
     020546  000006                     .WORD   6
     020550  003221                     .WORD   CMND
     020552  016570                     .WORD   CMDERR
2041 020554  000427                     BR      6$                      ; EXIT TEST
2042
2043 020556  016102  000004      5$:    MOV     DPR2(R1),R2             ; READ IOP DPR2
2044 020562  033702  002246             BIT     RAM,R2                  ; CHECK FOR ERROR IN RAM TEST
2045 020566  001422                     BEQ     6$                      ; BRANCH, IF SUCCESSFUL TEST
2046 020570  043761  002246  000004     BIC     RAM,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2047 020576  016103  000006             MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2048 020602  012702  004151             MOV     #RAMT,R2                ; ERROR MESSAGE POINTER
2049 020606                             ERRDF   7,ROMD,RTERR            ; RAM TEST FAILED
     020606  104455                     TRAP    C$ERDF
     020610  000007                     .WORD   7
     020612  003112                     .WORD   ROMD
     020614  016070                     .WORD   RTERR
2050 020616                             DODU    LUN                     ; DROP THIS UNIT 'CAUSE OF FATAL ERROR
     020616  013700  002210             MOV     LUN,R0
     020622  104451                     TRAP    C$DODU
2051 020624  012737  177777  002206     MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
2052 020632                             DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     020632  104444                     TRAP    C$DCLN
2053
2054 020634                     6$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     020634  104406                     TRAP    C$CLP1
2055
2056 020636                             ENDTST
     020636                  L10023:
     020636  104401                     TRAP    C$ETST
```

TEST 3: INVOKE ROM TEST OF THE IOP 16KW LOCAL RAM

```
2058
2059
2060                                    .SBTTL  TEST 4: INVOKE THE BOOT/SELFTEST CHECKSUM TEST
2061
2062                                    ;++
2063                                    ;
2064                                    ;               IOP SELFTEST #3.
2065                                    ;
2066                                    ; THE ROM TEST OF THE BOOT/SELFTEST ROM WILL BE INVOKED.  THE USER ROM
2067                                    ; WILL BE TESTED HERE IF SO INDICATED BY THE OPERATOR.
2068                                    ;
2069                                    ;--
2070
2071 020640                                    BGNTST
2072
2073 020640  012702  004767                    MOV     #ROMT3,R2               ; GET TITLE ADDRESS
2074 020644  004537  017336                    JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
2075 020650  005737  002206                    TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
2076 020654  001401                            BEQ     1$                      ; BRANCH, IF NOT DROPPED
2077 020656                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     020656  104444                            TRAP    C$DCLN
2078
2079 020660  004537  017014            1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
2080 020664  013701  002216                    MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
2081 020670  005737  002234                    TST     ROMTST                  ; CHECK IF USER ROM IS TO BE TESTED
2082 020674  001403                            BEQ     2$                      ; BRANCH, IF NOT
2083 020676  012761  177777  000006            MOV     #-1,DPR3(R1)            ; DPR 3 MUST BE NON-0 FOR USER ROM...
2084                                                                            ; ...TO BE TESTED
2085 020704  013761  002250  000000    2$:     MOV     ROM,DPR0(R1)            ; SEND COMMAND TO DPR0
2086 020712  012704  140000                    MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
2087 020716  005761  000000            3$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
2088 020722  001423                            BEQ     5$                      ; BRANCH, IF THE TEST HAS COMPLETED
2089 020724  004537  016754                    JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
2090 020730  000001                            1
2091 020732  005204                            INC     R4                      ; ERROR, IF R4 WRAPS TO 0
2092 020734  001370                            BNE     3$                      ; ERROR, IF NO BRANCH
2093 020736  012702  004170                    MOV     #ROMT,R2                ; SETUP FOR ERROR REPORTING
2094 020742                                    ERRDF   10,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
     020742  104455                            TRAP    C$ERDF
     020744  000012                            .WORD   10
     020746  003054                            .WORD   NORES
     020750  016412                            .WORD   NRES
2095 020752                                    CKLOOP                          ; CHECK FOR LOOP ON TEST
     020752  104406                            TRAP    C$CLP1
2096 020754                                    DODU    LUN                     ; DROP THIS UNIT
     020754  013700  002210                    MOV     LUN,R0
     020760  104451                            TRAP    C$DODU
2097 020762  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
2098 020770                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     020770  104444                            TRAP    C$DCLN
```

TEST 4: INVOKE THE BOOT/SELFTEST CHECKSUM TEST

```
2100
2101                                    ;
2102                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2103                                    ;
2104
2105 020772  016102  000002      5$:    MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
2106 020776  100005                     BPL     6$                      ; BR, IF NO COMMAND STATUS ERROR
2107 021000                             ERRHRD  11,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     021000  104456                     TRAP    C$ERHRD
     021002  000013                     .WORD   11
     021004  003221                     .WORD   CMND
     021006  016570                     .WORD   CMDERR
2108 021010  000427                     BR      7$                      ; EXIT TEST
2109
2110 021012  016102  000004      6$:    MOV     DPR2(R1),R2             ; READ IOP DPR2
2111 021016  033702  002250             BIT     ROM,R2                  ; CHECK FOR ERROR IN ROM TEST
2112 021022  001422                     BEQ     7$                      ; BRANCH, IF SUCCESSFUL TEST
2113 021024  043761  002250  000004     BIC     ROM,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2114 021032  016103  000006             MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2115 021036  012702  004170             MOV     #ROMT,R2                ; ERROR MESSAGE POINTER
2116 021042                             ERRDF   12,ROMD,RTERR           ; ROM TEST FAILED
     021042  104455                     TRAP    C$ERDF
     021044  000014                     .WORD   12
     021046  003112                     .WORD   ROMD
     021050  016070                     .WORD   RTERR
2117 021052                             DODU    LUN                     ; FATAL ERROR.  DROP THIS UNIT
     021052  013700  002210             MOV     LUN,R0
     021056  104451                     TRAP    C$DODU
2118 021060  012737  177777  002206     MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
2119 021066                             DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     021066  104444                     TRAP    C$DCLN
2120
2121 021070                     7$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     021070  104406                     TRAP    C$CLP1
2122
2123 021072                             ENDTST
     021072                 L10024:
     021072  104401                     TRAP    C$ETST
```

```
                                        .SBTTL  TEST 5: IOP CPU INSTRUCTION TEST
                                        ;++
                                        ;
                                        ;               IOP SELFTEST #4.
                                        ;
                                        ; INVOKE THE IOP T11 INSTRUCION TEST.
                                        ;
                                        ;--

021074                                          BGNTST

021074  012702  005023                        MOV     #ROMT4,R2               ; GET TITLE ADDRESS
021100  004537  017336                        JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
021104  005737  002206                        TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
021110  001401                                BEQ     1$                      ; BRANCH, IF NOT DROPPED
021112                                        DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
021112  104444                                TRAP    C$DCLN

021114  004537  017014                1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
021120  013701  002216                        MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
021124  013761  002252  000000                MOV     CPU,DPRO(R1)            ; SEND COMMAND TO DPRO

021132  012704  140000                        MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
021136  005761  000000                2$:     TST     DPRO(R1)                ; TEST THE IOP'S DPRO REG.
021142  001423                                BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
021144  004537  016754                        JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
021150  000001                                1
021152  005204                                INC     R4                      ; ERROR, IF R4 WRAPS TO 0
021154  001370                                BNE     2$                      ; ERROR, IF NO BRANCH
021156  012702  004643                        MOV     #CPUT,R2                ; SETUP FOR ERROR REPORTING.
021162                                        ERRDF   13,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
021162  104455                                TRAP    C$ERDF
021164  000015                                .WORD   13
021166  003054                                .WORD   NORES
021170  016412                                .WORD   NRES
021172                                        CKLOOP                          ; CHECK FOR LOOP ON TEST
021172  104406                                TRAP    C$CLP1
021174                                        DODU    LUN                     ; DROP THIS UNIT
021174  013700  002210                        MOV     LUN,R0
021200  104451                                TRAP    C$DODU
021202  012737  177777  002206                MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
021210                                        DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
021210  104444                                TRAP    C$DCLN
```

```
2162
2163                                    ;
2164                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2165                                    ;
2166
2167 021212  016102  000002            4$:     MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
2168 021216  100005                            BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
2169 021220                                    ERRHRD  14,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     021220  104456                            TRAP    C$ERHRD
     021222  000016                            .WORD   14
     021224  003221                            .WORD   CMND
     021226  016570                            .WORD   CMDERR
2170 021230  000427                            BR      6$                      ; EXIT TEST
2171
2172 021232  016102  000004            5$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
2173 021236  033702  002252                    BIT     CPU,R2                  ; CHECK FOR ERROR IN CPU TEST
2174 021242  001422                            BEQ     6$                      ; BRANCH, IF SUCCESSFUL TEST
2175 021244  043761  002252  000004          BIC     CPU,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2176 021252  016103  000006                    MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2177 021256  012702  004643                    MOV     #CPUT,R2                ; ERROR MESSAGE POINTER
2178 021262                                    ERRDF   15,ROMD,RTERR           ; CPU TEST FAILED
     021262  104455                            TRAP    C$ERDF
     021264  000017                            .WORD   15
     021266  003112                            .WORD   ROMD
     021270  016070                            .WORD   RTERR
2179 021272                                    DODU    LUN                     ; FATAL ERROR. DROP THIS UNIT
     021272  013700  002210                    MOV     LUN,R0
     021276  104451                            TRAP    C$DODU
2180 021300  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
2181 021306                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     021306  104444                            TRAP    C$DCLN
2182
2183 021310                            6$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     021310  104406                            TRAP    C$CLP1
2184
2185 021312                                    ENDTST
     021312                            L10025:
     021312  104401                            TRAP    C$ETST
2186
```

```
2188
2189
2190                                    .SBTTL  TEST 6: INVOKE THE LINE CLOCK INTERRUPT TEST
2191
2192                                    ;++
2193                                    ;
2194                                    ;               IOP SELFTEST #5.
2195                                    ;
2196                                    ; THE LINE CLOCK (BEVNT) INTERRUPT TEST IS INVOKED IN THE IOP ROM
2197                                    ;
2198                                    ;--
2199
2200 021314                                    BGNTST
2201
2202 021314  012702  005062                    MOV     #ROMT5,R2               ; GET TITLE ADDRESS
2203 021320  004537  017336                    JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
2204 021324  005737  002206                    TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
2205 021330  001401                            BEQ     1$                      ; BRANCH, IF NOT DROPPED
2206 021332                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     021332  104444                            TRAP    C$DCLN
2207
2208 021334  004537  017014            1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
2209 021340  013701  002216                    MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
2210 021344  013761  002254  000000            MOV     BVNT,DPRO(R1)           ; SEND COMMAND TO DPRO
2211
2212 021352  012704  140000                    MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
2213 021356  005761  000000            2$:     TST     DPRO(R1)                ; TEST THE IOP'S DPRO REG.
2214 021362  001423                            BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
2215 021364  004537  016754                    JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
2216 021370  000001                            1
2217 021372  005204                            INC     R4                      ; ERROR, IF R4 WRAPS TO 0
2218 021374  001370                            BNE     2$                      ; ERROR, IF NO BRANCH
2219 021376  012702  004174                    MOV     #BEVNT,R2               ; SETUP FOR ERROR REPORTING.
2220 021402                                    ERRDF   16,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
     021402  104455                            TRAP    C$ERDF
     021404  000020                            .WORD   16
     021406  003054                            .WORD   NORES
     021410  016412                            .WORD   NRES
2221 021412                                    CKLOOP                          ; CHECK FOR LOOP ON TEST
     021412  104406                            TRAP    C$CLP1
2222 021414                                    DODU    LUN                     ; DROP THIS UNIT
     021414  013700  002210                    MOV     LUN,R0
     021420  104451                            TRAP    C$DODU
2223 021422  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
2224 021430                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     021430  104444                            TRAP    C$DCLN
```

```
                                        ;
                                        ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
                                        ;
021432  016102  000002          4$:     MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
021436  100005                          BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
021440                                  ERRHRD  17,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
021440  104456                          TRAP    C$ERHRD
021442  000021                          .WORD   17
021444  003221                          .WORD   CMND
021446  016570                          .WORD   CMDERR
021450  000431                          BR      7$                      ; EXIT TEST

021452  016102  000004          5$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
021456  033702  002254                  BIT     BVNT,R2                 ; CHECK FOR ERROR IN CLOCK TEST
021462  001424                          BEQ     7$                      ; BRANCH, IF SUCCESSFUL TEST
021464  043761  002254  000004          BIC     BVNT,DPR2(R1)           ; CLEAR THE ERROR BIT FOR THIS TIME.
021472  016103  000006                  MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
021476  032703  000001                  BIT     #BIT0,R3                ; CHECK FOR ENTIRE TEST SKIPPED
021502  001406                          BEQ     6$                      ; BR, IF TEST WASN'T SKIPPED
021504  012702  007411                  MOV     #T5E0,R2                ; SETUP MESSAGE ADDRESS FOR PRINTOUT
021510  004537  016722                  JSR     R5,SKIPED               ; PRINT THIS TEST SKIPPED
021514                                  EXIT    TST                     ; EXIT THIS TEST
021514  104432                          TRAP    C$EXIT
021516  000020                          .WORD   L10026-.

021520  012702  004174          6$:     MOV     #BEVNT,R2               ; ERROR MESSAGE POINTER
021524                                  ERRHRD  20,ROMD,RTERR           ; CLOCK TEST FAILED
021524  104456                          TRAP    C$ERHRD
021526  000024                          .WORD   20
021530  003112                          .WORD   ROMD
021532  016070                          .WORD   RTERR

021534                          7$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
021534  104406                          TRAP    C$CLP1

021536                                  ENDTST
021536                          L10026:
021536  104401                          TRAP    C$ETST
```

```
                                .SBTTL  TEST 7: INVOKE SERIAL PORT #1 TEST

                                ;++
                                ;
                                ;               IOP SELFTEST #6.
                                ;
                                ; INVOKE THE ROM TEST OF THE CONSOLE SERIAL PORT DC319 (SLU1).
                                ;
                                ;--

021540                                  BGNTST

021540  012702  005117                  MOV     #ROMT6,R2               ; GET TITLE ADDRESS
021544  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
021550  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
021554  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
021556                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
021556  104444                          TRAP    C$DCLN

021560  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
021564  005737  002222                  TST     LOOPB1                  ; CHECK FOR LOOPBACK CONNECTOR INSTALLED
021570  001500                          BEQ     7$                      ; BRANCH, IF NO CONNECTOR INSTALLED
021572  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
021576  013761  002256  000000          MOV     SLU1,DPR0(R1)           ; SEND COMMAND TO DPR0

021604  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
021610  005761  000000          2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
021614  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
021616  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
021622  000001                          1
021624  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
021626  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
021630  012702  004202                  MOV     #SLU1T,R2               ; SETUP FOR ERROR REPORTING.
021634                                  ERRDF   21,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
021634  104455                          TRAP    C$ERDF
021636  000025                          .WORD   21
021640  003054                          .WORD   NORES
021642  016412                          .WORD   NRES
021644                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
021644  104406                          TRAP    C$CLP1
021646                                  DODU    LUN                     ; DROP THIS UNIT
021646  013700  002210                  MOV     LUN,R0
021652  104451                          TRAP    C$DODU
021654  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
021662                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
021662  104444                          TRAP    C$DCLN
```

```
2293
2294                                    ;
2295                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2296                                    ;
2297
2298 021664  016102  000002            4$:     MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
2299 021670  100005                            BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
2300 021672                                    ERRHRD  22,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     021672  104456                            TRAP    C$ERHRD
     021674  000026                            .WORD   22
     021676  003221                            .WORD   CMND
     021700  016570                            .WORD   CMDERR
2301 021702  000433                            BR      7$                      ; EXIT TEST
2302
2303 021704  016102  000004            5$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
2304 021710  033702  002256                    BIT     SLU1,R2                 ; CHECK FOR ERROR IN SLU1 TEST
2305 021714  001426                            BEQ     7$                      ; BRANCH, IF SUCCESSFUL TEST
2306 021716  043761  002256  000004           BIC     SLU1,DPR2(R1)           ; CLEAR THE ERROR BIT FOR THIS TIME.
2307 021724  016103  000006                    MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2308 021730  032703  000001                    BIT     #BIT0,R3                ; CHECK IF INTERRUPTS WERE TESTED
2309 021734  001404                            BEQ     6$                      ; BR, IF INTERRUPTS WERE TESTED
2310 021736  012702  007411                    MOV     #T5E0,R2                ; SETUP MESSAGE ADDRESS FOR PRINTOUT
2311 021742  004537  016722                    JSR     R5,SKIPED               ; PRINT A PORTION OF SELFTEST NOT RUN
2312
2313 021746  042703  000001            6$:     BIC     #BIT0,R3                ; CLEAR BIT 0 FOR NEXT TEST
2314 021752  005703                            TST     R3                      ; SEE IF ANY LEGITIMATE ERRORS
2315 021754  001406                            BEQ     7$                      ; BRANCH, IF NO ERRORS
2316 021756  012702  004202                    MOV     #SLU1T,R2               ; ERROR MESSAGE POINTER
2317 021762                                    ERRHRD  23,ROMD,RTERR           ; SLU1 TEST FAILED
     021762  104456                            TRAP    C$ERHRD
     021764  000027                            .WORD   23
     021766  003112                            .WORD   ROMD
     021770  016070                            .WORD   RTERR
2318
2319 021772                            7$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     021772  104406                            TRAP    C$CLP1
2320
2321 021774                                    ENDTST
     021774                            L10027:
     021774  104401                            TRAP    C$ETST
```

```
                                .SBTTL  TEST 8: INVOKE ROM TEST OF SERIAL PORT #2 (CHANNEL A) - NEC7201

                                ;++
                                ;
                                ;               IOP SELFTEST #7.
                                ;
                                ; INVOKE THE NEC7201 (SERIAL PORT #2), CHANNEL A SELFTEST
                                ;
                                ;--

021776                                  BGNTST

021776  012702  005151                  MOV     #ROMT7A,R2              ; GET TITLE ADDRESS
022002  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
022006  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
022012  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
022014                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022014  104444                          TRAP    C$DCLN

022016  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
022022  005737  002224                  TST     LOOPB2                  ; CHECK IF LOOPBACK CONNECTOR INSTALLED
022026  001511                          BEQ     8$                      ; BRANCH, IF NO CONNECTOR INSTALLED

022030  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
022034  012761  000001  000006          MOV     #1,DPR3(R1)             ; SET TEST FLAG FOR CHANNEL A
022042  013761  002260  000000          MOV     SLU2,DPR0(R1)           ; SEND COMMAND TO DPR0

022050  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
022054  005761  000000          2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
022060  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
022062  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
022066  000001                          1
022070  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
022072  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
022074  012702  004235                  MOV     #SLU2A,R2               ; SETUP FOR ERROR REPORTING.
022100                                  ERRDF   24,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
022100  104455                          TRAP    C$ERDF
022102  000030                          .WORD   24
022104  003054                          .WORD   NORES
022106  016412                          .WORD   NRES
022110                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
022110  104406                          TRAP    C$CLP1
022112                                  DODU    LUN                     ; DROP THIS UNIT
022112  013700  002210                  MOV     LUN,R0
022116  104451                          TRAP    C$DODU
022120  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
022126                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022126  104444                          TRAP    C$DCLN
```

TEST 8: INVOKE ROM TEST OF SERIAL PORT #2 (CHANNEL A) - NEC720

```
2364
2365                                    ;
2366                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2367                                    ;
2368
2369 022130  016102  000002        4$:  MOV     DPR1(R1),R2          ; READ BOOT COMMAND STATUS REGISTER
2370 022134  100005                     BPL     5$                   ; BR, IF NO COMMAND STATUS ERROR
2371 022136                             ERRHRD  25,CMND,CMDERR       ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     022136  104456                     TRAP    C$ERHRD
     022140  000031                     .WORD   25
     022142  003221                     .WORD   CMND
     022144  016570                     .WORD   CMDERR
2372 022146  000441                     BR      8$                   ; EXIT TEST
2373
2374 022150  016102  000004        5$:  MOV     DPR2(R1),R2          ; READ IOP DPR2
2375 022154  033702  002260             BIT     SLU2,R2              ; CHECK FOR ERROR IN SLU2 TEST
2376 022160  001434                     BEQ     8$                   ; BRANCH, IF SUCCESSFUL TEST
2377 022162  043761  002260  000004     BIC     SLU2,DPR2(R1)        ; CLEAR THE ERROR BIT FOR THIS TIME.
2378 022170  016103  000006             MOV     DPR3(R1),R3          ; READ DPR3 FOR EXTENDED INFO
2379 022174  005737  002232             TST     SL2DMA               ; CHECK SLU2 SETUP FOR DMA OPERATION
2380 022200  001002                     BNE     6$                   ; BRANCH, IF DMA JUMPER IS IN
2381 022202  042703  000300             BIC     #300,R3              ; JUMPER IS OUT.  FORCE ERRORS 6,7 CLEAR.
2382
2383 022206  032703  000001        6$:  BIT     #BIT0,R3             ; CHECK FOR ENTIRE TEST SKIPPED
2384 022212  001406                     BEQ     7$                   ; BR, IF TEST WASN'T SKIPPED
2385 022214  012702  010337             MOV     #T7E0,R2             ; SETUP MESSAGE ADDRESS FOR PRINTOUT
2386 022220  004537  016722             JSR     R5,SKIPED            ; PRINT THIS TEST SKIPPED
2387 022224                             EXIT    TST                  ; EXIT THIS TEST
     022224  104432                     TRAP    C$EXIT
     022226  000026                     .WORD   L10030-.
2388
2389 022230  032703  007777        7$:  BIT     #7777,R3             ; CHECK FOR LEGITIMATE ERRORS
2390 022234  001406                     BEQ     8$                   ; BRANCH IF NO LEGITIMATE ERRORS
2391 022236  012702  004235             MOV     #SLU2A,R2            ; ERROR MESSAGE POINTER
2392 022242                             ERRHRD  26,ROMD,RTERR        ; SLU2 CHANNEL A FAILED
     022242  104456                     TRAP    C$ERHRD
     022244  000032                     .WORD   26
     022246  003112                     .WORD   ROMD
     022250  016070                     .WORD   RTERR
2393
2394 022252                        8$:  CKLOOP                       ; CHECK FOR LOOP ON TEST
     022252  104406                     TRAP    C$CLP1
2395
2396 022254                             ENDTST
     022254                     L10030:
     022254  104401                     TRAP    C$ETST
```

```
                                .SBTTL  TEST 9: INVOKE ROM TEST OF SERIAL PORT #2 (CHANNEL B) - NEC7201

                                ;++
                                ;
                                ;               IOP SELFTEST #7.
                                ;
                                ; INVOKE THE NEC7201 (SERIAL PORT #2), CHANNEL B SELFTEST
                                ;
                                ;--

022256                                  BGNTST

022256  012702  005220                  MOV     #ROMT7B,R2              ; GET TITLE ADDRESS
022262  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
022266  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
022272  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
022274                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022274  104444                          TRAP    C$DCLN

022276  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
022302  005737  002226                  TST     LOOPB3                  ; CHECK IF LOOPBACK CONNECTOR INSTALLED
022306  001501                          BEQ     7$                      ; BRANCH, IF NO CONNECTOR INSTALLED

022310  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
022314  012761  000002  000006          MOV     #2,DPR3(R1)             ; SET TEST FLAG FOR CHANNEL B
022322  013761  002260  000000          MOV     SLU2,DPR0(R1)           ; SEND COMMAND TO DPR0

022330  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
022334  005761  000000          2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
022340  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
022342  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
022346  000001                          1
022350  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
022352  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
022354  012702  004273                  MOV     #SLU2B,R2               ; SETUP FOR ERROR REPORTING.
022360                                  ERRDF   27,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
022360  104455                          TRAP    C$ERDF
022362  000033                          .WORD   27
022364  003054                          .WORD   NORES
022366  016412                          .WORD   NRES
022370                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
022370  104406                          TRAP    C$CLP1
022372                                  DODU    LUN                     ; DROP THIS UNIT
022372  013700  002210                  MOV     LUN,R0
022376  104451                          TRAP    C$DODU
022400  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
022406                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022406  104444                          TRAP    C$DCLN
```

```
2439
2440                                    ;
2441                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2442                                    ;
2443
2444 022410  016102  000002        4$:  MOV     DPR1(R1),R2            ; READ BOOT COMMAND STATUS REGISTER
2445 022414  100005                     BPL     5$                     ; BR, IF NO COMMAND STATUS ERROR
2446 022416                             ERRHRD  30,CMND,CMDERR         ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     022416  104456                     TRAP    C$ERHRD
     022420  000036                     .WORD   30
     022422  003221                     .WORD   CMND
     022424  016570                     .WORD   CMDERR
2447 022426  000431                     BR      7$                     ; EXIT TEST
2448
2449 022430  016102  000004        5$:  MOV     DPR2(R1),R2            ; READ IOP DPR2
2450 022434  033702  002260             BIT     SLU2,R2                ; CHECK FOR ERROR IN SLU2 TEST
2451 022440  001424                     BEQ     7$                     ; BRANCH, IF SUCCESSFUL TEST
2452 022442  043761  002260  000004     BIC     SLU2,DPR2(R1)          ; CLEAR THE ERROR BIT FOR THIS TIME.
2453 022450  016103  000006             MOV     DPR3(R1),R3            ; READ DPR3 FOR EXTENDED INFO
2454 022454  032703  000001             BIT     #BIT0,R3               ; CHECK FOR ENTIRE TEST SKIPPED
2455 022460  001406                     BEQ     6$                     ; BR, IF TEST WASN'T SKIPPED
2456 022462  012702  010337             MOV     #T7E0,R2               ; SETUP MESSAGE ADDRESS FOR PRINTOUT
2457 022466  004537  016722             JSR     R5,SKIPED              ; PRINT THIS TEST SKIPPED
2458 022472                             EXIT    TST                    ; EXIT THIS TEST
     022472  104432                     TRAP    C$EXIT
     022474  000020                     .WORD   L10031-.
2459
2460 022476  012702  004273        6$:  MOV     #SLU2B,R2              ; ERROR MESSAGE POINTER
2461 022502                             ERRHRD  31,ROMD,RTERR          ; SLU2 CHANNEL B FAILED
     022502  104456                     TRAP    C$ERHRD
     022504  000037                     .WORD   31
     022506  003112                     .WORD   ROMD
     022510  016070                     .WORD   RTERR
2462
2463 022512                        7$:  CKLOOP                         ; CHECK FOR LOOP ON TEST
     022512  104406                     TRAP    C$CLP1
2464
2465 022514                             ENDTST
     022514                        L10031:
     022514  104401                     TRAP    C$ETST
```

```
                                .SBTTL  TEST 10: INVOKE TEST OF THE PARALLEL I/O PORT, Z8036

                                ;++
                                ;
                                ;               IOP SELFTEST #10.
                                ;
                                ; INVOKE THE ROM TEST OF THE Z8036 (PARALLEL I/O).
                                ;
                                ;--

022516                                  BGNTST

022516  012702  005267                  MOV     #ROMT10,R2              ; GET TITLE ADDRESS
022522  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
022526  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
022532  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
022534                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022534  104444                          TRAP    C$DCLN

022536  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
022542  005737  002230                  TST     LOOPB4                  ; CHECK LOOPBACK CONNECTOR INSTALLED
022546  001476                          BEQ     7$                      ; BRANCH IF NO CONNECTOR INSTALLED

022550  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
022554  013761  002262  000000          MOV     PLLIO,DPR0(R1)          ; SEND COMMAND TO DPR0

022562  012704  140000                  MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
022566  005761  000000          2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
022572  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
022574  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
022600  000001                          1
022602  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
022604  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
022606  012702  004331                  MOV     #PLLP,R2                ; SETUP FOR ERROR REPORTING.
022612                                  ERRDF   32,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
022612  104455                          TRAP    C$ERDF
022614  000040                          .WORD   32
022616  003054                          .WORD   NORES
022620  016412                          .WORD   NRES
022622                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
022622  104406                          TRAP    C$CLP1
022624                                  DODU    LUN                     ; DROP THIS UNIT
022624  013700  002210                  MOV     LUN,R0
022630  104451                          TRAP    C$DODU
022632  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
022640                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
022640  104444                          TRAP    C$DCLN
```

```
                                        ;
                                        ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
                                        ;

022642  016102  000002          4$:     MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
022646  100005                          BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
022650                                  ERRHRD  33,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
022650  104456                          TRAP    C$ERHRD
022652  000041                          .WORD   33
022654  003221                          .WORD   CMND
022656  016570                          .WORD   CMDERR
022660  000431                          BR      7$                      ; EXIT TEST

022662  016102  000004          5$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
022666  033702  002262                  BIT     PLLIO,R2                ; CHECK FOR ERROR IN PARALLEL I/O TEST
022672  001424                          BEQ     7$                      ; BRANCH, IF SUCCESSFUL TEST
022674  043761  002262  000004          BIC     PLLIO,DPR2(R1)          ; CLEAR THE ERROR BIT FOR THIS TIME.
022702  016103  000006                  MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
022706  032703  000001                  BIT     #BIT0,R3                ; CHECK FOR ENTIRE TEST SKIPPED
022712  001406                          BEQ     6$                      ; BR, IF TEST WASN'T SKIPPED
022714  012702  011477                  MOV     #T10E0,R2               ; SETUP MESSAGE ADDRESS FOR PRINTOUT
022720  004537  016722                  JSR     R5,SKIPED               ; PRINT THIS TEST SKIPPED
022724                                  EXIT    TST                     ; EXIT THIS TEST
022724  104432                          TRAP    C$EXIT
022726  000020                          .WORD   L10032-.

022730  012702  004331          6$:     MOV     #PLLP,R2                ; ERROR MESSAGE POINTER
022734                                  ERRHRD  34,ROMD,RTERR           ; PARALLEL I/O TEST FAILED
022734  104456                          TRAP    C$ERHRD
022736  000042                          .WORD   34
022740  003112                          .WORD   ROMD
022742  016070                          .WORD   RTERR

022744                          7$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
022744  104406                          TRAP    C$CLP1

                                        ENDTST
022746                          L10032:
022746  104401                          TRAP    C$ETST
```

```
2535
2536                                    .SBTTL  TEST 11: INVOKE THE DMA CONTROLLER TEST OF THE AMZ8016 (LOCAL SIDE)
2537
2538                                    ;++
2539                                    ;
2540                                    ;               IOP SELFTEST #11.
2541                                    ;
2542                                    ; THE ROM TEST OF THE IOP'S AMZ8C16 DMA CONTROLLER CHIP IS INVOKED.
2543                                    ;
2544                                    ; DMA TRANSFERS WILL BE DONE ON THE LOCAL SIDE ONLY.  NEXT TEST DOES LSI-11.
2545                                    ;
2546                                    ;--
2547 022750                                    BGNTST
2548
2549 022750  012702  005346                    MOV     #ROM11A,R2              ; GET TITLE ADDRESS
2550 022754  004537  017336                    JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
2551 022760  005737  002206                    TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
2552 022764  001401                            BEQ     1$                      ; BRANCH, IF NOT DROPPED
2553 022766                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     022766  104444                            TRAP    C$DCLN
2554
2555 022770  004537  017014            1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
2556 022774  013701  002216                    MOV     @BASE,R1                ; R1 = IOP BASE ADDRESS
2557 023000  005061  000006                    CLR     DPR3(R1)                ; CLEAR TPR3 SO ONLY LOCAL DMA'S DONE.
2558 023004  013761  002264  000000            MOV     DMA,DPR0(R1)            ; SEND COMMAND TO DPR0
2559
2560 023012  012704  140000                    MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
2561 023016  005761  000000            2$:     TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
2562 023022  001423                            BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
2563 023024  004537  016754                    JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
2564 023030  000001                            1
2565 023032  005204                            INC     R4                      ; ERROR, IF R4 WRAPS TO 0
2566 023034  001370                            BNE     2$                      ; ERROR, IF NO BRANCH
2567 023036  012702  004353                    MOV     #DMAL,R2                ; SETUP FOR ERROR REPORTING.
2568 023042                                    ERRDF   35,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
     023042  104455                            TRAP    C$ERDF
     023044  000043                            .WORD   35
     023046  003054                            .WORD   NORES
     023050  016412                            .WORD   NRES
2569 023052                                    CKLOOP                          ; CHECK FOR LOOP ON TEST
     023052  104406                            TRAP    C$CLP1
2570 023054                                    DODU    LUN                     ; DROP THIS UNIT
     023054  013700  002210                    MOV     LUN,R0
     023060  104451                            TRAP    C$DODU
2571 023062  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
2572 023070                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     023070  104444                            TRAP    C$DCLN
```

```
2574
2575                                    ;
2576                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2577                                    ;
2578
2579 023072  016102  000002      4$:    MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
2580 023076  100005                     BPL     5$                      ; BR, IF NO COMMAND STATUS ERROR
2581 023100                             ERRHRD  36,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     023100  104456                     TRAP    C$ERHRD
     023102  000044                     .WORD   36
     023104  003221                     .WORD   CMND
     023106  016570                     .WORD   CMDERR
2582 023110  000436                     BR      8$                      ; EXIT TEST
2583
2584 023112  016102  000004      5$:    MOV     DPR2(R1),R2             ; READ IOP DPR2
2585 023116  033702  002264             BIT     DMA,R2                  ; CHECK FOR ERROR IN DMA TEST
2586 023122  001431                     BEQ     8$                      ; BRANCH, IF SUCCESSFUL TEST
2587 023124  043761  002264  000004     BIC     DMA,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2588 023132  016103  000006             MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2589 023136  032703  000001             BIT     #BIT0,R3                ; CHECK IF INTERRUPTS WERE TESTED
2590 023142  001406                     BEQ     6$                      ; BR, IF INTERRUPTS WERE TESTED
2591 023144  013702  012161             MOV     T11E0,R2                ; SETUP MESSAGE ADDRESS
2592 023150  004537  016722             JSR     R5,SKIPED               ; PRINT A PORTION OF SELFTEST NOT RUN
2593 023154  042703  000001             BIC     #BIT0,R3                ; CLEAR IT SO NEXT TEST NOT CONFUSED
2594 023160  042703  000002      6$:    BIC     #BIT1,R3                ; THE BIT 1 ERROR DOESN'T APPLY HERE
2595
2596 023164  032703  007777      7$:    BIT     #7777,R3                ; SEE IF ANY LEGITIMATE ERRORS EXIST
2597 023170  001406                     BEQ     8$                      ; BRANCH, IF NO ERRORS
2598 023172  012702  004353             MOV     #DMAL,R2                ; ERROR MESSAGE POINTER
2599 023176                             ERRHRD  37,ROMD,RTERR           ; DMA TEST FAILED
     023176  104456                     TRAP    C$ERHRD
     023200  000045                     .WORD   37
     023202  003112                     .WORD   ROMD
     023204  016070                     .WORD   RTERR
2600
2601 023206                     8$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     023206  104406                     TRAP    C$CLP1
2602
2603 023210                             ENDTST
     023210                 L10033:
     023210  104401                     TRAP    C$ETST
```

```
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TEST 11: INVOKE THE DMA CONTROLLER TEST OF THE AMZ8016 (LOCAL

                                .SBTTL  TEST 12: INVOKE THE DMA CONTROLLER TEST OF THE AMZ8016 (LSI-11 SIDE)

                                ;++
                                ;
                                ;               IOP SELFTEST #11.
                                ;
                                ; THE ROM TEST OF THE IOP'S AMZ8016 DMA CONTROLLER CHIP IS INVOKED.
                                ;
                                ; TESTS OF DMA TRANSFERS TO AND FROM THE LSI-11 BUS ARE DONE.
                                ;
                                ;--
023212                                  BGNTST

023212  012702  005416                  MOV     #ROM11B,R2              ; GET TITLE ADDRESS
023216  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
023222  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
023226  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
023230                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
023230  104444                          TRAP    C$DCLN

023232  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
023236  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
023242  013761  002242  000006          MOV     HIMEM,DPR3(R1)          ; SEND BASE OF HI 4KW PAGE (PAR FORMAT)
023250  013761  002264  000000          MOV     DMA,DPR0(R1)            ; SEND COMMAND TO DPR0

023256  012704  140000          2$:     MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
023262  005761  000000                  TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REG.
023266  001423                          BEQ     4$                      ; BRANCH, IF THE TEST HAS COMPLETED
023270  004537  016754                  JSR     R5,RDELAY               ; DELAY ABOUT 1 MS
023274  000001                          1
023276  005204                          INC     R4                      ; ERROR, IF R4 WRAPS TO 0
023300  001370                          BNE     2$                      ; ERROR, IF NO BRANCH
023302  012702  004413                  MOV     #DMAT,R2                ; SETUP FOR ERROR REPORTING.
023306                                  ERRDF   40,NORES,NRES           ; FATAL ERROR. NO RESPONSE FROM TEST.
023306  104455                          TRAP    C$ERDF
023310  000050                          .WORD   40
023312  003054                          .WORD   NORES
023314  016412                          .WORD   NRES
023316                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
023316  104406                          TRAP    C$CLP1
023320                                  DODU    LUN                     ; DROP THIS UNIT
023320  013700  002210                  MOV     LUN,R0
023324  104451                          TRAP    C$DODU
023326  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG.
023334                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
023334  104444                          TRAP    C$DCLN
```

```
2645
2646                                    ;
2647                                    ; TO HERE IF TEST COMPLETED, AND CHECK DPR2 FOR SUCCESS/FAILURE.
2648                                    ;
2649
2650 023336  016102  000002        4$:  MOV     DPR1(R1),R2          ; READ BOOT COMMAND STATUS REGISTER
2651 023342  100005                     BPL     5$                   ; BR, IF NO COMMAND STATUS ERROR
2652 023344                             ERRHRD  41,CMND,CMDERR       ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
     023344  104456                     TRAP    C$ERHRD
     023346  000051                     .WORD   41
     023350  003221                     .WORD   CMND
     023352  016570                     .WORD   CMDERR
2653 023354  000445                     BR      8$                   ; EXIT TEST
2654
2655 023356  016102  000004        5$:  MOV     DPR2(R1),R2          ; READ IOP DPR2
2656 023362  033702  002264             BIT     DMA,R2               ; CHECK FOR ERROR IN DMA TEST
2657 023366  001440                     BEQ     8$                   ; BRANCH, IF SUCCESSFUL TEST
2658 023370  043761  002264  000004     BIC     DMA,DPR2(R1)         ; CLEAR THE ERROR BIT FOR THIS TIME.
2659 023376  016103  000006             MOV     DPR3(R1),R3          ; READ DPR3 FOR EXTENDED INFO
2660 023402  032703  000001             BIT     #BIT0,R3             ; CHECK IF INTERRUPTS WERE TESTED
2661 023406  001406                     BEQ     6$                   ; BR, IF INTERRUPTS WERE TESTED
2662 023410  013702  012161             MOV     T11E0,R2             ; SETUP MESSAGE ADDRESS
2663 023414  004537  016722             JSR     R5,SKIPED            ; PRINT A PORTION OF SELFTEST NOT RUN
2664 023420  042703  000001             BIC     #BIT0,R3             ; CLEAR IT SO NEXT TEST NOT CONFUSED
2665
2666 023424  032703  000002        6$:  BIT     #BIT1,R3             ; CHECK IF BUS TESTS WERE RUN
2667 023430  001406                     BEQ     7$                   ; BR, IF BUS TESTS WERE RUN
2668 023432  012702  012260             MOV     #T11E1,R2            ; SETUP MESSAGE ADDRESS
2669 023436  004537  016722             JSR     R5,SKIPED            ; PRINT BUS TESTS NOT DONE
2670 023442  042703  000002             BIC     #BIT1,R3             ; CLEAR IT SO NEXT TEST NOT CONFUSED
2671
2672 023446  032703  007777        7$:  BIT     #7777,R3             ; SEE IF ANY LEGITIMATE ERRORS EXIST
2673 023452  001406                     BEQ     8$                   ; BRANCH, IF NO ERRORS
2674 023454  012702  004413             MOV     #DMAT,R2             ; ERROR MESSAGE POINTER
2675 023460                             ERRHRD  42,ROMD,RTERR        ; DMA TEST FAILED
     023460  104456                     TRAP    C$ERHRD
     023462  000052                     .WORD   42
     023464  003112                     .WORD   ROMD
     023466  016070                     .WORD   RTERR
2676
2677 023470                        8$:  CKLOOP                       ; CHECK FOR LOOP ON TEST
     023470  104406                     TRAP    C$CLP1
2678
2679 023472                             ENDTST
     023472                        L10034:
     023472  104401                     TRAP    C$ETST
```

```
                                .SBTTL  TEST 13: LSI-11 BUS INTERRUPT TEST

                                ;++
                                ;
                                ;               IOP SELFTEST #12.
                                ;
                                ;       INVOKE THE LSI-11 BUS INTERRUPT TEST
                                ;
                                ;--

023474                                  BGNTST

023474  012702  005462                  MOV     #ROMT12,R2              ; GET TITLE ADDRESS
023500  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
023504  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
023510  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
023512                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
023512  104444                          TRAP    C$DCLN

023514  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY

023520  013701  002216          2$:     MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
023524  012737  001770  002220          MOV     #1770,QIRVEC            ; ADDRESS 1770 IS THE INTERRUPT VECTOR
023532  005037  002240                  CLR     INTFLG                  ; SOFTWARE FLAG INDICATES INT. OCCURED
023536                                  SETVEC  QIRVEC,#QIRSRV,#PRI07   ; SETUP THE VECTOR; TEMP PRIORITY OF 7
023536  012746  000340                  MOV     #PRI07,-(SP)
023542  012746  024244                  MOV     #QIRSRV,-(SP)
023546  013746  002220                  MOV     QIRVEC,-(SP)
023552  012746  000003                  MOV     #3,-(SP)
023556  104437                          TRAP    C$SVEC
023560  062706  000010                  ADD     #10,SP

023564                                  SETPRI  #PRI07                  ; RAISE CPU SO IOP CAN'T INTERRUPT YET.
023564  012700  000340                  MOV     #PRI07,R0
023570  104441                          TRAP    C$SPRI
023572  013761  002220  000006          MOV     QIRVEC,DPR3(R1)         ; TELL IOP WHICH VECTOR WE WANT
023600  013761  002266  000000          MOV     QIR,DPR0(R1)            ; SEND QIR TEST COMMAND TO DPR0
023606                                  SETPRI  #PRI00                  ; LOWER PRIORITY SO IOP CAN INTERRUPT
023606  012700  000000                  MOV     #PRI00,R0
023612  104441                          TRAP    C$SPRI

023614  004537  016754                  JSR     R5,RDELAY               ; DELAY, AND THEN CHECK INT. OCCURED
023620  000002                          2                               ; 2 MILLISECONDS
023622  005737  002240                  TST     INTFLG                  ; IOP INTERRUPTED, IF INTFLG SET
023626  001060                          BNE     6$                      ; BR, IF OK
023630  016102  000002                  MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
023634  100006                          BPL     3$                      ; BR, IF NO COMMAND STATUS ERROR
023636                                  ERRHRD  43,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
023636  104456                          TRAP    C$ERHRD
023640  000053                          .WORD   43
023642  003221                          .WORD   CMND
023644  016570                          .WORD   CMDERR
023646                                  EXIT    TST                     ; EXIT TEST
023646  104432                          TRAP    C$EXIT
023650  000404                          .WORD   L10035-.
```

```
 2722
 2723 023652  016102  000004          3$:     MOV     DPR2(R1),R2             ; READ IOP TPR2
 2724 023656  033702  002266                  BIT     QIR,R2                  ; CHECK FOR A SELFTEST ERROR
 2725 023662  001424                          BEQ     5$                      ; BR, IF NO ERROR.
 2726 023664  016103  000006                  MOV     DPR3(R1),R3             ; READ SELFTEST EXTENDED ERROR REGISTER
 2727 023670  032703  000001                  BIT     #BIT0,R3                ; CHECK FOR ENTIRE TEST SKIPPED
 2728 023674  001406                          BEQ     4$                      ; BR, IF TEST WASN'T SKIPPED
 2729 023676  012702  012625                  MOV     #T12E0,R2               ; SETUP MESSAGE ADDRESS FOR PRINTOUT
 2730 023702  004537  016722                  JSR     R5,SKIPED               ; PRINT THIS TEST SKIPPED
 2731 023706                                  EXIT    TST                     ; EXIT THIS TEST
      023706  104432                          TRAP    C$EXIT
      023710  000344                          .WORD   L10035-.
 2732
 2733 023712  032703  000004          4$:     BIT     #BIT2,R3                ; NOW CHECK FOR ROM IN VECTOR SPACE
 2734 023716  001406                          BEQ     5$                      ; BR, IF RAM AND NOT ROM IN VECTOR SPACE
 2735 023720  012702  012771                  MOV     #T12E2,R2               ; SETUP MESSAGE ADDRESS FOR PRINTOUT
 2736 023724  004537  016722                  JSR     R5,SKIPED               ; PRINT THIS TEST SKIPPED
 2737 023730                                  EXIT    TST                     ; EXIT THIS TEST
      023730  104432                          TRAP    C$EXIT
      023732  000322                          .WORD   L10035-.
 2738
 2739 023734                          5$:     SETPRI  #PRI07                  ; RESTORE PRIORITY TO 7
      023734  012700  000340                  MOV     #PRI07,R0
      023740  104441                          TRAP    C$SPRI
 2740 023742  012702  004453                  MOV     #QIRT,R2                ; ERROR MESSAGE POINTER
 2741 023746  012703  004500                  MOV     #QIRT1,R3               ; ERROR MESSAGE POINTER
 2742 023752                                  ERRHRD  44,ROMD,GENMSG          ; ERROR.  NO INTERRUPT FROM IOP
      023752  104456                          TRAP    C$ERHRD
      023754  000054                          .WORD   44
      023756  003112                          .WORD   ROMD
      023760  016444                          .WORD   GENMSG
 2743 023762                                  CKLOOP                          ; CHECK FOR LOOP ON TEST
      023762  104406                          TRAP    C$CLP1
 2744 023764                                  EXIT    TST                     ; EXIT THIS TEST
      023764  104432                          TRAP    C$EXIT
      023766  000266                          .WORD   L10035-.
```

```
2746
2747 023770                                6$:     SETPRI  #PRI07                  ; SET CPU TEMORARILY TO 7
     023770  012700  000340                        MOV     #PRI07,R0
     023774  104441                                TRAP    C$SPRI
2748 023776  005037  002240                        CLR     INTFLG                  ; CLEAR THE SOFTWARE INT. FLAG
2749 024002                                        CLRVEC  QIRVEC                  ; CLEAR THE VECTOR JUST USED
     024002  013700  002220                        MOV     QIRVEC,R0
     024006  104436                                TRAP    C$CVEC
2750 024010  062737  000004  002220                ADD     #4,QIRVEC               ; ADVANCE TO THE NEXT (#1774)
2751 024016                                        SETVEC  QIRVEC,#QIRSRV,#PRI07   ; SETUP VECTOR FOR NEXT TEST
     024016  012746  000340                        MOV     #PRI07,-(SP)
     024022  012746  024244                        MOV     #QIRSRV,-(SP)
     024026  013746  002220                        MOV     QIRVEC,-(SP)
     024032  012746  000003                        MOV     #3,-(SP)
     024036  104437                                TRAP    C$SVEC
     024040  062706  000010                        ADD     #10,SP
2752 024044                                        SETPRI  #PRI00                  ; LOWER PRIORITY TO 0
     024044  012700  000000                        MOV     #PRI00,R0
     024050  104441                                TRAP    C$SPRI
2753
2754 024052  012704  140000                        MOV     #140000,R4              ; R4 WILL BE USED AS A COUNTER
2755 024056  005737  002240            7$:         TST     INTFLG                  ; IOP INTERRUPTED, IF INTFLG SET
2756 024062  001023                                BNE     8$                      ; BR, IF OK
2757 024064  004537  016754                        JSR     R5,RDELAY               ; DELAY, AND THEN TEST THAT INT. OCCURED
2758 024070  000001                                1                               ; 1 MILLISECOND
2759 024072  005204                                INC     R4                      ; WAIT FOR INTERRUPT FROM IOP
2760 024074  001370                                BNE     7$                      ; WAIT.  ERROR IF R4 WRAPS TO 0
2761
2762 024076                                        SETPRI  #PRI07                  ; RESTORE PRIORITY TO 7
     024076  012700  000340                        MOV     #PRI07,R0
     024102  104441                                TRAP    C$SPRI
2763 024104  012702  004453                        MOV     #QIRT,R2                ; ERROR MESSAGE POINTER
2764 024110  012703  004552                        MOV     #QIRT2,R3               ; ERROR MESSAGE POINTER
2765 024114                                        ERRHRD  45,ROMD,GENMSG          ; ERROR.  NO INTERRUPT FROM IOP...
     024114  104456                                TRAP    C$ERHRD
     024116  000055                                .WORD   45
     024120  003112                                .WORD   ROMD
     024122  016444                                .WORD   GENMSG
2766 024124                                        CKLOOP                          ; CHECK FOR LOOP ON TEST
     024124  104406                                TRAP    C$CLP1
2767 024126                                        EXIT    TST                     ; EXIT THIS TEST
     024126  104432                                TRAP    C$EXIT
     024130  000124                                .WORD   L10035-.
```

```
2769
2770 024132  000005                    8$:     RESET                           ; ISSUE A BUS RESET AS PART OF..
2771                                                                          ; ..THE IOP SELFTEST CODE.
2772 024134  004537  016754                    JSR     R5,RDELAY               ; WAIT FOR THE RESET TO COMPLETE
2773 024140  000062                            50.                             ; 50 MILLISECONDS
2774 024142  005761  000000                    TST     DPR0(R1)                ; TEST THE IOP'S DPR0 REGISTER
2775 024146  001413                            BEQ     9$                      ; BR MEANS TEST COMPLETED
2776 024150  012702  004453                    MOV     #QIRT,R2                ; QIR TEST MESSAGE ADDRESS
2777
2778 024154                                    ERRDF   46,NORES,NRES           ; FATAL ERROR.  NO RESPONSE FROM TEST
     024154  104455                            TRAP    C$ERDF
     024156  000056                            .WORD   46
     024160  003054                            .WORD   NORES
     024162  016412                            .WORD   NRES
2779 024164                                    CKLOOP                          ; CHECK FOR LOOP ON TEST
     024164  104406                            TRAP    C$CLP1
2780 024166  012737  177777  002206            MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
2781 024174                                    DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     024174  104444                            TRAP    C$DCLN
2782
2783 024176  016102  000004            9$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
2784 024202  033702  002266                    BIT     QIR,R2                  ; CHECK FOR ERROR IN QIR TEST
2785 024206  001413                            BEQ     10$                     ; BR, IF NO ERROR
2786 024210  043761  002266  000004            BIC     QIR,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2787 024216  016103  000006                    MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2788 024222  012702  004453                    MOV     #QIRT,R2                ; ERROR MESSAGE POINTER
2789 024226                                    ERRHRD  47,ROMD,RTERR           ; QIR TEST FAILED
     024226  104456                            TRAP    C$ERHRD
     024230  000057                            .WORD   47
     024232  003112                            .WORD   ROMD
     024234  016070                            .WORD   RTERR
2790
2791 024236                            10$:    CKLOOP                          ; CHECK FOR LOOP ON TEST
     024236  104406                            TRAP    C$CLP1
2792 024240                                    EXIT    TST                     ; EXIT THIS TEST
     024240  104432                            TRAP    C$EXIT
     024242  000012                            .WORD   L10035-.
2793
2794
2795                                   ;++
2796                                   ;
2797                                   ;       IOP INTERRUPT SERVICE ROUTINE FOR TEST 12.
2798                                   ;
2799                                   ;--
2800 024244                                    BGNSRV  QIRSRV
     024244                            QIRSRV::
2801
2802 024244  012737  177777  002240            MOV #-1,INTFLG                  ; SET FLAG TO INDICATE INT. OCCURED
2803 024252                                    ENDSRV                          ; EXIT SERVICE ROUTINE
     024252                            L10036:
     024252  000002                            RTI
2804
2805 024254                                    ENDTST
     024254                            L10035:
     024254  104401                            TRAP    C$ETST
```

```
                                .SBTTL  TEST 14: INVOKE THE TWO-PORT RAM TEST

                                ;++
                                ;
                                ;               IOP SELFTEST #13.
                                ;
                                ; THE ROM TEST OF THE IOP'S TWO-PORT RAM IS INVOKED.  THE TWO-PORT RAM
                                ; IS ALSO CONSIDERED AS THE LSI-11 BUS INTERFACE.
                                ;
                                ; THE PROTOCOL BETWEEN THIS PROGRAM AND THE IOP BREAKS DOWN FOR THIS
                                ; PARTICULAR TEST, BECAUSE THE IOP TEST OF THE TWO-PORT RAM MUST
                                ; DISABLE THE DPR IN ORDER TO TEST IT.  THEREFORE, THE STANDARD COMMUNI-
                                ; CATION METHOD ISN'T POSSIBLE.  THIS TEST SIMPLY INITIATES IOP TEST
                                ; #13 AND THEN DELAYS ABOUT 1 SECOND; AFTER WHICH, WE MUST ASSUME THAT
                                ; THE TEST HAS COMPLETED AND THE DPR HAS BEEN RE-ENABLED.  DPR2 IS THEN
                                ; CHECKED FOR ERROR BITS.
                                ;
                                ;--

024256                                  BGNTST

024256  012702  005507                  MOV     #ROMT13,R2              ; GET TITLE ADDRESS
024262  004537  017336                  JSR     R5,PNTFLG               ; SEE IF PNT FLAG IS SET
024266  005737  002206                  TST     DROPUN                  ; CHECK THIS UNIT FOR BEING DROPPED
024272  001401                          BEQ     1$                      ; BRANCH, IF NOT DROPPED
024274                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
024274  104444                          TRAP    C$DCLN

024276  004537  017014          1$:     JSR     R5,CKTPRO               ; SEE IF THE CURRENT IOP IS READY
024302  013701  002216                  MOV     QBASE,R1                ; R1 = IOP BASE ADDRESS
024306  013761  002270  000000          MOV     DPR,DPR0(R1)            ; SEND COMMAND TO DPR0
024314  004537  016754                  JSR     R5,RDELAY               ; DELAY BEFORE CHECKING FOR ERROR.
024320  011610                          5000.                           ; ABOUT 5 SECONDS.

024322  016102  000002                  MOV     DPR1(R1),R2             ; READ BOOT COMMAND STATUS REGISTER
024326  100005                          BPL     2$                      ; BR, IF NO COMMAND STATUS ERROR
024330                                  ERRHRD  50,CMND,CMDERR          ; ERROR.  BOOT CODE DIDN'T LIKE THE COMMAND
024330  104456                          TRAP    C$ERHRD
024332  000062                          .WORD   50
024334  003221                          .WORD   CMND
024336  016570                          .WORD   CMDERR
024340  000442                          BR      4$                      ; EXIT TEST
```

TEST 14: INVOKE THE TWO-PORT RAM TEST

```
2847
2848 024342  016102  000004          2$:     MOV     DPR2(R1),R2             ; READ IOP DPR2
2849 024346  033702  002270                  BIT     DPR,R2                  ; CHECK FOR ERROR IN DPR TEST
2850 024352  001435                          BEQ     4$                      ; BRANCH, IF SUCCESSFUL TEST
2851 024354  043761  002270  000004          BIC     DPR,DPR2(R1)            ; CLEAR THE ERROR BIT FOR THIS TIME.
2852 024362  016103  000006                  MOV     DPR3(R1),R3             ; READ DPR3 FOR EXTENDED INFO
2853 024366  032703  000010                  BIT     #BIT3,R3                ; CHECK IF BUS WRITES/INTERRUPTS RUN
2854 024372  001410                          BEQ     3$                      ; BR, IF THE TESTS WERE RUN
2855 024374  012702  013545                  MOV     #T13E3,R2               ; SETUP MESSAGE ADDRESS
2856 024400  004537  016722                  JSR     R5,SKIPED               ; PRINT THAT THE TESTS WERE NOT RUN
2857 024404  042703  000010                  BIC     #BIT3,R3                ; CLEAR THE BIT SO NEXT TEST NOT CONFUSED
2858 024410  005703                          TST     R3                      ; CHECK IF LEGITIMATE ERRORS EXIST
2859 024412  001415                          BEQ     4$                      ; BRANCH, IF NO ERRORS
2860
2861 024414  012702  004626          3$:     MOV     #DPRT,R2                ; ERROR MESSAGE POINTER
2862 024420                                  ERRDF   51,ROMD,RTERR           ; DPR TEST FAILED
     024420  104455                          TRAP    C$ERDF
     024422  000063                          .WORD   51
     024424  003112                          .WORD   ROMD
     024426  016070                          .WORD   RTERR
2863 024430                                  DODU    LUN                     ; FATAL ERROR.  DROP THIS UNIT
     024430  013700  002210                  MOV     LUN,R0
     024434  104451                          TRAP    C$DODU
2864 024436  012737  177777  002206          MOV     #-1,DROPUN              ; SET DROPPED UNIT FLAG
2865 024444                                  DOCLN                           ; ABORT THE DIAGNOSTIC FOR THIS UNIT
     024444  104444                          TRAP    C$DCLN
2866
2867 024446                          4$:     CKLOOP                          ; CHECK FOR LOOP ON TEST
     024446  104406                          TRAP    C$CLP1
2868
2869 024450                                  ENDTST
     024450                      L10037:
     024450  104401                          TRAP    C$ETST
```

```
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TEST 14: INVOKE THE TWO-PORT RAM TEST

   2871
   2872                                 .TITLE PARAMETER CODING
   2873                                 .SBTTL  IDENTIFICATION
   2874
   2875                                 .SBTTL  HARDWARE PARAMETER CODING SECTION
   2876
   2877                                 ;++
   2878                                 ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
   2879                                 ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
   2880                                 ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
   2881                                 ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
   2882                                 ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
   2883                                 ; WITH THE OPERATOR.
   2884                                 ;--
   2885
   2886 024452                                  BGNHRD
        024452  000033                          .WORD L10040-L$HARD/2
        024454                          L$HARD::
   2887
   2888 024454                                  GPRMD   CCPU,0,D,740,2,15.,NO           ; GET SBC ID SWITCH
        024454  000042                          .WORD   T$CODE
        024456  003415                          .WORD   CCPU
        024460  000740                          .WORD   740
        024462  000002                          .WORD   T$LOLIM
        024464  000017                          .WORD   T$HILIM
   2889
   2890 024466                                  GPRML   BASE,2,-1,YES                   ; GET LSI-11 BUS BASE ADDR. RANGE
        024466  001130                          .WORD   T$CODE
        024470  003443                          .WORD   BASE
        024472  177777                          .WORD   -1
   2891
   2892 024474                                  GPRML   LOOP1,4,-1,YES                  ; ASK IF LOOPBACK...
        024474  002130                          .WORD   T$CODE
        024476  003535                          .WORD   LOOP1
        024500  177777                          .WORD   -1
   2893                                                                                 ; ...IS INSTALLED FOR SLU1
   2894
   2895 024502                                  GPRML   LOOP2,6,-1,YES                  ; ASK IF CHANNEL A LOOPBACK INSTALLED
        024502  003130                          .WORD   T$CODE
        024504  003622                          .WORD   LOOP2
        024506  177777                          .WORD   -1
   2896
   2897 024510                                  GPRML   LOOP3,10,-1,YES                 ; ASK IF CHANNEL B LOOPBACK INSTALLED
        024510  004130                          .WORD   T$CODE
        024512  003702                          .WORD   LOOP3
        024514  177777                          .WORD   -1
   2898
   2899 024516                                  GPRML   LOOP4,12,-1,YES                 ; ASK IF PARALLEL LOOPBACK INSTALLED
        024516  005130                          .WORD   T$CODE
        024520  003762                          .WORD   LOOP4
        024522  177777                          .WORD   -1
```

```
2901
2902 024524                            GPRML   SLU2CF,14,-1,YES        ; IS SLU2 SET FOR DMA?
     024524  006130                     .WORD   T$CODE
     024526  004027                     .WORD   SLU2CF
     024530  177777                     .WORD   -1
2903
2904 024532                            GPRML   UROM,16,-1,YES         ; ASK IF USER ROM IS TO...
     024532  007130                     .WORD   T$CODE
     024534  004127                     .WORD   UROM
     024536  177777                     .WORD   -1
2905                                                                   ; ...BE TESTED.
2906 024540                            EXIT    HRD
     024540  001004                     .WORD   T$CODE
2907 024542                            ENDHRD
                                       .EVEN
     024542                    L10040:
2908
```

```
                                .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.
                                ;--

024542                                  BGNSFT
024542  000000                          .WORD L10041-L$SOFT/2
024544                          L$SOFT::

024544                                  ENDSFT
                                        .EVEN
024544                          L10041:

024544                          $PATCH::
024544                                  .BLKW   50

024664                                  LASTAD
                                        .EVEN
024664  025320                          .WORD T$FREE
024666  000214                          .WORD T$SIZE
024670                          L$LAST::
```

```
                                        ;++
                                        ; HARD-CODED HARDWARE P-TABLES
                                        ;
                                        ; THERE ARE 14 HARDWARE P-TABLES HERE; HOWEVER, KEEP IN MIND THAT
                                        ; THE MAXIMUM LEGAL NUMBER OF KXT11-CA IOP'S ON ANY ONE SYSTEM IS
                                        ; 14(D), AND THE LEGAL UNIT NUMBERS ARE 2 THROUGH 15(D).  IOP UNITS
                                        ; 0 AND 1 ARE RESERVED FOR THE NON-MULTIPROCESSING ARBITER OR DMA
                                        ; DEVICE AND THE HOST MULTIPROCESSOR ARBITER, RESPECTIVELY, AND SHOULD
                                        ; NOT BE USED.  IOPS 0 AND 1 AUTOMATICALLY DISCONNECT THE IOP FROM
                                        ; THE LSI-11 BUS.
                                        ;--

2943 024670                             BGNSETUP        14.

                                        ; UNIT 0

2947 024670                             BGNPTAB
     024670  024720                     .WORD   L10043
     024672  000010                     .WORD   L10044-./2-1
     024674                     L10042:
2948 024674  000000                     .WORD   0
2949 024676  000001                     .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
2950 024700  000000                     .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
2951 024702  000000                     .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
2952 024704  000000                     .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
2953 024706  000000                     .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
2954 024710  000000                     .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
2955 024712  000000                     .WORD   0               ; TEST USER ROM DEFAULT IS NO
2956 024714                             ENDPTAB
     024714                     L10044:
2957
2958                                    ; UNIT 1
2959
2960 024714                             BGNPTAB
     024714  024744                     .WORD   L10045
     024716  000010                     .WORD   L10046-./2-1
     024720                     L10043:
2961 024720  000000                     .WORD   0
2962 024722  000001                     .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
2963 024724  000000                     .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
2964 024726  000000                     .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
2965 024730  000000                     .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
2966 024732  000000                     .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
2967 024734  000000                     .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
2968 024736  000000                     .WORD   0               ; TEST USER ROM DEFAULT IS NO
2969 024740                             ENDPTAB
     024740                     L10046:
```

```
                                                ; UNIT 2

                                                BGNPTAB
024740                                          .WORD   L10047
024740  024770                                  .WORD   L10050-./2-1
024742  000010                          L10045:
024744
024744  000000                                  .WORD   0
024746  000001                                  .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
024750  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
024752  000000                                  .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
024754  000000                                  .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
024756  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
024760  000000                                  .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
024762  000000                                  .WORD   0               ; TEST USER ROM DEFAULT IS NO
024764                                          ENDPTAB
024764                          L10050:

                                                ; UNIT 3

024764                                          BGNPTAB
024764  025014                                  .WORD   L10051
024766  000010                                  .WORD   L10052-./2-1
024770                          L10047:
024770  000000                                  .WORD   0
024772  000001                                  .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
024774  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
024776  000000                                  .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
025000  000000                                  .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
025002  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
025004  000000                                  .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
025006  000000                                  .WORD   0               ; TEST USER ROM DEFAULT IS NO
025010                                          ENDPTAB
025010                          L10052:
```

```
                                                ; UNIT 4
                                                BGNPTAB
025010                                          .WORD   L10053
025010  025040                                  .WORD   L10054-./2-1
025012  000010                          L10051:
025014                                  .WORD   0
025014  000000                          .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
025016  000001                          .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
025020  000000                          .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
025022  000000                          .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
025024  000000                          .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
025026  000000                          .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
025030  000000                          .WORD   0               ; TEST USER ROM DEFAULT IS NO
025032  000000                          ENDPTAB
025034                          L10054:

                                                ; UNIT 5

                                                BGNPTAB
025034                                          .WORD   L10055
025034  025064                                  .WORD   L10056-./2-1
025036  000010                          L10053:
025040                                  .WORD   0
025040  000000                          .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
025042  000001                          .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
025044  000000                          .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
025046  000000                          .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
025050  000000                          .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
025052  000000                          .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
025054  000000                          .WORD   0               ; TEST USER ROM DEFAULT IS NO
025056  000000                          ENDPTAB
025060                          L10056:
```

```
                                                ; UNIT 6
                                                BGNPTAB
025060                                          .WORD   L10057
025060  025110                                  .WORD   L10060-./2-1
025062  000010                          L10055:
025064
025064  000000                                  .WORD   0
025066  000001                                  .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
025070  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
025072  000000                                  .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
025074  000000                                  .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
025076  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
025100  000000                                  .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
025102  000000                                  .WORD   0               ; TEST USER ROM DEFAULT IS NO
025104                                          ENDPTAB
025104                          L10060:

                                                ; UNIT 7

025104                                          BGNPTAB
025104  025134                                  .WORD   L10061
025106  000010                                  .WORD   L10062-./2-1
025110                          L10057:
025110  000000                                  .WORD   0
025112  000001                                  .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
025114  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
025116  000000                                  .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
025120  000000                                  .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
025122  000000                                  .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
025124  000000                                  .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
025126  000000                                  .WORD   0               ; TEST USER ROM DEFAULT IS NO
025130                                          ENDPTAB
025130                          L10062:
```

```
3052
3053                                        ; UNIT 8
3054
3055 025130                                 BGNPTAB
     025130  025160                         .WORD   L10063
     025132  000010                         .WORD   L10064-./2-1
     025134                         L10061:
3056 025134  000000                         .WORD   0
3057 025136  000001                         .WORD   1           ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3058 025140  000000                         .WORD   0           ; LOOP-BACK DEFAULT IS NO (SLU1)
3059 025142  000000                         .WORD   0           ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3060 025144  000000                         .WORD   0           ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3061 025146  000000                         .WORD   0           ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3062 025150  000000                         .WORD   0           ; SLU2 DMA OPERATION DEFAULT IS NO
3063 025152  000000                         .WORD   0           ; TEST USER ROM DEFAULT IS NO
3064 025154                                 ENDPTAB
     025154                         L10064:
3065
3066                                        ; UNIT 9
3067
3068 025154                                 BGNPTAB
     025154  025204                         .WORD   L10065
     025156  000010                         .WORD   L10066-./2-1
     025160                         L10063:
3069 025160  000000                         .WORD   0
3070 025162  000001                         .WORD   1           ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3071 025164  000000                         .WORD   0           ; LOOP-BACK DEFAULT IS NO (SLU1)
3072 025166  000000                         .WORD   0           ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3073 025170  000000                         .WORD   0           ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3074 025172  000000                         .WORD   0           ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3075 025174  000000                         .WORD   0           ; SLU2 DMA OPERATION DEFAULT IS NO
3076 025176  000000                         .WORD   0           ; TEST USER ROM DEFAULT IS NO
3077 025200                                 ENDPTAB
     025200                         L10066:
```

```
3079
3080                                            ; UNIT 10
3081
3082 025200                                     BGNPTAB
     025200  025230                             .WORD   L10067
     025202  000010                             .WORD   L10070-./2-1
     025204                             L10065:
3083 025204  000000                             .WORD   0
3084 025206  000001                             .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3085 025210  000000                             .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
3086 025212  000000                             .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3087 025214  000000                             .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3088 025216  000000                             .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3089 025220  000000                             .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
3090 025222  000000                             .WORD   0               ; TEST USER ROM DEFAULT IS NO
3091 025224                                     ENDPTAB
     025224                             L10070:
3092
3093                                            ; UNIT 11
3094
3095 025224                                     BGNPTAB
     025224  025254                             .WORD   L10071
     025226  000010                             .WORD   L10072-./2-1
     025230                             L10067:
3096 025230  000000                             .WORD   0
3097 025232  000001                             .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3098 025234  000000                             .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
3099 025236  000000                             .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3100 025240  000000                             .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3101 025242  000000                             .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3102 025244  000000                             .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
3103 025246  000000                             .WORD   0               ; TEST USER ROM DEFAULT IS NO
3104 025250                                     ENDPTAB
     025250                             L10072:
```

```
3106
3107                                        ; UNIT 12
3108
3109 025250                                 BGNPTAB
     025250  025300                         .WORD   L10073
     025252  000010                         .WORD   L10074-./2-1
     025254                         L10071:
3110 025254  000000                         .WORD   0
3111 025256  000001                         .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3112 025260  000000                         .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
3113 025262  000000                         .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3114 025264  000000                         .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3115 025266  000000                         .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3116 025270  000000                         .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
3117 025272  000000                         .WORD   0               ; TEST USER ROM DEFAULT IS NO
3118 025274                                 ENDPTAB
     025274                         L10074:
3119
3120                                        ; UNIT 13
3121
3122 025274                                 BGNPTAB
     025274  000000                         .WORD   0
     025276  000010                         .WORD   L10076-./2-1
     025300                         L10073:
3123 025300  000000                         .WORD   0
3124 025302  000001                         .WORD   1               ; BUS ADDRESS RANGE (LOW IS DEFAULT)
3125 025304  000000                         .WORD   0               ; LOOP-BACK DEFAULT IS NO (SLU1)
3126 025306  000000                         .WORD   0               ; CHANNEL A LOOP-BACK DEFAULT IS NO (SLU2)
3127 025310  000000                         .WORD   0               ; CHANNEL B LOOP-BACK DEFAULT IS NO (SLU2)
3128 025312  000000                         .WORD   0               ; LOOP-BACK DEFAULT IS NO (PARALLEL I/O)
3129 025314  000000                         .WORD   0               ; SLU2 DMA OPERATION DEFAULT IS NO
3130 025316  000000                         .WORD   0               ; TEST USER ROM DEFAULT IS NO
3131 025320                                 ENDPTAB
     025320                         L10076:
3132
3133 025320                                 ENDSETUP
3134         000001                 .END
```

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SYMBOL TABLE

```
ABORT   017656          C$DU  = 000053          DPR2  = 000004 G        G$RADL= 000120          L$DESC  014432 G
ADR   = 000020 G        C$EDIT= 000003          DPR3  = 000006 G        G$RADO= 000020          L$DESP  002076 G
ASSEMB= 000010          C$ERDF= 000055          DPR4  = 000010 G        G$XFER= 000004          L$DEVP  002060 G
BADSW   003151          C$ERHR= 000056          DPR5  = 000012 G        G$YES = 000010          L$DISP  002124 G
BASE    003443          C$ERRO= 000060          DPR6  = 000014 G        HELP  = 000000          L$DLY   002116 G
BEVNT   004174          C$ERSF= 000054          DPR7  = 000016 G        HIMEM   002242          L$DTP   002040 G
BIT0  = 000001 G        C$ERSO= 000057          DROP    014772          HOE   = 100000 G        L$DTYP  002034 G
BIT00 = 000001 G        C$ESCA= 000010          DROPUN  002206          IBE   = 010000 G        L$DU    020014 G
BIT01 = 000002 G        C$ESEG= 000005          DSPCOD  002122 G        IDU   = 000040 G        L$DUT   002072 G
BIT02 = 000004 G        C$ESUB= 000003          EF.CON= 000036 G        IER   = 020000 G        L$DVTY  014422 G
BIT03 = 000010 G        C$ETST= 000001          EF.NEW= 000035 G        INITNG  015676          L$EF    002052 G
BIT04 = 000020 G        C$EXIT= 000032          EF.PWR= 000034 G        INITOK  015763          L$ENVI  002044 G
BIT05 = 000040 G        C$GETB= 000026          EF.RES= 000037 G        INTACK  015606          L$ETP   002102 G
BIT06 = 000100 G        C$GETW= 000027          EF.STA= 000040 G        INTFLG  002240          L$EXP1  002046 G
BIT07 = 000200 G        C$GMAN= 000043          END     017660          IOPN    002212          L$EXP4  002064 G
BIT08 = 000400 G        C$GPHR= 000042          EVL   = 000004 G        IOPNN   002214          L$EXP5  002066 G
BIT09 = 001000 G        C$GPLO= 000030          E$END = 002100          ISR   = 000100 G        L$HARD  024454 G
BIT1  = 000002 G        C$GPRI= 000040          E$LOAD= 000035          IXE   = 004000 G        L$HIME  002120 G
BIT10 = 002000 G        C$INIT= 000011          F$AU  = 000015          I$AU  = 000041          L$HPCP  002016 G
BIT11 = 004000 G        C$INLP= 000020          F$AUTO= 000020          I$AUTO= 000041          L$HPTP  002022 G
BIT12 = 010000 G        C$MANI= 000050          F$BGN = 000040          I$CLN = 000041          L$HW    002162 G
BIT13 = 020000 G        C$MEM = 000031          F$CLEA= 000007          I$DU  = 000041          L$ICP   002104 G
BIT14 = 040000 G        C$MSG = 000023          F$DU  = 000016          I$HRD = 000041          L$INIT  017412 G
BIT15 = 100000 G        C$OPEN= 000034          F$END = 000041          I$INIT= 000041          L$LADP  002026 G
BIT2  = 000004 G        C$PNTB= 000014          F$HARD= 000004          I$MOD = 000041          L$LAST  024670 G
BIT3  = 000010 G        C$PNTF= 000017          F$HW  = 000013          I$MSG = 000041          L$LOAD  002100 G
BIT4  = 000020 G        C$PNTS= 000016          F$INIT= 000006          I$PROT= 000040          L$LUN   002074 G
BIT5  = 000040 G        C$PNTX= 000015          F$JMP = 000050          I$PTAB= 000041          L$MREV  002050 G
BIT6  = 000100 G        C$QIO = 000377          F$MOD = 000000          I$PWR = 000041          L$NAME  002000 G
BIT7  = 000200 G        C$RDBU= 000007          F$MSG = 000011          I$RPT = 000041          L$PRIO  002042 G
BIT8  = 000400 G        C$REFG= 000047          F$PROT= 000021          I$SEG = 000041          L$PROT  017404 G
BIT9  = 001000 G        C$RESE= 000033          F$PWR = 000017          I$SETU= 000041          L$PRT   002112 G
BOE   = 000400 G        C$REVI= 000003          F$RPT = 000012          I$SFT = 000041          L$REPP  002062 G
BVNT    002254          C$RFLA= 000021          F$SEG = 000003          I$SRV = 000041          L$REV   002010 G
CCPU    003415          C$RPT = 000025          F$SOFT= 000005          I$SUB = 000041          L$RPT   017402 G
CKTPRO  017014          C$SEFG= 000046          F$SRV = 000010          I$TST = 000041          L$SOFT  024544 G
CMDERR  016570 G        C$SPRI= 000041          F$SUB = 000002          J$JMP = 000167          L$SPC   002056 G
CMND    003221          C$SVEC= 000037          F$SW  = 000014          LOE   = 040000 G        L$SPCP  002020 G
CMNDR   015142          C$TPRI= 000013          F$TEST= 000001          LOOPB1  002222          L$SPTP  002024 G
CPU     002252          DELCNT  002236          GENMSG  016444 G        LOOPB2  002224          L$STA   002030 G
CPUT    004643          DFPTBL  002162 G        GLBDAT  002204 G        LOOPB3  002226          L$SW    002204 G
CSR     002244          DIAGMC= 000000          GLBEQA  002204 G        LOOPB4  002230          L$TEST  002114 G
CSRT    004145          DMA     002264          G$CNTO= 000200          LOOP1   003535          L$TIML  002014 G
C$AU  = 000052          DMAL    004353          G$DELM= 000372          LOOP2   003622          L$UNIT  002012 G
C$AUTO= 000061          DMAT    004413          G$DISP= 000003          LOOP3   003702          L10000  002202
C$BRK = 000022          DPR     002270          G$EXCP= 000400          LOOP4   003762          L10001  002204
C$BSEG= 000004          DPRT    004626          G$HILI= 000002          LOT   = 000010 G        L10002  016364
C$BSUB= 000002          DPR0  = 000000 G        G$LOLI= 000001          LUN     002210          L10003  016410
C$CEFG= 000045          DPR1  = 000002 G        G$NO  = 000000          L$ACP   002110 G        L10004  016442
C$CLCK= 000062          DPR10 = 000020 G        G$OFFS= 000400          L$APT   002036 G        L10005  016516
C$CLEA= 000012          DPR11 = 000022 G        G$OFSI= 000376          L$AU    020050 G        L10006  016566
C$CLOS= 000035          DPR12 = 000024 G        G$PRMA= 000001          L$AUT   002070 G        L10007  016616
C$CLP1= 000006          DPR13 = 000026 G        G$PRMD= 000002          L$AUTO  017662 G        L10010  016646
C$CVEC= 000036          DPR14 = 000030 G        G$PRML= 000000          L$CCP   002106 G        L10011  016720
C$DCLN= 000044          DPR15 = 000032 G        G$RADA= 000140          L$CLEA  020006 G        L10012  017402
C$DODU= 000051          DPR16 = 000034 G        G$RADB= 000000          L$CO    002032 G        L10014  017660
C$DRPT= 000024          DPR17 = 000036 G        G$RADD= 000040          L$DEPO  002011 G        L10015  017702
```

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SYMBOL TABLE

```
L10016  020012          NOTPR   003353          ROMT7B  005220          T$PCNT= 000000          T11E4   012524
L10017  020046          NOTRDY  003264          ROM11A  005346          T$PTAB= 010075          T11E5   012573
L10020  020054          NOTST   015240          ROM11B  005416          T$PTHV= 000016          T12     023212 G
L10021  020214          NRES    016412 G        RTERR   016070 G        T$PTNU= 000016          T12ADR  002314
L10022  020416          NXM     016366 G        RT1     002320          T$SAVL= 177777          T12E0   012625
L10023  020636          NXMVEC= 000004          RT10    002606          T$SEGL= 177777          T12E1   012721
L10024  021072          O$APTS= 000000          RT11    002640          T$SIZE= 000214          T12E2   012771
L10025  021312          O$AU  = 000001          RT12    002672          T$SUBN= 000000          T12E3   013052
L10026  021536          O$BGNR= 000001          RT13    002724          T$TAGL= 177777          T12E4   013132
L10027  021774          O$BGNS= 000000          RT2     002352          T$TAGN= 010077          T12E5   013205
L10030  022254          O$DU  = 000001          RT3     002404          T$TEMP= 000005          T12E6   013262
L10031  022514          O$ERRT= 000000          RT4     002436          T$TEST= 000016          T13     023474 G
L10032  022746          O$GNSW= 000000          RT5     002470          T$TSTM= 177777          T13ADR  002316
L10033  023210          O$POIN= 000001          RT6     002522          T$TSTS= 000001          T13E0   013336
L10034  023472          O$SETU= 000001          RT7     002554          T$$AU = 010020          T13E1   013404
L10035  024254          PLLIO   002262          SAVEC   002204          T$$AUT= 010015          T13E10  014277
L10036  024252          PLLP    004331          SETSW   015264          T$$CLE= 010016          T13E11  014350
L10037  024450          PNT   = 001000 G        SFPTBL  002204 G        T$$DAT= 010076          T13E2   013460
L10040  024542          PNTFLG  017336          SKIPED  016722          T$$DU = 010017          T13E3   013545
L10041  024544          PRI   = 002000 G        SLOT    015532          T$$HAR= 010040          T13E4   013653
L10042  024674          PRI00 = 000000 G        SLU1    002256          T$$HW = 010000          T13E5   013727
L10043  024720          PRI01 = 000040 G        SLU1T   004202          T$$INI= 010014          T13E6   014005
L10044  024714          PRI02 = 000100 G        SLU2    002260          T$$MSG= 010011          T13E7   014105
L10045  024744          PRI03 = 000140 G        SLU2A   004235          T$$PC = 000016          T13E8   014161
L10046  024740          PRI04 = 000200 G        SLU2B   004273          T$$PRO= 010013          T13E9   014227
L10047  024770          PRI05 = 000240 G        SLU2CF  004027          T$$PTA= 010075          T14     024256 G
L10050  024764          PRI06 = 000300 G        SL2DMA  002232          T$$RPT= 010012          T2      020216 G
L10051  025014          PRI07 = 000340 G        SOFT    016520 G        T$$SOF= 010041          T2ADR   002274
L10052  025010          QBASE   002216          SVCGBL= 000000          T$$SRV= 010036          T2E0    006200
L10053  025040          QIR     002266          SVCINS= 000000          T$$SW = 010001          T2E1    006253
L10054  025034          QIRSRV  024244 G        SVCSUB= 177777          T$$TES= 010037          T2E2    006323
L10055  025064          QIRT    004453          SVCTAG= 000000          T1      020056 G        T2E3    006374
L10056  025060          QIRT1   004500          SVCTST= 177777          T1ADR   002272          T2E4    006457
L10057  025110          QIRT2   004552          SWITCH  015047          T1E0    005524          T2E5    006542
L10060  025104          QIRVEC  002220          S$LSYM= 010000          T1E1    005570          T2E6    006613
L10061  025134          RAM     002246          TESTID  014570          T1E2    005634          T2E7    006661
L10062  025130          RAMT    004151          TPR     015377          T1E3    005700          T2E8    006725
L10063  025160          RDELAY  016754          TPRDIS  016650 G        T1E4    005746          T2E9    007003
L10064  025154          REINIT  017210          TPR1    015453          T1E5    006016          T3      020420 G
L10065  025204          ROM     002250          TSTERR  014653          T1E6    006064          T3ADR   002276
L10066  025200          ROMD    003112          TSTNO   016045          T1E7    006132          T3E0    007061
L10067  025230          ROMETX  014556          TST1    004663          T10     022516 G        T3E1    007137
L10070  025224          ROMSG   014531          T$ARGC= 000002          T10ADR  002310          T3E2    007215
L10071  025254          ROMT    004170          T$CODE= 001004          T10E0   011477          T3E3    007313
L10072  025250          ROMTST  002234          T$ERRN= 000063          T10E1   011560          T4      020640 G
L10073  025300          ROMT1   004721          T$EXCP= 000000          T10E2   011621          T4ADR   002300
L10074  025274          ROMT10  005267          T$FLAG= 000041          T10E3   011657          T5      021074 G
L10076  025320          ROMT11  005317          T$FREE= 025320          T10E4   011714          T5ADR   002302
MDHEDR  002000 G        ROMT12  005462          T$GMAN= 000000          T10E5   011767          T5E0    007411
NEXT    017470          ROMT13  005507          T$HILI= 000017          T10E6   012037          T5E1    007471
NOINFO  014712          ROMT2   004744          T$LAST= 000001          T10E7   012116          T5E2    007544
NOIOP   002756          ROMT3   004767          T$LOLI= 000002          T11     022750 G        T5E3    007607
NONO    016620 G        ROMT4   005023          T$LSYM= 010000          T11ADR  002312          T6      021314 G
NOREG   014500          ROMT5   005062          T$LTNO= 000016          T11E0   012161          T6ADR   002304
NORES   003054          ROMT6   005117          T$NEST= 177777          T11E1   012260          T6E0    007647
NOSEC   017704          ROMT7 = ****** GX       T$NS0 = 000005          T11E2   012365          T6E1    007745
NOTCLR  015321          ROMT7A  005151          T$NS1 = 000010          T11E3   012437          T6E2    010025
```

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PARAMETER CODING        MACRO M1200  26-JUL-83 08:14  PAGE 154-3
SYMBOL TABLE

T6E3    010074          T7E0    010337          T7E4    010634          T7E9    011227          X$ALWA= 000000
T6E4    010154          T7E1    010417          T7E5    010707          T8      021776 G        X$FALS= 000040
T6E5    010223          T7E10   011320          T7E6    010775          T9      022256 G        X$OFFS= 000400
T6E6    010266          T7E11   011412          T7E7    011054          UAM   = 000200 G        X$TRUE= 000020
T7      021540 G        T7E2    010504          T7E8    011132          UROM    004127          $PATCH  024544 G
T7ADR   002306          T7E3    010560

. ABS.  025320      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  28581 WORDS  ( 112 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:03:34
CZKTCA,CZKTCA/-SP=SVC34/ML,CZKTCA.P11
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