DPV-11

DPV-11 FUNC. DIAG
CVDPVB0

AH-S035B-MC
FICHE 1 OF 1

```
                        .NLIST  TOC
                        .REM @
```

IDENTIFICATION

PRODUCT CODE:	AC-S033B-MC
PRODUCT NAME:	CVDPVB0 DPV11 FUNC DIAG
PRODUCT DATE:	OCTOBER 1980
MAINTAINER:	DIAGNOSTIC ENGINEERING
AUTHOR:	MIKE O'CONNOR

REVISION HISTORY:

REV	DATE	AUTHOR	REASON
A	JUNE 80	MIKE OCONNOR	ORIGINAL RELEASE
B	OCT. 80	MIKE OCONNOR	1. CHANGE CHARACTER LENGTH IN TEST 37 2. CHANGE TIMEOUT IN TEST 29 3. ENHANCEMENTS

CONTENTS

1.0 INTRODUCTION

2.0 HARDWARE REQUIREMENTS

3.0 PRELIMINARY PROGRAM REQUIREMENTS

4.0 GENERAL PROGRAM CONSIDERATIONS
    4.1 DIAGNOSTIC SUPERVISOR
    4.2 EXECUTION TIME
    4.3 XXDP+
    4.4 ACT/SLIDE
    4.5 APT
    4.6 MEMORY MANAGEMENT
    4.7 MEMORY PARITY OPTION
    4.8 ERROR LOGGING

5.0 PROGRAM LOAD MEDIA

6.0 OPERATING INSTRUCTIONS
    6.1 LOADING AND STARTING PROCEDURES
        6.1.1 LOADING PROCEDURES
        6.1.2 STARTING PROCEDURES
        6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION
    6.2 INITIAL DIALOGUE
    6.3 PROGRAM OPTIONS
        6.3.1 START COMMAND
            6.3.1.1 TESTS SWITCH
            6.3.1.2 PASS SWITCH
            6.3.1.3 FLAGS SWITCH
            6.3.1.4 END OF PASS SWITCH
            6.3.1.5 EFFECT OF START COMMAND
        6.3.2 RESTART COMMAND
            6.3.2.1 TESTS, PASS, AND FLAG SWITCHES
            6.3.2.2 UNITS SWITCH
            6.3.2.3 EFFECT OF RESTART COMMAND
        6.3.3 CONTINUE COMMAND
            6.3.3.1 PASS SWITCH
            6.3.3.2 FLAGS SWITCH
            6.3.3.3 EFFECT OF CONTINUE COMMAND
        6.3.4 PROCEED COMMAND
            6.3.4.1 FLAGS SWITCH
            6.3.4.2 EFFECT OF PROCEED COMMAND
        6.3.5 ADD COMMAND
            6.3.5.1 UNITS SWITCH
            6.3.5.2 EFFECT OF ADD COMMAND
        6.3.6 DROP COMMAND
            6.3.6.1 UNITS SWITCH
            6.3.6.2 EFFECT OF DROP COMMAND
        6.3.7 PRINT COMMAND
            6.3.7.1 EFFECT OF PRINT COMMAND
        6.3.8 DISPLAY COMMAND
            6.3.8.1 UNITS SWITCH

58 6.3.8.2 EFFECT OF DISPLAY COMMAND
59 6.3.9 FLAGS COMMAND
60 6.3.9.1 EFFECT OF FLAGS COMMAND
61 6.3.10 ZFLAGS COMMAND
62 6.3.10.1 EFFECT OF ZFLAGS COMMAND
63 6.3.11 CONTROL CHARACTERS
64 6.3.12 HARDWARE PARAMETERS
65 6.3.13 SOFTWARE PARAMETERS
66 6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE
67
68 7.0 DEVICE INFORMATION TABLES
69
70 8.0 TEST DESCRIPTIONS
71 8.1 DATA PATTERNS USED
72
73 9.0 ERROR INFORMATION
74 9.1 ERROR REPORTING

1.0 INTRODUCTION

THIS PROGRAM WILL BE IMPLEMENTED USING THE DIAGNOSTIC SUPERVISOR AND A STRUCTURED PROGRAMMING APPROACH. BECAUSE THE DESIGN WILL CONFORM TO THE SUPERVISOR (STANDALONE VERSION) THE PROGRAM WILL BE COMPATIBLE WITH ACT, APT, XXDP+, AND SLIDE.

THROUGH DIALOGUE WITH THE OPERATOR, THE PROGRAM WILL ALLOW MODIFICATION OF DEVICE PARAMETERS, SUCH AS LSI-BUS ADDRESS, VECTOR ADDRESSES AND DEVICE PRIORITY. IN ADDITION, THE OPERATOR CAN SPECIFY PARTICULAR TESTS TO BE RUN AND A VARIETY OF LOOPING, RUNNING, AND REPORTING MODES.

DEVICE ERRORS WILL BE REPORTED AS THEY OCCUR. THE REPORT WILL INCLUDE A TEST NUMBER AND DESCRIPTION OF THE ERROR, GOOD AND BAD TEST DATA, AND APPLICABLE DEVICE REGISTER CONTENTS.

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE DPV11 FUNCTIONAL DIAGNOSTIC TESTS:

A LSI11 OR PDP11/03
16K MEMORY
CONSOLE TERMINAL
DPV11

3.0 PRELIMINARY PROGRAM REQUIREMENTS

IT IS ASSUMED THAT THE PROCESSOR IS IN PROPER WORKING CONDITION.

THE DEVICE ADDRESS AND THE INTERRUPT VECTOR MUST BE KNOWN BEFORE ANSWERING THE USER DIALOGUE. THE USER SHOULD ALSO KNOW WHETHER THE CPU IS A LSI11 (M7264), A LSI11/2 (M7270), OR A LSI11/23 (M8186). FINALLY THE USER MUST DECIDE THE TYPE OF TURNAROUND IN ORDER TO DETERMINE THE CONNECTOR (IF ANY) IS NECESSARY.

4.0 GENERAL PROGRAM CONSIDERATIONS
4.1 DIAGNOSTIC SUPERVISCR

THIS PROGRAM IS COMPATIBLE WITH THE STANDALONE DIAGNOSTIC SUPERVISOR, AND MUST BE LOADED TO BE CO-RESIDENT WITH THE SUPERVISOR, OR BE PREVIOUSLY COMBINED WITH THE SUPERVISOR AND LOADED AS A SINGLE FILE. IN EITHER CASE, THE COMBINED PROGRAM WILL NOT EXCEED 16K OF MEMORY.

4.2 EXECUTION TIME

EXECUTION TIME IS DEPENDENT ON THE PROCESSOR SPEED AND THE TYPE OF LOOPBACK
THE FOLLOWING ARE THE TIMES TO COMPLETE THE 1ST PASS:

	RS423 (OR INTERNAL)	RS422
LSI11 (KD11-F M7264 MODULE):	10 SECONDS	30 SEC.
LSI11/2 (KD11-HA M7270 MODULE):	10 SECONDS	30 SEC.
LSI11/23(KDF11-AA M8186 MODULE):	7 SECONDS	5 SEC.

4.3 XXDP+

THIS PROGRAM MAY BE LOADED UNDER XXDP+, AND MAY BE RUN IN
DUMP MODE OR CHAIN MODE.

4.4 ACT/SLIDE

THIS PROGRAM MAY BE LOADED UNDER ACT OR SLIDE AND MAY BE RUN
IN DUMP MODE OR CHAIN MODE.

4.5 APT

THIS PROGRAM MAY BE LOADED BY THE APT SYSTEM (INCLUDING
APT-RD) AND RUN IN PROGRAM MODE OR SCRIPT MODE.

4.6 MEMORY MANAGEMENT

THERE IS NO MEMORY MANAGEMENT USE IN THIS DIAGNOSTIC.

4.7 MEMORY PARITY OPTION

IF PARITY MEMORY IS INSTALLED, MEMORY PARITY TRAPS ARE
DISABLED BY THE PROGRAM.

4.8 ERROR LOGGING

AT THE END OF EACH PASS ON ALL UNITS, THE PROGRAM PRINTS OUT
THE CUMULATIVE TOTAL NUMBER OF ERRORS SINCE THE LAST START OR
RESTART COMMAND.

5.0 PROGRAM LOAD MEDIA

THIS PROGRAM CAN BE LOADED FROM PAPER TAPE USING THE
ABSOLUTE LOADER OR FROM ACT, SLIDE, OR APT SYSTEMS, OR FROM
ANY MEDIA SUPPORTED BY XXDP+. WHEN USING THE PAPER TAPE
ABSOLUTE LOADER, THE PROGRAM SHOULD BE LOADED FIRST,
FOLLOWED BY THE DIAGNOSTIC SUPERVISOR. WHEN USING XXDP+, THE
DIAGNOSTIC SUPERVISOR SHOULD BE LOADED FIRST, FOLLOWED BY
THE DIAGNOSTIC PROGRAM.

```
                                6.0 OPERATING INSTRUCTIONS
                                6.1 LOADING AND STARTING PROCEDURES

                                6.1.1 LOADING PROCEDURES

                                THIS PROGRAM MAY BE LOADED FROM PAPER TAPE USING THE
                                ABSOLUTE LOADER.  IT MAY ALSO BE LOADED FROM ANY XXDP+ LOAD
                                MEDIA. WHEN LOADED UNDER XXDP+, THE DIAGNOSTIC SUPERVISOR
                                WILL BE LOADED AUTOMATICALLY.



                                6.1.2 STARTING PROCEDURES

                                THE PROGRAM STARTS AT LOCATION 200. USE STANDARD DEC
                                PROCEDURES TO START THE PROGRAM.


                                6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION

                                THE DIAGNOSTIC CAN BE EXECUTED STANDALONE UNDER XXDP+,
                                WITHOUT READING THE REMAINDER OF THIS DOCUMENT, AS FOLLOWS:

                                A) LOAD AND START DIAGNOSTIC USING RUN COMMAND
                                B) RECEIVE DIAGNOSTIC SUPERVISOR IDENTIFICATION AND PROMPT (DRS-C>)
                                C) ENTER STA<CR>
                                D) ANSWER HARDWARE AND SOFTWARE QUESTIONS
                                E) GET END OF PASS MESSAGES OR ERROR MESSAGES
                                F) TO END EXECUTION, ENTER CONTROL/C


                                6.2 INITIAL DIALOGUE

                                AFTER THE PROGRAM AND THE SUPERVISOR ARE LOADED AND THE PROGRAM
                                IS STARTED, THE FOLLOWING IDENTIFICATION IS TYPED :

                                DRS LOADED
                                DIAG. RUN-TIME SERVICES

                                DR>

                                THE OPERATOR THEN PROCEEDS BY TYPING ONE OR MORE OF THE
                                COMMANDS DESCRIBED IN THE FOLLOWING SECTION 6.3. (FOR MORE
                                DETAILED INFORMATION, REFER TO THE DIAGNOSTIC SUPERVISOR
                                FUNCTIONAL SPECIFICATION).


                                6.3 PROGRAM OPTIONS


                                6.3.1 START COMMAND

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

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

<TEST-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (1:2 ETC.) OR RANGES OF DECIMAL NUMBERS (1-5:8-10 ETC.) THAT SPECIFY THE TESTS TO BE EXECUTED. THE NUMBERS ARE SEPARATED BY COLONS. THE NUMBERS RANGE FROM 1 TO THE LARGEST TEST NUMBER IN THE DIAGNOSTIC. THEY MAY BE SPECIFIED IN ANY ORDER. TESTS WILL BE EXECUTED IN NUMERICAL ORDER REGARDLESS OF THE ORDER OF SPECIFICATION. THE DEFAULT IS TO EXECUTE ALL TESTS. ON THIS AND ALL SWITCHES, THE ANGLE BRACKETS <> ARE PUNCTUATION USED IN THE DEFINITION ONLY, AND ARE NOT TO BE TYPED BY THE OPERATOR. SEE EXAMPLE AT END OF 6.3.1.5.

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

<PASS-CNT> IS A DECIMAL NUMBER INDICATING THE DESIRED NUMBER OF PASSES. A PASS IS DEFINED AS THE EXECUTION OF THE FULL DIAGNOSTIC (ALL SELECTED TESTS) AGAINST ALL UNITS SUBMITTED. THE DEFAULT IS NON-ENDING EXECUTION. IN THIS CASE EXIT FROM THE PROGRAM IS ACCOMPLISHED EITHER BY TYPING A CONTROL/C OR BY OCCURANCE OF AN ERROR WITH THE HALT ON ERROR FLAG BEING SET. THE EXIT IS A RETURN TO COMMAND MODE. SEE EXAMPLE AT FND OF 6.3.1.5.

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

<FLAG-LIST> IS A SEQUENCE OF ELEMENTS OF THE FORM <FLAG>, <FLAG=1>, OR <FLAG=0>, SEPARATED BY COLONS, WHERE <FLAG> HAS ONE OF THE FOLLOWING VALUES:

HOE	HALT ON ERROR, CAUSING COMMAND MODE TO BE ENTERED WHEN AN ERROR IS ENCOUNTERED
LOE	LOOP ON ERROR, CAUSING THE DIAGNOSTIC TO LOOP CONTINUOUSLY WITHIN THE SMALLEST DEFINED BLOCK OF CODING (SEGMENT, SUBTEST, OR TEST) CONTAINING THE ERROR
IER	INHIBIT ERROR REPORTING
IBE	INHIBIT BASIC ERROR REPORTS
IXE	INHIBIT EXTENDED ERROR REPORTS
PRI	DIRECT ALL MESSAGES TO A LINE PRINTER
PNT	PRINT NUMBER OF TEST BEING EXECUTED
BOE	BELL ON ERROR
UAM	RUN IN UNATTENDED MODE, BYPASSING MANUAL INTERVENTION TESTS
ISR	INHIBIT STATISTICAL REPORTS
IDU	INHIBIT DROPPING OF UNITS BY DIAGNOSTIC
LOT	LOOP ON TEST

THE FLAGS NAMED OR EQUATED TO 1 ARE SET, THOSE EQUATED TO 0 ARE CLEARED. A FLAG NOT SPECIFIED IS CLEARED. IF THE FLAGS SWITCH IS NOT GIVEN ALL FLAGS ARE CLEARED. SEE EXAMPLE AT END OF 6.3.1.5.

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

<INCR> IS A DECIMAL NUMBER INDICATING HOW OFTEN (IN TERMS OF PASSES) IT IS DESIRED THAT THE END OF PASS MESSAGE BE PRINTED. THE DEFAULT IS AT THE END OF EVERY PASS. SEE EXAMPLE AT END OF 6.3.1.5.

6.3.1.5 EFFECT OF START COMMAND

THE EFFECT OF THE START COMMAND IS TO INITIATE THE HARDWARE PARAMETER DIALOGUE, THE SOFTWARE PARAMETER DIALOGUE, AND THEN THE DIAGNOSTIC TESTS THEMSELVES.

THE HARDWARE PARAMETER DIALOGUE COMMENCES WITH THE QUESTION "# UNITS?" TO WHICH THE OPERATOR REPLIES WITH A DECIMAL NUMBER N FROM 1 TO 16. THE TERM "UNIT" REFERS TO THE DEVICE TO WHICH THIS SERIES OF DIAGNOSTICS IS DEDICATED. FOLLOWING THIS ARE THE QUESTIONS WHEREBY THE P-TABLES THEMSELVES WILL BE BUILT. EACH P-TABLE IS A CORE-RESIDENT TABLE CONTAINING ALL THE HARDWARE INFORMATION FOR ONE UNIT. THE OPERATOR MUST SUPPLY N (NUMBER OF UNITS) VALUES FOR EACH QUESTION. HE MAY DO THIS BY GIVING ONE ANSWER TO EACH QUESTION (IN WHICH CASE THE SERIES OF QUESTIONS WILL BE POSED N TIMES) OR BY GIVING N VALUES, SEPARATED BY COMMAS, TO EACH QUESTION (SERIES WILL BE POSED ONCE). EACH QUESTION IS FOLLOWED BY THE RESPONSE RADIX (D FOR DECIMAL, B FOR BINARY, O FOR OCTAL, L FOR YES/NO) IN PARENTHESES AND THE DEFAULT VALUE AFTER THE PARENTHESES.

FOLLOWING THE HARDWARE QUESTIONS ARE THE SOFTWARE QUESTIONS TO BUILD THE SOFTWARE TABLES, WHICH DEFINE THE MODE (QUICK VERIFY ETC.) THAT THE DIAGNOSTIC WILL EXECUTE IN.

WHEN THE QUESTION "# UNITS?" IS ANSWERED, MEMORY STORAGE IS ALLOCATED FOR THE P-TABLES, AND IF THERE IS NOT ENOUGH TO ACCOMMODATE THEM THE MESSAGE "TOO MANY UNITS" IS ISSUED. IN THIS CASE THE DIAGNOSTIC MUST BE EXECUTED MORE THAN ONCE TO TEST ALL UNITS.

EXAMPLE:

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

THIS COMMAND WILL CAUSE THREE PASSES TO BE MADE, EACH PASS CONSISTING OF TESTS 1,2,3,4,6,8,9, AND 10 EXECUTED AGAINST ALL UNITS. THERE IS NO DIFFERENCE BETWEEN SAYING <FLAG> AND SAYING <FLAG=1>. THE NOTATION <FLAG=0> IS MEANINGFUL ONLY ON A COMMAND OTHER THAN START TO CLEAR A FLAG THAT WAS PREVIOUSLY SET. NOTE THAT ON ALL COMMANDS ONLY THE FIRST THREE LETTERS ARE SCANNED.

6.3.2 RESTART COMMAND

****

RES(TART)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:

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


                                    6.3.2.1 TESTS, PASS, AND FLAGS SWITCHES

                                    <TEST-LIST>, <PASS-CNT>, AND <FLAG-LIST> ARE AS IN THE START
                                    COMMAND.


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

                                    <UNIT-LIST>  IS  A SEQUENCE OF DECIMAL NUMBERS (0,1 ETC.) OR
                                    RANGES OF DECIMAL NUMBERS (0-5, 8-10 ETC.) THAT SPECIFY  THE
                                    UNITS  TO  BE  TESTED.  THE NUMBERS ARE SEPARATED BY COLONS.
                                    THE NUMBERS MAY RANGE FROM 0 THRU N-1  (N  IS  THE  NUMBER  OF
                                    UNITS  SPECIFIED IN THE PREVIOUS START COMMAND).  THE NUMBER
                                    INDICATES THE POSITION  OF  THE  P-TABLE  AS  THE  DATA  WAS
                                    ENTERED  DURING THE HARDWARE DIAGLOGUE.  THE UNITS WHICH ARE
                                    SELECTED MUST NOT HAVE BEEN DROPPED  BY  THE  DROP  COMMAND.
                                    SEE  THE DISCUSSION OF ADD AND DROP COMMANDS BELOW.  DEFAULT
                                    IS TO TEST ALL UNITS WHICH HAVE NOT BEEN DROPPED BY  A  DROP
                                    COMMAND.


                                    6.3.2.3 EFFECT OF RESTART COMMAND

                                    THE  RESTART  COMMAND DIFFERS FROM THE START COMMAND IN THAT
                                    THE P-TABLES FROM THE PREVIOUS  START  COMMAND  (THERE  MUST
                                    HAVE  BEEN  ONE)  ARE USED, INSTEAD OF NEW ONES BEING BUILT.
                                    THE UNITS SWITCH GIVES THE ABILITY TO  SELECT  A  SUBSET  OF
                                    THESE.   THE  SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED
                                    (OPERATOR WILL BE ASKED). THE  COMMAND  CAN  BE  USED  AFTER
                                    COMMAND  MODE  HAS BEEN REENTERED IN ANY OF THE THREE NORMAL
                                    WAYS:  A) THE REQUESTED NUMBER OF PASSES HAVE BEEN  MADE  B)
                                    AN  ERROR WAS ENCOUNTERED WITH THE HALT ON ERROR FLAG SET C)
                                    A CONTROL/C WAS ENTERED BY THE OPERATOR.


                                    6.3.3 CONTINUE COMMAND

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


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

                                    <PASS-CNT> IS SAME AS IN START COMMAND, BUT THE  DEFAULT  IS
                                    THE UNSATISFIED PASS-CNT FROM THE PREVIOUS START OR RESTART.
                                    IF NONE REMAINS, THE DEFAULT IS NON-ENDING EXECUTION.


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

                                    <FLAG-LIST> IS SAME AS IN  START  COMMAND,  BUT  UNSPECIFIED
                                    FLAGS RETAIN THEIR CURRENT VALUE.
```

6.3.3.3 EFFECT OF CONTINUE COMMAND

CONTINUE MUST FOLLOW A START OR RESTART, AND COMMAND MODE MUST HAVE BEEN ENTERED DUE TO A HALT ON ERROR OR A CONTROL/C. THE EFFECT OF THE COMMAND IS TO GO TO THE BEGINNING OF THE TEST THAT WAS BEING EXECUTED WHEN THE HALT OR CONTROL/C TOOK PLACE. SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED. HARDWARE PARAMETERS MAY NOT BE CHANGED.

6.3.4 PROCEED COMMAND

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

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

<FLAG-LIST> IS AS IN THE START COMMAND, BUT UNSPECIFIED FLAGS RETAIN THEIR CURRENT VALUE.

6.3.4.2 EFFECT OF PROCEED COMMAND

PROCEED MUST FOLLOW A START, RESTART, OR CONTINUE. COMMAND MODE MUST HAVE BEEN ENTERED VIA A HALT ON ERROR. THE EFFECT OF THE COMMAND IS TO BEGIN EXECUTION AT THE LOCATION FOLLOWING THE ERROR CALL. NEITHER HARDWARE NOR SOFTWARE PARAMETERS MAY BE ALTERED.

6.3.5 ADD COMMAND

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

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

<UNIT-LIST> IS AS IN THE RESTART COMMAND.

6.3.5.2 EFFECT OF ADD COMMAND

THE UNITS SPECIFIED ARE ADDED TO THE TEST SEQUENCE. EACH UNIT MUST HAVE A P-TABLE IN MEMORY DUE TO AN EARLIER HARDWARE DIALOGUE. THIS COMMAND MUST BE FOLLOWED BY A RESTART OR CONTINUE. THE UNITS SWITCH MUST BE SPECIFIED. THE ADD COMMAND IS MEANINGFUL ONLY FOR UNITS THAT WERE PREVIOUSLY DROPPED.

```
                                6.3.6 DROP COMMAND

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


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

                                <UNIT-LIST> IS AS IN THE RESTART COMMAND.


                                6.3.6.2 EFFECT OF DROP COMMAND

                                THE UNITS SPECIFIED WILL BE DROPPED FROM TESTING.  THE UNITS
                                WILL BE RESELECTED ONLY BY THE EXECUTION OF AN ADD OR  START
                                COMMAND.   THE  UNITS  SWITCH MUST BE ENTERED.  THIS COMMAND
                                MUST BE FOLLOWED BY A RESTART OR A CONTINUE COMMAND.


                                6.3.7 PRINT COMMAND

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


                                6.3.7.1 EFFECT OF PRINT COMMAND

                                THE TOTAL NUMBER OF ERRORS FOR  EACH  UNIT  SINCE  THE  LAST
                                START  OR  RESTART  COMMAND  ARE  PRINTED.  THE ISR (INHIBIT
                                STATISTICAL REPORTING) FLAG IS CLEARED.


                                6.3.8 DISPLAY COMMAND

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


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

                                <UNIT-LIST> IS AS IN THE RESTART COMMAND.


                                6.3.8.2 EFFECT OF DISPLAY COMMAND

                                THE HARDWARE P-TABLES FOR ALL UNITS UNDER TEST  ARE  PRINTED
                                OUT  IN  THE  FORMAT  IN WHICH THEY WERE ENTERED.  ANY UNITS
                                THAT WERE DROPPED BY THE  OPERATOR  "DROP"  COMMAND  ARE  SO
                                DESIGNATED.


                                6.3.9 FLAGS COMMAND

                                ********************************************************************
```

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


                                6.3.9.1 EFFECT OF FLAGS COMMAND

                                THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.


                                6.3.10 ZFLAGS COMMAND

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


                                6.3.10.1 EFFECT OF ZFLAGS COMMAND

                                ALL FLAGS ARE CLEARED.


                                6.3.11  CONTROL  CHARACTERS

                                A CONTROL C (C) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC CAUSES
                                A  RETURN  TO  COMMAND MODE.

                                A  CONTROL  Z  (Z)  ENTERED DURING ONE OF THE OPERATOR
                                DIALOGUES- HARD CORE QUESTIONS (SEE  6.2),HARDWARE  DIALOGUE
                                (SEE 6.3.1.5), OR SOFTWARE DIALOGUE (SEE 6.3.1.5) CAUSES THE
                                DEFAULTS TO BE TAKEN FOR THE REMAINDER OF THAT DIALOGUE.

                                A CONTROL O (O) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC
                                CAUSES   ALL   TELETYPE   OUTPUT   TO   BE   SURPRESSED   FOR   THE
                                REMAINDER OF THE DIAGNOSTIC OR UNTIL  ANOTHER  O  IS  TYPED,
                                WHICH RESTORES NORMAL TELETYPE OUTPUT.


                                6.3.12 HARDWARE PARAMETERS

                                THE  FOLLOWING 4 QUESTIONS WILL BE ASKED ON A START COMMAND.
                                THE VALUE LOCATED TO THE LEFT OF THE QUESTION  MARK  IS  THE
                                DEFAULT  VALUE  THAT  WILL  BE  TAKEN  ON  A CARRIAGE RETURN
                                RESPONSE.

                                1.   ADDRESS : (O) 160010?

                                THIS IS THE ADDRESS AT WHICH THE DPV CSR REGISTERS RESIDE
                                ON   THE  LSI-BUS.   THE  ALLOWABLE  RANGE  IS  160000-177776
                                (OCTAL), AND THE DEFAULT VALUE IS 160010.

                                2.   VECTOR  : (O) 300 ?

                                THIS IS THE ADDRESS OF THE INPUT INTERRUPT VECTOR  FOR  THIS
                                DEVICE.   THE  ALLOWABLE  RANGE  IS 000-674 (OCTAL), AND THE
                                DEFAULT VALUE IS 300.

                                3.   LOOPBACK -
```

```
                        0 = INTERNAL, 1 = RS423, 2 = RS422
                        3 = LOCAL MODEM LOOP, 4 = REMOTE MODEM LOOP (0)  1?

                THIS IS THE USER SELECTED LOOPBACK. THE DEFAULT IS RS423.
                THE FOLLOWING SHOULD BE CONSIDERED:
                        A. INTERNAL LOOPBACK RUNS THE DIAGNOSTIC THROUGH THE
                           USYNRT MAINTENANCE MODE LOOPBACK.  THE DRIVERS WILL
                           NOT BE TESTED.  NO CONNECTOR IS REQUIRED.
                        B. RS423 REQUIRES A H3260 ONBOARD CONNECTOR OR THE
                           BC05C CABLE AND THE H3259 CONNECTOR.  THIS TURNAROUND
                           WILL PROVIDE A 2K CLOCK FOR DIAGNOSTICS.  ALL TESTS
                           SHOULD BE ABLE TO BE RUN ON ALL PROCESSORS.
                        C. R2422 REQUIRES A MODIFIED H3260 ONBOARD CONNECTOR.
                           THIS TURNAROUND WILL PROVIDE A 50K CLOCK FOR DIAGNOSTICS.
                           THE TESTS RUN WILL DEPEND ON THE PROCESSOR.
                           1. THE LSI11/23 SHOULD RUN ALL TESTS.
                           2. THE LSI11/2  SHOULD RUN ALL TESTS EXCEPT TESTS 29-41.
                           3. THE LSI11 WITHOUT PROCESSOR MEMORY REFRESH SHOULD
                              RUN ALL TESTS EXCEPT TESTS 29-41.
                           4. THE LSI11 WITH PROCESSOR MEMORY REFRESH SHOULD
                              RUN ALL TESTS EXCEPT TESTS 29-43.
                        D. LOOPBACK THROUGH THE MODEM SHOULD ONLY BE ATTEMPTED IF THE
                           MODEM SUPPORTS THAT TYPE OF LOOBACK.



                6.3.13 SOFTWARE PARAMETERS

                NO SOFTWARE PARAMETER QUESTIONS ARE ASKED BY TIS DIAGNOSTIC


                6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE

                THE  FULL CAPABILITY OF THE HARDWARE DIALOGUE IS REVEALED BY
                THE FOLLOWING DISCUSSION OF WHAT HAPPENS INTERNALLY.

                AS SOON AS THE QUESTION "# UNITS?" IS ANSWERED (WITH THE
                NUMBER N, SAY) SPACE IN CORE IS ALLOCATED FOR N P-TABLES.
                ALL OF THE P-TABLES ARE OF THE SAME FORMAT, AND THERE IS A
                ONE-TO ONE CORRESPONDENCE BETWEEN THE HARDWARE PARAMETER
                QUESTIONS AND THE SLOTS IN THE P-TABLE FORMAT.

                ON THE FIRST TRIP THRU THE QUESTIONS, ALL OF THE SLOTS IN
                ALL OF THE P-TABLES ARE FILLED.  IF THE OPERATOR TYPES IN
                LESS THAN N EXPLICIT VALUES IN RESPONSE TO A PARTICULAR
                QUESTION, THESE VALUES ARE PLACED IN THE P-TABLES (ONE VALUE
                GOING INTO THE PROPER SLOT OF EACH P-TABLE BEGINNING WITH
                THE FIRST P-TABLE) UNTIL THE STRING OF VALUES IS EXHAUSTED.
                THE LAST VALUE IN THE STRING BECOMES THE NEW DEFAULT AND IS
                USED TO FILL THAT SLOT IN THE REMAINING P-TABLES.

                ON SUBSEQUENT TRIPS THRU THE QUESTIONS, THE SAME PROCESS IS
                CARRIED OUT, EXCEPT THAT THE EARLIEST P-TABLE NOT TO HAVE
                RECEIVED AN EXPLICIT VALUE IN ANY OF ITS SLOTS NOW ASSUMES
                THE ROLE THAT TABLE NUMBER ONE PLAYED IN THE FIRST TRIP.

                THE SERIES OF QUESTIONS IS REISSUED UNTIL AT LEAST ONE
```

QUESTION HAS RECEIVED N EXPLICIT VALUES FROM THE OPERATOR.

IN GIVING A STRING OF VALUES, COMMAS WITHOUT INTERVENING VALUES MAY BE USED TO INDICATE A REPETITION OF THE LAST NAMED VALUE.

A STRING OF VALUES MAY BE GIVEN AS A RANGE (6-10 FOR EXAMPLE). IF THE VALUES REPRESENT PURE NUMERICAL DATA, THIS SAMPLE RANGE TRANSLATES TO THE STRING 6,7,8,9,10 (AN INCREMENT OF 1). IF THE VALUES ARE ADDRESSES, THE SAMPLE RANGE TRANSLATES TO THE STRING 6,8,10 (AN INCREMENT OF 2).

NOW LET US SEE HOW WE COULD USE THESE CAPABILITIES TO CONSTRUCT A SET OF P-TABLES. ASSUME THAT WE HAVE 16 UNITS, AND THAT THERE ARE THREE HARDWARE PARAMETERS FOR EACH (THREE SLOTS IN THE P-TABLE, THREE HARDWARE QUESTIONS IN THE DIALOGUE). LET THE DESIRED VALUE FOR THE FIRST PARAMETER BE THE NUMBER 75 FOR ALL 16 TABLES. LET THE DESIRED VALUE FOR THE SECOND PARAMETER BE EQUAL TO THE UNIT NUMBER (0,1,2,...,15) EXCEPT FOR UNIT 12, WHICH SHOULD RECEIVE THE VALUE 11. LET THE DESIRED VALUE FOR THE THIRD PARAMETER BE THE NUMBER 76 FOR THE FIRST 7 UNITS AND THE NUMBER 77 FOR THE LAST 9 UNITS.

THE FOLLOWING DIALOGUE WOULD ACCOMPLISH THIS GOAL:

```
# UNITS (D) ? 16
UNIT 0
<QUESTION 1> ? 75
<QUESTION 2> ? 0-6
<QUESTION 3> ? 76

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

THE FIRST TIME THE SERIES IS ASKED, SLOT ONE RECEIVES A 75 IN ALL 16 TABLES. SLOT TWO RECEIVES THE VALUES 0,1,2,...,6 IN TABLES 0 THRU 6 AND A CONSTANT 6 IN TABLES 7 THRU 15. SLOT THREE RECEIVES A CONSTANT 76 IN ALL 16 TABLES.

THE SECOND TIME THRU THE SERIES, TABLES 7 THRU THE END ARE GOING TO BE AFFECTED (NOTE THAT THIS PIECE OF INFORMATION IS PRINTED OUT FOR THE THE OPERATOR IN THE FORM "UNIT XX" AT THE BEGINNING OF EACH SERIES). QUESTION 1 IS RESPONDED TO BY A <CR>, SO SLOT ONE STAYS AT CONSTANT 75 IN TABLES 7 THRU 15, SINCE NO NEW EXPLICIT VALUES ARE TYPED IN. SLOT TWO GETS THE VALUES 7,8,9,10,11 IN TABLES 7 THRU 11, AND GETS AN 11 IN SLOT 12, AND GETS THE VALUES 13,14,15 IN TABLES 13 THRU 15. SLOT THREE GETS THE VALUE 77 IN TABLES 7 THRU 15.

THE DIALOGUE IS TERMINATED WHEN THE SOFTWARE RECOGNIZES THAT 16 EXPLICIT VALUES HAVE BEEN GIVEN FOR AT LEAST ONE QUESTION (NAMELY QUESTION 2).

```
                        7.0 DEVICE INFORMATION TABLES

                        SEE THE GLOBAL EQUATES SECTION FOR DEFINITIONS OF REGISTERS IN THE DPV
                        AND BIT DEFINITIONS WITHIN THOSE REGISTERS.



                        8.0 TEST DESCRIPTIONS

                        ;*************************************************************************
                        ;*                  TEST 1 - DPV-11
                        ;* VERIFY THAT ADDRESSING THE 4 LSI-BUS CSRS DOES NOT CAUSE A NON-
                        ;* EXISTENT MEMORY TRAP.
                        ;*
                        ;* THE DPV IS AN COMMUNICATION DEVICE RESIDING ON A LSI-BUS.
                        ;* COMMUNICATION BETWEEN THE MAIN CPU AND THE DPV IS ACCOMPLISHED
                        ;* THROUGH A SET OF FOUR 16-BIT LSI-BUS CONTROL AND STATUS REGISTERS
                        ;* (CSRS).  THE FOUR REGISTERS ARE ASSIGNED ADDRESSES IN THE I/O PAGE
                        ;* FLOATING ADDRESS SPACE: 76XXX0 - 76XXX6
                        ;*
                        ;* AN ERROR IN THIS TEST COULD MEAN THAT THE DEVICE IS INCORRECTLY
                        ;* CONFIGURED, THAT THE ADDRESS IS WRONG OR THAT THE CRYSTAL CLOCK
                        ;* ON THE DPV IS NOT WORKING.  THE SHIFT REGISTER CLOCK IS NEEDED
                        ;* FOR THE LS164 (E15) IN ORDER TO PROVIDE THE BUS REPLY (BRPLY/L ON
                        ;* PIN AF2).
                        ;*************************************************************************



                        ;*************************************************************************
                        ;*                  TEST 2 - DPV-11
                        ;* DPV RESET
                        ;* RESET THE DPV AND ENSURE THAT ALL REGISTERS ARE IN THEIR
                        ;* PROPER INITIALIZATION STATE.  THE RESET IS ASYNCHRONOUS TO ALL
                        ;* DATA SET TIMING AND ANY DATA PORT ACCESSES. THE FOLLOWING
                        ;* WILL BE CHECKED BY THE $RESET SUBROUTINE:
                        ;*      1. ALL BITS IN THE DATA PORT REGISTERS ARE CLEARED.
                        ;*      2. ALL OUTPUT INDICATORS ARE CLEARED.
                        ;*      3. TRANSMIT BUFFER EMPTY (TBE) IS SET
                        ;*
                        ;* SUBTEST 1 - AFTER RESET, CHECK THAT MAINTENANCE MODE AND
                        ;*             TRANSMITTER CAN BE SET. ALSO CHECK THAT TRANSMITTER
                        ;*             BUFFER EMPTY (TBE) IS CLEARED WHEN TDSR IS ACCESSED
                        ;*             WITHOUT SETTING TRANSMITTER ENABLE.
                        ;* SUBTEST 2 - ON THE FIRST PASS ONLY, CHECK THAT A BUS RESET, DOES
                        ;*             A DPV11 RESET.
                        ;*
                        ;* NOTE: DATA MODE, CTS, RR (RECEIVER READY) AND IC (INCOMING CALL)
                        ;*       ARE UNAFFECTED BY A RESET.
                        ;*
                        ;*************************************************************************
```

```
                        ;*****************************************************************************
                        ;*                  TEST 3 - DPV-11
                        ;* WRITE/READ DATA PATTERNS
                        ;* THIS TEST IS INTENDED TO TEST THE READ/WRITE BITS IN THE CSRS. THERE
                        ;* IS NO INTENTION TO CHECK THE USYNR/T; IT IS DESIRED TO ONLY CHECK THE
                        ;* READING AND WRITING OF THE CSRS.  IN ALL THE SUBTESTS THE BITS ARE
                        ;* CHECKED TOGETHER AND INDIVIDUALLY.
                        ;* SUBTEST 1 - RXCSR (LOW BYTE CSR0)
                        ;*             CHECK BITS 0-6
                        ;* SUBTEST 2 - PCR (HIGH BYTE CSR4)
                        ;*             CHECK BITS 0-7
                        ;* SUBTEST 3 - TDSR (LOW BYTE OF CSR6) - TRANSMIT DATA BUFFER
                        ;*             BITS 0-7
                        ;* SUBTEST 4 - TDSR (HIGH BYTE OF CSR6) - TRANSMIT STATUS REGISTER.
                        ;*             BITS 0-3
                        ;* SUBTEST 5 - TDSR  - CHECK BYTE OP SIGNAL FOR USYNRT
                        ;*
                        ;*****************************************************************************



                        ;*****************************************************************************
                        ;*                  TEST 4 - DMR-11
                        ;* TRANSMIT ENABLE/ TRANSMIT ACTIVE
                        ;* AFTER A DEVICE RESET, SET TRANSMIT START OF MESSAGE (TSOM).  ENSURE
                        ;* THAT TRANSMIT ACTIVE (TXACT) IS SET.
                        ;*
                        ;* TXACT IS USED TO INDICATE THE CURRENT STATE OF THE TRANSMITTER
                        ;* DATA PATH.  THIS BIT WILL BE ASSERTED WHEN BOTH THE TRANSMITTER IS
                        ;* ENABLED AND TSOM ARE INTERNALLY SYNCHRONIZED.  TXACT WILL BE CLEARED
                        ;* UPON RESET OR WHEN THE TRANSMITTER ENTERS THE IDLE STATE.
                        ;*
                        ;*****************************************************************************



                        ;*****************************************************************************
                        ;*                  TEST 5 - DPV-11
                        ;* TRANSMIT BUFFER EMPTY
                        ;* VERIFY THAT TBE (TRANSMIT BUFFER EMPTY) IS ASSERTED WHENEVER
                        ;* THE DEVICE IS RESET OR WHENEVER THE TDSR IS AVAILABLE FOR DATA.
                        ;* TBE IS CLEARED AFTER WRITING TO THE TDSR.
                        ;*
                        ;*****************************************************************************
```

```
                        ;*****************************************************************************
                        ;*                TEST 6 - DPV-11
                        ;* TRANSMIT INTERRUPT
                        ;* VERIFY THAT A TRANSMIT INTERRUPT IS RECEIVED WHEN TRANSMIT
                        ;* BUFFER EMPTY (TBE) IS ASSERTED.
                        ;*
                        ;*****************************************************************************




                        ;*****************************************************************************
                        ;*                TEST 7 - DPV-11
                        ;* RECEIVER ENABLE, RECEIVER ACTIVE AND RECEIVER DATA READY
                        ;*                MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
                        ;* ENABLE THE RECEIVER. AFTER TRANSMITTING A CHARACTER WAIT FOR
                        ;* RECEIVER DATA AVAILABLE AND CHECK THAT THE RECEIVER IS ACTIVE.
                        ;* AFTER CLEARING RECEIVER ENABLE, ENSURE THAT THE RECEIVER IS INACTIVE.
                        ;*
                        ;* RECEIVER ENABLE - CONTROLS THE OPERATION OF THE RECEIVER DATA PATH (RDP)
                        ;* RECEIVER ACTIVE - THIS OUTPUT IS ASSERTED WHEN THE RDP PRESENTS THE 1ST
                        ;*                   DATA CHARACTER OF A MESSAGE TO THE USYNRT.  IT REMAINS
                        ;*                   ASSERTED UNTIL THE RDP ENTERS THE IDLE STATE..
                        ;* RECEIVE DATA    - THIS OUTPUT IS SET WHEN THE RDP HAS ASSEMBLED A DATA
                        ;*                   CHARACTER THAT IS READY TO BE PRESENTED.
                        ;*****************************************************************************



                        ;*****************************************************************************
                        ;*                TEST 8 - DPV-11
                        ;* RECEIVE DATA INTERRUPT
                        ;*                MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
                        ;* ENABLE THE RECEIVER AND SET RECEIVER INTERRUPT. TRANSMIT DATA.
                        ;* CHECK THAT THE RECEIVE INTERUPT WAS GENERATED. AFTER THE INTERUPT
                        ;* WAS GENERATED DISABLE THE RECEIVER. CHECK THAT THE RECEIVER BECOMES
                        ;* INACTIVE.
                        ;*
                        ;*****************************************************************************
```

```
                        ;*****************************************************************************
                        ;*                  TEST 9 - DPV-11
                        ;* THERE ARE 3 SUBTESTS IN THIS TEST WHICH ARE INTENDED TO CHECK
                        ;* RECEIVER STATUS.
                        ;* SUBTEST 1 -  REOM (RECEIVE END OF MESSAGE)
                        ;*              THIS SUBTEST WILL TRANSMIT A DATA MESSAGE THAT IS
                        ;*              ENDED WITH A TEOM (TRANSMIT END OF MESSAGE).  A
                        ;*              CHECK WILL BE MADE THAT THE RECEIVER GETS THE DATA
                        ;*              AND THAT THE REOM IS RECEIVED WHEN RECEIVE
                        ;*              STATUS IS AVAILABLE.
                        ;*
                        ;* SUBTEST 2 -  RECEIVER OVERRUN
                        ;*              THIS SUBTEST WILL TRANSMIT DATA CORRECTLY.  THE
                        ;*              RECEIVER AFTER BECOMING ACTIVE WILL NOT SERVICE
                        ;*              THE RECEIVE BUFFER CORRECTLY.  THIS SHOULD RESULT IN
                        ;*              A RECEIVE OVERRUN.  THIS SUBTEST WILL ENSURE THAT
                        ;*              WHEN RECEIVE STATUS IS AVAILABLE, THE RECEIVER OVERRUN
                        ;*              IS SET.
                        ;*
                        ;* SUBTEST 3 -  RECEIVER ABORT
                        ;*              THIS SUBTEST WILL TRANSMIT A DATA MESSAGE THAT IS ENDED
                        ;*              WITH A TRANSMIT ABORT.  THE SUBTEST WILL ENSURE THAT
                        ;*              RECEIVE STATUS AVAILABLE IS RECEIVED AND THAT THE
                        ;*              ABORT IS RECEIVED.
                        ;*
                        ;*****************************************************************************
```

```
                        ;*****************************************************************************
                        ;*                  TEST 10 - DPV-11
                        ;* THIS TEST WILL ENSURE THAT INTERRUPTS MAY BE GENERATED WHEN
                        ;* RECEIVE STATUS IS AVAILABLE. EACH OF THE FOLLOWING SUBTESTS
                        ;* WILL GENERATE THE STATUS AS FOLLOWS:
                        ;* SUBTEST 1 -  REOM
                        ;* SUBTEST 2 -  RECEIVER OVERRUN
                        ;* SUBTEST 3 -  RECEIVER ABORT
                        ;*
                        ;*****************************************************************************
```

```
;*****************************************************************************
;*                  TEST 11 - DPV-11
;* RECEIVE AND TRANSMIT INTERRUPT
;* TRANSMIT AND RECEIVE DATA USING INTERRUPT ROUTINES. THIS TEST
;* WILL TRANSMIT 4 DATA CHARACTERS. AFTER ENSURING THAT A TRANSMIT
;* INTERRUPT WAS COMPLETED, THE TEST WILL CHECK TO MAKE SURE THAT AT
;* LEAST 1 RECEIVE INTERRUPT WAS GENERATED.
;*
;*****************************************************************************



;*****************************************************************************
;*                  TEST 12 - DPV-11
;* MODEM STATUS
;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL
;* CHECK THAT THE FOLLOWING MODEM SIGNALS ARE TURNED AROUND
;* 1. RTS (REQUEST TO SEND)     TURNED AROUND TO CTS (CLEAR TO SEND)
;*                                             & RR  (RECEIVER READY)
;* 2. DTR (DATA TERMINAL READY) TURNED AROUND TO IC  (INCOMING CALL OR RING)
;* 3. SF  (SELECT FREQUENCY)    TURNED AROUND TO SQ  (SIGNAL QUALITY)
;* 4. LL  (LOCAL LOOPBACK)      TURNED AROUND TO DM  (DATA MODE)
;*
;*****************************************************************************



;*****************************************************************************
;*                  TEST 13 - DPV-11
;* MODEM STATUS INTERRUPT
;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL CHECK
;* THAT THE FOLLOWING SUBTESTS WORK CORRECTLY.
;* SUBTEST 1 -  SET DTR (DATA TERMINAL READY), LOCAL LOOP (LL), RTS (REQUEST
;*              TO SEND) WITH ONLY RECEIVE INTERRUPT ENABLED. ENSURE THAT AN
;*              INTERRUPT IS NOT RECEIVED.
;* SUBTEST 2 -  SET DTR, LL AND RTS WITH ONLY DATA SET INTERRUPT ENABLED.
;*              ENSURE THAT AN INTERRUPT IS NOT RECEIVED.
;* SUBTEST 3 -  SET DTR, LL AND RTS WITHOUT ANY INTERRUPTS ENABLED.  ENSURE
;*              THAT AN INTERRUPT IS NOT RECEIVED.
;* SUBTEST 4 -  SET RTS WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
;*              THAT AN INTERRUPT IS RECEIVED.
;* SUBTEST 5 -  SET DTR WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
;*              THAT AN INTERRUPT IS RECEIVED.
;* SUBTEST 6 -  SET LL WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
;*              THAT AN INTERRUPT IS RECEIVED.
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*                   TEST 14 - DPV-11
;* RECEIVE AND MODEM STATUS INTERRUPTS
;* CHANGE THE MODEM STATUS WHILE HANDLING A RECEIVE INTERRUPT.
;* ENSURE THAT THE MODEM STATUS INTERRUPT IS RECEIVED.
;* SUBTEST 1 -  CHANGE RTS DURING THE RECEIVE INTERRUPT.  ENSURE THAT
;*              THE DATA SET INTERRUPT WAS RECEIVED.
;* SUBTEST 2 -  CHANGE DTR DURING THE RECEIVE INTERRUPT.  ENSURE THAT
;*              THE DATA SET INTERRUPT WAS RECEIVED.
;* SUBTEST 3 -  CHANGE LL DURING THE RECEIVE INTERRUPT.  ENSURE THAT
;*              THE DATA SET INTERRUPT WAS RECEIVED.
;*
;*****************************************************************************




;*****************************************************************************
;*                   TEST 15 - DPV-11
;* SUBTEST 1 - SECONDARY ADDRESS
;*      SEGMENT 1 -     SELECT SECONDARY ADDRESS AND SEND THE CORRECT
;*                      ADDRESS.  CHECK THE DATA IS PROPERLY RECEIVED.
;*      SEGMENT 2 -     SELECT SECONDARY ADDRESS AND SEND A MESSAGE WITHOUT
;*                      SENDING USING THE SECONDARY ADDRESS.  CHECK THAT A
;*                      TIME OUT IS RECEIVED.
;*
;* SUBTEST 2 - ALL PARTIES ADDRESSING
;*      SEGMENT 1 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
;*                      MESSAGE USING THE ALL PARTIES ADDRESS.  ENSURE THAT
;*                      THE MESSAGE IS CORRECTLY RECEIVED.
;*      SEGMENT 2 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
;*                      MESSAGE WITHOUT ALL PARTIES OR SECONDARY ADDRESS.
;*                      CHECK THAT A TIME OUT IS RECEIVED.
;*      SEGMENT 3 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
;*                      MESSAGE WITH A SECONDARY ADDRESS.  CHECK THAT A
;*                      TIME OUT IS RECEIVED.
;*
;*****************************************************************************
```

```
;************************************************************************
;*                  TEST 16 - DPV-11
;* ABORT TEST
;* SUBTEST 1 -   ABORT WITH IDLE CLEAR. ABORT CHARACTERS TRANSMITTED WHEN
;*               THE ABORT BIT IS ASSERTED.
;*               SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1,
;*                                 5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;* SUBTEST 2 -   ABORT WITH IDLE SET. FLAGS TRANSMITTED WHEN THE ABORT BIT
;*               IS ASSERTED.
;*               SELECTED OPTIONS: BOP MODE, NO ERROR CHECKING, IDLE SET,
;*                                 5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;************************************************************************


;************************************************************************
;*                  TEST 17 - DPV-11
;* EXTENDED CONTROL AND ADDRESSING TEST
;* CHECK THAT THE RECEIVER CAN RECOGNIZE EXTENDED ADDRESSING AND CONTROL
;* CHARACTERS.
;*       SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1,
;*                         3 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK,
;*                         EXTENDED CONTROL AND ADDRESSING SELECTED
;*
;************************************************************************


;************************************************************************
;*                  TEST 18 - DPV-11
;* TRANSMIT GO AHEAD
;* TERMINATE A MESSAGE USING TRANSMIT GO AHEAD.  CHECK THAT THE RECEIVE
;* ABORT BIT IS SET WHEN THE END OF MESSAGE IS RECEIVED.
;*       SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1, LOOP SET,
;*                         5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;************************************************************************


;************************************************************************
;*                  TEST 19 - DPV-11
;* ASSEMBLED BIT COUNT
;* TRANSMIT VARIOUS BIT LENGTHS WHILE RECEIVING AN 8 BIT CHARACTER.
;* ENSURE THAT THE ASSEMBLED BIT COUNT (ABC) IS CORRECT UPON THE END
;* OF MESSAGE.
;*       SELECTED OPTIONS: BOP MODE, NO ERROR CHECKING, VARIOUS BIT
;*                         LENGTH CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;************************************************************************
```

```
                        ;*****************************************************************************
                        ;*                  TEST 20 - DPV-11
                        ;* SPECIAL SPACE SEQUENCE
                        ;* START A MESSAGE USING A SPECIAL SPACE SEQUENCE.  CHECK THAT THE
                        ;* MESSAGE IS CORRECTLY TRANSMITTED AND RECEIVED.
                        ;* NOTE: CERTAIN USYNRTS ONLY TRANSMIT A SPECIAL START SEQUENCE WHEN
                        ;*       TRANSMIT START AND END OF MESSAGE ARE SET BY A BYTE OPERATION.
                        ;*
                        ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1,
                        ;*                        5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*****************************************************************************


                        ;*****************************************************************************
                        ;*                  TEST 21 - DPV-11
                        ;* SYNCH CHARACTER
                        ;* CHECK THAT A SYNCH CHARACTER OF 271 CAN BE USED TO COMMENCE A MESSAGE.
                        ;* VERIFY THAT THE MESSAGE IS CORRECTLY TRANSMITTED AND RECEIVED.
                        ;*      SELECTED OPTIONS: BCP MODE, VRC-EVEN PARITY,
                        ;*                        7 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*****************************************************************************


                        ;*****************************************************************************
                        ;*                  TEST 22 - DPV-11
                        ;* SYNCH FROM TRANSMIT DATA PATH
                        ;* TRANSMIT A MESSAGE USING THE SYNCH FROM THE TRANSMIT DATA PATH.
                        ;* VERIFY THAT THE MESSAGE IS CORRECTLY TRANSMITTED AND RECEIVED.
                        ;*      SELECTED OPTIONS: BCP MODE, VRC-ODD PARITY, IDLE SET
                        ;*                        5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*****************************************************************************


                        ;*****************************************************************************
                        ;*                  TEST 23 - DPV-11
                        ;* STRIP SYNCHS
                        ;* SEND MORE THAN 2 SYNCHS WITH THE STRIP SYNCH BIT SET. CHECK THAT
                        ;* THE MESSAGE IS CORRECTLY TRANSMITTED AND RECEIVED.
                        ;*      SELECTED OPTIONS: BCP MODE, VRC-ODD PARITY, STRIP SYNCH SET
                        ;*                        6 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*****************************************************************************
```

```
;*****************************************************************************
;*                  TEST 24 - DPV-11
;* CRC-CCITT PRESET TO ONES.
;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
;* SET WHEN AN ABORT IS RECEIVED.  IN BOP MODE THIS BIT IS SET WHEN THE
;* CRC IS IN ERROR.  THE ERROR CHECK BIT SHOULD BE ZERO WHEN REOM=1,
;* IF THE CRC WERE CORRECTLY RECEIVED. BY FORCING AN ABORT WE INTENTIONALLY
;* LOOK AT THE ERROR BIT WHEN IT SHOULD BE IN AN ERROR STATE.
;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1, LOOP SET,
;*                        4 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;*****************************************************************************



;*****************************************************************************
;*                  TEST 25 - DPV-11
;* CRC-CCITT PRESET TO ZERO.
;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
;* SET WHEN AN ABORT IS RECEIVED.  IN BOP MODE THIS BIT IS SET WHEN THE
;* CRC IS IN ERROR.  THE ERROR CHECK BIT SHOULD BE ZERO WHEN REOM=1,
;* IF THE CRC WERE CORRECTLY RECEIVED. BY FORCING AN ABORT WE INTENTIONALLY
;* LOOK AT THE ERROR BIT WHEN IT SHOULD BE IN AN ERROR STATE.
;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 0, LOOP SET,
;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;*****************************************************************************



;*****************************************************************************
;*                  TEST 26 - DPV-11
;* CRC-16 PRESET TO 0
;*
;* SUBTEST 1 - CRC-16 ERROR
;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
;* CLEAR IF THE RECEIVER IS SHUTDOWN BEFORE THE CRC IS RECEIVED.
;* IN BCP MODE THIS BIT IS CLEAR WHEN THE CRC IS IN ERROR.
;* THE ERROR CHECK BIT SHOULD BE SET WHEN THE LAST CHARACTER IS RECEIVED,
;* IF THE CRC WERE GOOD.
;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO 0, LOOP SET,
;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
;*
;* SUBTEST 2 -  CRC-16 CHECK
;* CHECK THAT THE CORRECT CRC-16 IS RECEIVED FOR THE DATA MESSAGE.
;* THE CRC FOR THIS DATA MESSAGE WAS PREDETERMINED.
;*
;*****************************************************************************
```

```
                        ;*******************************************************************************
                        ;*                  TEST 27 - DPV-11
                        ;* VRC ODD PARITY ERROR
                        ;* BY SELECTING DIFFERENT CHARACTER LENGTHS IN THE RECEIVER AND
                        ;* TRANSMITTER, CAUSE A PARITY ERROR TO OCCUR.
                        ;*      SELECTED OPTIONS: BCP MODE, VRC-ODD PARITY, XMIT=7 &
                        ;*                        RCV=6 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*******************************************************************************

                        ;*******************************************************************************
                        ;*                  TEST 28 - DPV-11
                        ;* VRC EVEN PARITY ERROR
                        ;* BY SELECTING DIFFERENT CHARACTER LENGTHS IN THE RECEIVER AND
                        ;* TRANSMITTER, CAUSE A PARITY ERROR TO OCCUR.
                        ;*      SELECTED OPTIONS: BCP MODE, VRC-EVEN PARITY, XMIT=5 &
                        ;*                        RCV=4 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*******************************************************************************

                        ;*******************************************************************************
                        ;*                  TEST 29 - DPV-11
                        ;* DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE WITHOUT THE USE OF INTERRUPT
                        ;* SERVICE ROUTINES. CHECK THAT THE DATA IS  CORRECT.
                        ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
                        ;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
                        ;*
                        ;*******************************************************************************

                        ;*******************************************************************************
                        ;*                  TEST 30 - DPV-11
                        ;* BOP DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
                        ;* DATA IS CORRECTLY RECEIVED.
                        ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ZERO,
                        ;*                        6 BIT CHARACTERS, USER SELECTED LOOPBACK.
                        ;*
                        ;*******************************************************************************

                        ;*******************************************************************************
                        ;*                  TEST 31 - DPV-11
                        ;* BOP DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
                        ;* DATA IS CORRECTLY RECEIVED.
                        ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
                        ;*                        5 BIT CHARACTERS, USER SELECTED LOOPBACK.
                        ;*
                        ;*******************************************************************************
```

```
;*******************************************************************************
;*                        TEST 32 - DPV-11
;* BOP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*        SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ZERO,
;*                          7 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*******************************************************************************

;*******************************************************************************
;*                        TEST 33 - DPV-11
;* BOP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*        SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
;*                          8 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*******************************************************************************

;*******************************************************************************
;*                        TEST 34 - DPV-11
;* BOP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;* NOTE: CERTAIN USYNRTS ONLY TRANSMIT A SPECIAL START SEQUENCE WHEN
;*         TRANSMIT START AND END OF MESSAGE ARE SET BY A BYTE OPERATION.
;*        SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
;*                          6 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*******************************************************************************

;*******************************************************************************
;*                        TEST 35 - DPV-11
;* BOP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*        SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ZEROS,
;*                          7 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*******************************************************************************

;*******************************************************************************
;*                        TEST 36 - DPV-11
;* BOP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*        SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ZERO, LOOP SET,
;*                          8 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*******************************************************************************
```

```
;*********************************************************************
;*                    TEST 37 - DPV-11
;* BCP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*      SELECTED OPTIONS: BCP MODE, VRC-ODD PARITY, IDLE BIT SET
;*                        6 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*********************************************************************

;*********************************************************************
;*                    TEST 38 - DPV-11
;* BCP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*      SELECTED OPTIONS: BCP MODE, VRC-EVEN PARITY,
;*                        5 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*********************************************************************

;*********************************************************************
;*                    TEST 39 - DPV-11
;* BCP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO ONES, STRIP SYNCHS,
;*                        7 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*********************************************************************

;*********************************************************************
;*                    TEST 40 - DPV-11
;* BCP DATA TEST
;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
;* DATA IS CORRECTLY RECEIVED.
;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO ONES,
;*                        8 BIT CHARACTERS, USER SELECTED LOOPBACK.
;*
;*********************************************************************
```

```
                        ;*****************************************************************************
                        ;*                  TEST 41 - DPV-11
                        ;* DDCMP DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE USING THE
                        ;* DDCMP MESSAGE FORMAT.  CHECK THAT THE DATA IS CORRECTLY RECEIVED
                        ;* AND THAT THE CRC CHARACTERS ARE RECEIVED IN THE PROPER DDCMP
                        ;* ORDER.
                        ;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO ONES, STRIP SYNCHS
                        ;*                        8 BIT CHARACTERS, USER SELECTED LOOPBACK.
                        ;*
                        ;*****************************************************************************

                        ;*****************************************************************************
                        ;*                  TEST 42 - DPV-11
                        ;* BCP DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
                        ;* DATA IS CORRECTLY RECEIVED.
                        ;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO ONES,
                        ;*                        5 OR 8 BIT CHARACTERS, USER SELECTED LOOPBACK.
                        ;*
                        ;*****************************************************************************

                        ;*****************************************************************************
                        ;*                  TEST 43 - DPV-11
                        ;* BOP DATA TEST
                        ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
                        ;* DATA IS CORRECTLY RECEIVED.
                        ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
                        ;*                        5 OR 8 BIT CHARACTERS, USER SELECTED LOOPBACK.
                        ;*
                        ;*****************************************************************************


                        9.0 ERROR INFORMATION


                        9.1 ERROR REPORTING

                        ERRORS  ARE  REPORTED  BY  THE PROGRAM AS THEY OCCUR (IF NOT
                        INHIBITED). THE REPORT CONFORMS TO THE DIAGNOSTIC SUPERVISOR
                        ERROR  REPORT  FORMAT,  AND CONSISTS OF A DESCRIPTION OF THE
                        ERROR, THE TEST NUMBER, SUBTEST  NUMBER,  PC  OF  THE  ERROR
                        CALL,   DEVICE   ADDRESS,   AND  BASIC  AND  EXTENDED  ERROR
                        INFORMATION.

                        THE FOLLOWING EXAMPLE PROVIDES A TYPICAL ERROR REPORT, WHICH
                        DESCRIBES  AN  "TIME OUT" ERROR, AND PROVIDES THE PC OF
                        THE ERROR CALL AND THE PC OF  THE  CALL  TO  THE  SUBROUTINE
                        REPORTING IT, THE FAILING REGISTER NAME, AND DEVICE REGISTER
                        CONTENTS :

                        DPV DVC FTL ERR 00002 ON UNIT 00 TST 020 SUB 000 PC:  004756
                        TIME OUT - DURING INTERRUPT EXERCISE
                        ERROR IN SUBROUTINE CALLED AT PC:  031706
                        RXCSR:  000160
                        RDSR :  000000
```

PROGRAM DOCUMENT

```
                                TXCSR:  122432
                                TDSR :  001402

                                DPV  EOP        1
                                     1 CUMULATIVE ERRORS

                                @
```

```
                002000                          .=2000
                                                .MCALL  SVC
002000                                          SVC                             ; INITIALIZE SUPERVISOR MACROS
                                        BGNMOD
                000001                  $LSTIN=  1      ;   LIST INSTRUCTIONS
                000001                  $LSTTAG= 1
                000001                  SVCINS=  1      ;   LIST INSTRUCTIONS, SHIFTED RIGHT
                000001                  SVCTST=  1      ;   LIST TEST TAGS, SHIFTED RIGHT
                000001                  SVCSUB=  1      ;   LIST SUBTEST TAGS, SHIFTED RIGHT
                000001                  SVCGBL=  1      ;   LIST GLOBAL TAGS, SHIFTED RIGHT
                000001                  SVCTAG=  1      ;   LIST OTHER TAGS, SHIFTED RIGHT
                                        ;       CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
                                        ;       TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
                                        ;       SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
                                        ;       CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
002000                                          POINTER BGNDU
```

PROGRAM HEADER

```
                                .SBTTL  PROGRAM HEADER
                                ;++
                                ;       THE PROGRAM HEADER MACRO CHARACTERIZES THIS DIAGNOSTIC. THE
                                ;       HEADER MACRO'S ARGUMENTS ARE FILE NAME, RELEASE LEVEL, PATCH
                                ;       DISPOSITION OF THE MOST RECENT PATCH, MAXIMUM TEST TIME IN SEC.,
                                ;       AND THE TYPE OF DIAGNOSTIC (0-SEQUENTIAL, 1-EXERCISER).  THESE
                                ;       ARGUMENTS ARE IN RESPECTIVE ORDER.
                                ;--


002000                                  HEADER CVDPV,A,0,200.,0
002000                                                          L$NAME::
002000  103                                                             .ASCII /C/
002001  126                                                             .ASCII /V/
002002  104                                                             .ASCII /D/
002003  120                                                             .ASCII /P/
002004  126                                                             .ASCII /V/
002005  000                                                             .BYTE   0
002006  000                                                             .BYTE   0
002007  000                                                             .BYTE   0
002010                                                          L$REV::
002010  101                                                             .ASCII  /A/
002011                                                          L$DEPO::
002011  060                                                             .ASCII  /0/
002012                                                          L$UNIT::
002012  000000                                                          .WORD   0
002014                                                          L$TIML::
002014  000310                                                          .WORD   200.
002016                                                          L$HPCP::
002016  040250                                                          .WORD   L$HARD
002020                                                          L$SPCP::
002020  000000                                                          .WORD   0
002022                                                          L$HPTP::
002022  002254                                                          .WORD   L$HW
002024                                                          L$SPTP::
002024  000000                                                          .WORD   0
002026                                                          L$LADP::
002026  040540                                                          .WORD   L$LAST
002030                                                          L$STA::
002030  000000                                                          .WORD   0
002032                                                          L$CO::
002032  000000                                                          .WORD   0
002034                                                          L$DTYP::
002034  000000                                                          .WORD   0
002036                                                          L$APT::
002036  000000                                                          .WORD   0
002040                                                          L$DTP::
002040  002124                                                          .WORD   L$DISPATCH
002042                                                          L$PRIO::
002042  000000                                                          .WORD   0
002044                                                          L$ENVI::
002044  000000                                                          .WORD   0
002046                                                          L$EXP1::
002046  000000                                                          .WORD   0
002050                                                          L$MREV::
002050  003                                                             .BYTE   C$REVISION
002051  003                                                             .BYTE   C$EDIT
```

PROGRAM HEADER

```
002052
002052  000000                          L$EF::  .WORD   0
002054  000000                                  .WORD   0
002056                                  L$SPC::
002056  000000                                  .WORD   0
002060                                  L$DEVP::
002060  003674                                  .WORD   L$DVTYP
002062                                  L$REPP::
002062  000000                                  .WORD   0
002064                                  L$EXP4::
002064  000000                                  .WORD   0
002066                                  L$EXP5::
002066  000000                                  .WORD   0
002070                                  L$AUT::
002070  000000                                  .WORD   0
002072                                  L$DUT::
002072  017750                                  .WORD   L$DU
002074                                  L$LUN::
002074  000000                                  .WORD   0
002076                                  L$DESP::
002076  003702                                  .WORD   L$DESC
002100                                  L$LOAD::
002100  104035                                  EMT     E$LOAD
002102                                  L$ETP::
002102  000000                                  .WORD   0
002104                                  L$ICP::
002104  015372                                  .WORD   L$INIT
002106                                  L$CCP::
002106  016564                                  .WORD   L$CLEAN
002110                                  L$ACP::
002110  016500                                  .WORD   L$AUTO
002112                                  L$PRT::
002112  015364                                  .WORD   L$PROT
002114                                  L$TEST::
002114  000000                                  .WORD   0
002116                                  L$DLY::
002116  000000                                  .WORD   0
002120                                  L$HIME::
002120  000000                                  .WORD   0
```

```
12
18
19
20
21
22                      .EVEN
23
24
25
26
27
28
```

DISPATCH TABLE

```
                        .SBTTL  DISPATCH TABLE

                        ;////////////////////////////////////////////////////////////////////////
                        ;/ THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                        ;/ IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                        ;////////////////////////////////////////////////////////////////////////

                                DISPATCH 43

002122                                                                  .WORD   43
002122  000053                                                  L$DISPATCH::
002124                                                                  .WORD   T1
002124  020030                                                          .WORD   T2
002126  020434                                                          .WORD   T3
002130  020660                                                          .WORD   T4
002132  021410                                                          .WORD   T5
002134  021752                                                          .WORD   T6
002136  022204                                                          .WORD   T7
002140  022362                                                          .WORD   T8
002142  022614                                                          .WORD   T9
002144  023112                                                          .WOPD   T10
002146  024120                                                          .WORD   T11
002150  025234                                                          .WORD   T12
002152  025500                                                          .WORD   T13
002154  025770                                                          .WORD   T14
002156  026700                                                          .WORD   T15
002160  030004                                                          .WORD   T16
002162  030714                                                          .WORD   T17
002164  031240                                                          .WORD   T18
002166  031412                                                          .WORD   T19
002170  031622                                                          .WORD   T20
002172  032072                                                          .WORD   T21
002174  032240                                                          .WORD   T22
002176  032424                                                          .WORD   T23
002200  032610                                                          .WORD   T24
002202  032774                                                          .WORD   T25
002204  033164                                                          .WORD   T26
002206  033352                                                          .WORD   T27
002210  033770                                                          .WORD   T28
002212  034160                                                          .WORD   T29
002214  034350                                                          .WORD   T30
002216  034746                                                          .WORD   T31
002220  035122                                                          .WORD   T32
002222  035304                                                          .WORD   T33
002224  035474                                                          .WORD   T34
002226  035646                                                          .WORD   T35
002230  036022                                                          .WORD   T36
002232  036204                                                          .WORD   T37
002234  036366                                                          .WORD   T38
002236  036570                                                          .WORD   T39
002240  036772                                                          .WORD   T40
002242  037174                                                          .WORD   T41
002244  037352                                                          .WORD   T42
002246  037624                                                          .WORD   T43
002250  040034
```

```
                        .SBTTL  DEFAULT HARDWARE P-TABLE

                        ;////////////////////////////////////////////////////////////////////////////
                        ;/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES FOR
                        ;/ THE TEST-DEVICE PARAMETERS.
                        ;////////////////////////////////////////////////////////////////////////////

002252                          BGNHW   DFPTBL
002252  000003                                                          .WORD   L10000-L$HW/2
002254                                                                  L$HW::
002254                                                                  DFPTBL::

002254  160010                  .WORD   160010          ;DPV11 CSR UNIBUS ADDRESS
002256  000300                  .WORD      300          ;DPV11 INTERRUPT VECTOR
002260  000001                  .WORD        1          ;TURNAROUND (DEFAULT = RS423)


002262                          ENDHW
002262                                                                  L10000:
```

GLOBAL EQUATES SECTION

```
                                .SBTTL  GLOBAL EQUATES SECTION

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

 002262                                 EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
 100000                         BIT15== 100000
 040000                         BIT14== 40000
 020000                         BIT13== 20000
 010000                         BIT12== 10000
 004000                         BIT11== 4000
 002000                         BIT10== 2000
 001000                         BIT09== 1000
 000400                         BIT08== 400
 000200                         BIT07== 200
 000100                         BIT06== 100
 000040                         BIT05== 40
 000020                         BIT04== 20
 000010                         BIT03== 10
 000004                         BIT02== 4
 000002                         BIT01== 2
 000001                         BIT00== 1
                                ;
 001000                         BIT9==  BIT09
 000400                         BIT8==  BIT08
 000200                         BIT7==  BIT07
 000100                         BIT6==  BIT06
 000040                         BIT5==  BIT05
 000020                         BIT4==  BIT04
 000010                         BIT3==  BIT03
 000004                         BIT2==  BIT02
 000002                         BIT1==  BIT01
 000001                         BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
 000040                         EF.START==      32.                     ; START COMMAND WAS ISSUED
 000037                         EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
 000036                         EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
 000035                         EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
 000034                         EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
 000340                         PRI07== 340
 000300                         PRI06== 300
 000240                         PRI05== 240
 000200                         PRI04== 200
 000140                         PRI03== 140
 000100                         PRI02== 100
```

GLOBAL EQUATES SECTION

```
                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
      9                                 ;;**************************************************************************
     10
     11                                 ;;**************************************************************************
     12                                 ;SWITCH REGISTER OPTIONS
     13
     14         100000                  SW15=   100000
     15         040000                  SW14=   40000
     16         020000                  SW13=   20000
     17         010000                  SW12=   10000
     18         004000                  SW11=   4000
     19         002000                  SW10=   2000
     20         001000                  SW09=   1000
     21         000400                  SW08=   400
     22         000200                  SW07=   200
     23         000100                  SW06=   100
     24         000040                  SW05=   40
     25         000020                  SW04=   20
     26         000010                  SW03=   10
     27         000004                  SW02=   4
     28         000002                  SW01=   2
     29         000001                  SW00=   1
     30
     31                                 ;;**************************************************************************
     32                                 ;;CSR AND STATUS WORD DEFINITIONS
     33
     34                                 ;;RXCSR - CSR0   (EXTERNAL REGISTER)  READ/WRITE BITS 0 - 6
     35
     36         000001                  SF=     BIT0            ;SELECT FREQUENCY.
     37         000001                  RL=     BIT0            ;REMOTE LOOPBACK - IF WIRE WRAPPED
     38                                                         ;SELECTED.
     39         000002                  DTR=    BIT1            ;DATA TERMINAL READY  R/W
     40         000004                  RTS=    BIT2            ;REQUEST TO SEND  R/W
     41         000010                  LL=     BIT3            ;LOCAL LOOPBACK
     42         000020                  RXENA=  BIT4            ;RECEIVER ENALBLE  R/W
     43         000040                  DSITEN= BIT5            ;DATA SET INTERRUPT ENABLE  R/W
     44         000100                  RXITEN= BIT6            ;RECEIVER INTERRUPT ENABLE  R/W
     45                                                         ;** BITS 7 - 15   READ ONLY **
     46         000200                  RDATRY= BIT7            ;RECEIVE DATA READY  READ ONLY
```

```
                                SFR=    BIT8            ;SYNCH OR FLAG DETECT  READ ONLY
                                DM=     BIT9            ;DATA MODE  READ ONLY
                                RSTARY= BIT10           ;RECEIVER STATUS READY  READ ONLY
                                RXACT=  BIT11           ;RECEIVER ACTIVE  READ ONLY
                                RR=     BIT12           ;RECEIVER READY  READ ONLY
                                CTS=    BIT13           ;CLEAR TO SEND  READ ONLY
                                IC=     BIT14           ;INCOMING CALL  READ ONLY
                                DSCNG=  BIT15           ;DATA SET CHANGE  READ ONLY


                                ;;PCSAR - CSR2   (INTERNAL USNYR/T REGISTERS 4 AND 5)  WRITE ONLY

                                                        ;BITS 0-7 SYNCH CHARACTER OR SECONDARY STATION
                                                        ;ADDRESS.  LOWER BYTE OF THE PCSAR IS THE
                                                        ;SYNCH CHARACTER USED WITH IN BCP MODE   OR
                                                        ;THE SECONDARY ADDRESS USED IN BOP MODE.

                                                        ;BITS 8-10 ERROR DETECTION SELECTION
000000                          CCITT1= 0               ;CRC CCITT INITIALIZED TO ONES
000400                          CCITT0= BIT8            ;CRC CCITT INITIALIZED TO ZEROS
001400                          CRC16=  BIT8!BIT9       ;CRC 16
002000                          VRCO=   BIT10           ;VRC ODD PARITY
002400                          VRCE=   BIT8!BIT10      ;VRC EVEN PARITY
003400                          NOERR=  BIT8!BIT9!BIT10 ;ALL ERROR DETECTION INHIBITED.
001000                          NONE1=  BIT9            ;NOT USED
003000                          NONE2=  BIT9!BIT10      ;NOT USED

004000                          IDLE=   BIT11           ;IDLE MODE SELECT
010000                          SECADR= BIT12           ;SECONDARY ADDRESS SELECT
020000                          SSYNCH= BIT13           ;STRIP SYNCH - BCP
020000                          LOOP=   BIT13           ;LOOP MODE - BOP
040000                          PROTO=  BIT14           ;PROTOCOL SELECT.
100000                          APA=    BIT15           ;ALL PARTIES ADDRESSED.


                                ;;RDSR  - CSR2   (INTERNAL USNYR/Y REGISTERS 0 AND 1)  READ ONLY

                                                        ;BITS 0-7 RECEIVE DATA BUFFER
000400                          RSOM=   BIT8            ;RECEIVED START OF MESSAGE.
001000                          REOM=   BIT9            ;RECEIVED END OF MESSAGE.
002000                          RABORT= BIT10           ;RECEIVER ABORT OR GO AHEAD
004000                          ROVER=  BIT11           ;RECEIVER OVERRUN.
                                                        ;BITS 12-14 ASSEMBLED BIT COUNT (ABC)
000000                          ALL=    0               ;ALL BITS VALID
010000                          ONE=    BIT12           ;ONE BIT VALID
020000                          TWO=    BIT13           ;TWO BITS VALID
030000                          THREE=  BIT12!BIT13     ;THREE BITS VALID
040000                          FOUR=   BIT14           ;FOUR BITS VALID
050000                          FIVE=   BIT12!BIT14     ;FIVE BITS VALID
060000                          SIX=    BIT13!BIT14     ;SIX BITS VALID
070000                          SEVEN=  BIT12!BIT13!BIT14 ;SEVEN BITS VALID

100000                          ERR=    BIT15           ;ERROR CHECK


                                ;;TXCSR - CSR4   (EXTERNAL LO BYTE  -  INTERNAL 7 HI BYTE) READ/WRITE
```

```
                                RESET=  BIT0            ;DEVICE RESET  - WRITE ONLY
                                TXACT=  BIT1            ;TRANSMITTER ACTIVE - READ ONLY
                                TBE=    BIT2            ;TRANSMITTER BUFFER EMPTY - READ ONLY
                                MM=     BIT3            ;MAINTENANCE MODE - R/W
                                TXENA=  BIT4            ;TRANSMITTER ENABLE - R/W
                                SQ=     BIT5            ;SIGNAL QUALITY -READ ONLY
                                TM=     BIT5            ;TEST MODE - READ ONLY  WIRE WRAPPED FOR
                                                        ;TEST MODE
                                TXIE=   BIT6            ;TRANSMIT INTERRUPT ENABLE - R/W

                                ;;PCR   - HI BYTE CSR4 (INTERNAL USNYR/T REGISTER 7)

                                EXCON=  BIT3            ;EXTENDED CONTROL FIELD
                                EXADD=  BIT4            ;EXTENDED ADDRESS FIELD.

                                ;;TDCSR - CSR6   (INTERNAL USNYR/T REGISTERS 7 AND 7) READ/WRITE

                                                        ;BITS 0-7 TRANSMITTER DATA
                                TSOM=   BIT8            ;TRANSMIT START OF MESSAGE - R/W
                                TEOM=   BIT9            ;TRANSMIT END OF MESSAGE - R/W
                                TXABO=  BIT10           ;TRANSMIT ABORT - R/W
                                TGA=    BIT11           ;TRANSMIT GO AHEAD - R/W
                                                        ;BITS 12 - 14 RESERVED
                                TERR=   BIT15           ;TRANSMIT DATA LATE ERROR. - READ ONLY


                ;;**************************************************************************
                ;;**************************************************************************
                ; MISC. EQUATES

                SYN=    226             ;DDCMP SYNCH CHARACTER
                RETURN= 207             ;RETURN FROM SUB.     [=  JSR PC]
                BOP=    BIT15           ;BIT SET IN MODE WHEN IN BOP MODE
                CR=     15              ;ASCII CARRIAGE RETURN
                LF=     12              ;ASCII LINE FEED
                MFPT=   7               ;OPCODE FOR LSI 11/23 TO MOVE PROCESSOR TYPE
                                        ;TO R0   R0=3 MEANS LSI 11/23  - ILLEGAL INSTRUCTION
                                        ;ON AN LSI 11 OR LSI 11/2
                CRCLO=  332             ;LOW BYTE OF CRC IN TEST 26.
                CRCHI=  266             ;HIGH BYTE OF CRC IN TEST 26.
```

GLOBAL DATA SECTION

```
                                .SBTTL  GLOBAL DATA SECTION

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



                                ;;*************************************************************************
                                ;DPV11 VECTOR AND REGISTER INDIRECT POINTERS
002262  000000                  RCVEC:  .WORD   0               ;DPV11 RECEIVER INTERRUPT VECTOR
002264  000000                  XMTVEC: .WORD   0               ;DPV11 TRANSMITTER INT. VECTOR
002266  000000                  CSR0:   .WORD   0               ;POINTER TO DPV11 CSR0
002270  000000                  CSR2:   .WORD   0               ;POINTER TO DPV11 CSR2
002272  000000                  CSR4:   .WORD   0               ;POINTER TO DPV11 CSR4
002274  000000                  CSR6:   .WORD   0               ;POINTER TO DPV11 CSR6
002276  000000                  CSR1:   .WORD   0               ;POINTER TO HIGH BYTE OF CSR0
002300  000000                  CSR3:   .WORD   0               ;POINTER TO HIGH BYTE OF CSR2
002302  000000                  CSR5:   .WORD   0               ;POINTER TO HIGH BYTE OF CSR4
002304  000000                  CSR7:   .WORD   0               ;POINTER TO HIGH BYTE OF CSR6

        002266                  RXCSR=  CSR0                    ;RECEIVER CSR (READ/WRITE)
        002270                  PCSAR=  CSR2                    ;PARAMETER CONTROL SYNCH/ADDRESS REG.
                                                                ;(WRITE ONLY)
        002270                  RDSR=   CSR2                    ;RECEIVE DATA/STATUS REGISTER (READ ONLY)
        002272                  TXCSR=  CSR4                    ;TRANSMITTER CSR (READ/WRITE)
        002274                  TDSR=   CSR6                    ;TRANSMIT DATA/STATUS REGISTER (READ ONLY)
        002302                  PCR=    CSR5                    ;PCR = PARAMETER CONTROL REGISTER

                                ;;OTHER HARDWARE PARAMETERS

002306  000000                  TURN:   .WORD   0               ;TURN AROUND TYPE (0-7)

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



002310  000000                  FRSTIM: .WORD   0               ;FLAG=0 IF PROGRAM JUST LOADED
002312  000000                  FRSPAS: .WORD   0               ;FLAG=0 IF FIRST PASS AFTER LOAD
002314  000000                  STARES: .WORD   0               ;FLAG=0 IF 1ST TIME THRU AFTER STA OR RES



                                ;;*************************************************************************
                                ;PROGRAM VARIABLES

                                ;* MISCELLANEOUS STORAGE
002316  000000                  ABORT:  .WORD   0               ;FLAG TO ALLOW AN ABORT TO BE ISSUED.
002320  000000                  BITS:   .WORD   0               ;BITS TO BET SET IN THE CSR REGISTER
002322  000000                  COUNTER:.WORD   0               ;COUNTER FOR # OF CHARACTERS TO RCV. (RDATA2)
002324  000000                  CPU:    .WORD   0               ;PROCESSOR TYPE
                                                                ;(3 = LSI11/23, 0 = LSI 11 OR LSI 11/2)
002326  000000                  DATA:   .WORD   0               ;COUNTER FOR # OF DATA CHARATERS TRANSMITTED.
002330  000000                  ERROR:  .WORD   0               ;ERROR STORAGE
002332  000000                  EXERR:  .WORD   0               ;FLAG THAT AN ERROR IS EXPECTED IN DATA
```

GLOBAL DATA SECTION

```
002334  000000                  FLAG:    .WORD   0               ;SCRATCH WORD USED FOR MISC. FLAG IN SUB.
002336  000000                  HEADER:  .WORD   0               ;FLAG USED TO MARK DDCMP HEADER.
002340  000000                  HIGH:    .WORD   0               ;FLAG USED TO INDICATE HIGH SPEED ISR WHEN SET
002342  000000                  IPCR:    .WORD   0               ;IMAGE OF PCR
002344  000000                  IPCSAR:  .WORD   0               ;IMAGE OF PCSAR
002346  000000                  IRXCSR:  .WORD   0               ;IMAGE OF RXCSR
002350  000000                  IRDSR:   .WORD   0               ;IMAGE OF RDSR.
002352  000000                  LENGTH:  .WORD   0               ;CHARACTER LENGTH.
002354  000000                  LOGDEV:  .WORD   0               ;LOGICAL DEVICE NUMBER
002356  000000                  MAINT:   .WORD   0               ;MAINTENANCE MODE LOOPBACK FLAG
002360  000000                  MCFLAG:  .WORD   0               ;WORD USED IN TO TRACK MODEM CONTROL INT.
002362  000000                  MODE:    .WORD   0               ;PROTOCOL TYPE
002364  000000                  NESTPC:  .WORD   0               ;FLAG TO NOTIFY WHEN A SUBR IS NESTED
002366  000000                  NXMFLG:  .WORD   0               ;WORD USED WHEN ADDRESS IS NXM.
002370  000000                  OVER:    .WORD   0               ;FLAG TO ALLOW RECEIVE OVERRUN.
002372  000000                  PSTACK:  .WORD   0               ;CONTAINS BASE LEVEL PROGRAM SP
002374  000000                  REG:     .WORD   0               ;STORAGE OF A CSR ADDRESS
002376  000000                  RFLAG:   .WORD   0               ;WORD USED IN RECEIVE ROUTINE.
002400  000000                  RSAVE:   .WORD   0               ;TEMPORARY LOCATION TO SAVE RDSR ON INTERRUPT
002402  000000                  RXINI:   .WORD   0               ;RECEIVER INITIALIZATION
002404  000000                  RXINIT:  .WORD   0               ;RECEIVER INITIALIZATION WITH INT ENABLED.
002406  000000                  RXMINI:  .WORD   0               ;RECEIVER INIT WITH MAINTENANCE LOOPBACK.
002410  000000                  SAVE:    .WORD   0               ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
002412  000000                  SAVTIM:  .WORD   0               ;STORAGE TO SAVE TIMER VALUE
002414  000000                  START:   .WORD   0               ;CONTER FOR # OF START CHARACTERS TO XMIT.
002416  000000                  SUBRPC:  .WORD   0               ;PC OF SUBR CALL FOR ERROR REPORTS
002420  000000                  TEMP:    .WORD   0               ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
002422  000000                  TEND:    .WORD   0               ;TRANSMIT END
002424  000000                  TFLAG:   .WORD   0               ;WORD USED IN TRANSMIT INTERRUPT ROUTINE
002426  000000                  TIMEO:   .WORD   0               ;FLAG TO MARK TIME OUT IN $DATA SUBROUTINE.
002430  000000                  TIMER:   .WORD   0               ;TIMER VALUE
002432  000000                  TOGGLE:  .WORD   0               ;FLAG TO ALLOW TOGGLE OF RTS IN TEST.
002434  000000                  TSTART:  .WORD   0               ;TRANSMIT START
002436  000000                  TXINI:   .WORD   0               ;TRANSMITTER INITIALIZATION
002440  000000                  TXINIT:  .WORD   0               ;TRANSMITTER INITIALIZATION WITH INT ENABLED.
002442  000000                  TXMINI:  .WORD   0               ;TRANSMITTER INIT WITH MAINTENANCE LOOPBACK


                                         .EVEN

                                ;;*******************************************************************************
                                ;;*******************************************************************************
                                ;;MODEM CONTROL

002444                          MODEM:   .BLKW   10.             ;BUFFER AREA FOR MODEM STATUS

                                ;;*******************************************************************************
                                ;;*******************************************************************************
                                ;;BUFFER AREA

002470  000000                  XTYPE:   .WORD   0               ;POINTER TO DATA TYPE TO LOAD INTO XMIT BUFFER
002472  000000                  XCOUNT:  .WORD   0               ;# OF CHARACTERS TO TRANSMIT.
```

```
                                ECOUNT: .WORD   0               ;# OF CHARACTERS FOR END OF MSG. IN BCP MODE.
                                XMITD:  .WORD   0               ;# OF CHARACTERS TRANSMITTED.
                                RCOUNT: .WORD   0               ;# OF CHARACTERS RECEIVED.


                                ;;*****************************************************************************
                                ;               ** CCITT PSUEDO-RANDOM TEST PATTERN **
                                ; THE FOLLOWING 32 WORDS TRANSLATE INTO A 512 BIT PATTERN
                                ; THAT WAS GENERATED ACCORDING TO CCITT RECOMMENDATION V.52.  THIS
                                ; PATTERN WAS GENERATED BY A 9 BIT SHIFT REGISTER (INITIALIZED
                                ; AS 1S) WHOSE 5TH AND 9TH BITS ARE XORED.  THIS XOR RESULT IS SHIFTED
                                ; INTO THE 1ST BIT OF THE REGISTER AS THE REGISTER IS SHIFTED RIGHT.
                                ; THE 9TH BIT (OR BIT SHIFTED OUT) IS SHIFTED INTO THE BIT PATTERN.
                                ; NOTE: CCITT RECOMMENDED 511 BITS, I'VE EXTENDED THIS BY 1 BIT TO END
                                ; ON A WORD BOUNDARY.
002502                          $CCITT:
002502  177603  157427  031011          .WORD   177603,157427,031011
002510  047321  163715  105221          .WORD   047321,163715,105221
002516  143325  142304  040041          .WORD   143325,142304,040041
002524  014116  052606  172334          .WORD   014116,052606,172334
002532  105025  123754  111337          .WORD   105025,123754,111337
002540  111523  030030  145064          .WORD   111523,030030,145064
002546  137642  143531  063617          .WORD   137642,143531,063617
002554  135015  066730  026575          .WORD   135015,066730,026575
002562  052012  053627  070071          .WORD   052012,053627,070071
002570  151172  165044  031605          .WORD   151172,165044,031605
002576  166632  016741                  .WORD   166632,016741

                                ;;*****************************************************************************
                                ;; ALPHANUMERIC DATA

002602    101     102     103   ALPHA:  .ASCIZ  /ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789/
002605    104     105     106
002610    107     110     111
002613    112     113     114
002616    115     116     117
002621    120     121     122
002624    123     124     125
002627    126     127     130
002632    131     132     060
002635    061     062     063
002640    064     065     066
002643    067     070     071
002646    000
000045                          ACOUNT= .-ALPHA                 ;CHARACTER COUNT
                                        .EVEN

                                ;;*****************************************************************************
                                ;; DDCMP BUFFER

002650    201                   DDCMP:  .BYTE   201             ;SOH (START OF HEADER)
002651    064     000                   .BYTE   64,0            ;COUNT AND FLAGS (BITS 0 AND 1 FLAGS)
002653    000                           .BYTE   0               ;RESPONSE NUMBER
002654    000                           .BYTE   0               ;TRANSMIT NUMBER
002655    001                           .BYTE   1               ;STATION ADDRESS
000006                          DDCMP1= .-DDCMP
                                                                ;2 BYTES OF CRC16
```

```
    160 002656     104     104     103  DDMSG:  .ASCII  /DDCMP MESSAGE/
        002661     115     120     040
        002664     115     105     123
        002667     123     101     107
        002672     105
    161                                                  ;2 BYTES OF CRC16
    162          000015                  DDCMP2= .-DDMSG
    163
    164                                  ;;*****************************************************************************
    165                                  ;; TRANSMIT BUFFER
    166
    167 002673                           XMTBUF: .BLKB   256.
    168
    169                                  ;;*****************************************************************************
    170                                  ;; RECEIVE BUFFER
    171
    172 003273                           RCVBUF: .BLKB   256.           ;256. BYTE BUFFER
    173          000400                  RSIZE=  .-RCVBUF
    174                                          .EVEN
    175
    176
```

```
                                        .SBTTL  GLOBAL TEXT SECTION

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


                                        ;;**********************************************************************
                                        ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
                                        ;;**********************************************************************
   003674                                       DEVTYP  <DPV11>
   003674                                                                       L$DVTYP::
   003674     104     120     126                                                       .ASCIZ  /DPV11/
   003677     061     061     000
                                                                                        .EVEN

                                        ;;************************************************************************
                                        ;* TITLE OF PROGRAM
                                        ;;************************************************************************
   003702                                       DESCRIPT   <DIAGNOSTIC TESTS>
   003702                                                                       L$DESC::
   003702     104     111     101                                                       .ASCIZ  /DIAGNOSTIC TESTS/
   003705     107     116     117
   003710     123     124     111
   003713     103     040     124
   003716     105     123     124
   003721     123     000
                                                                                        .EVEN



                                        ;
                                        ; FORMAT STATEMENTS USED IN PRINT CALLS
                                        ;
```

```
                        .SBTTL  GLOBAL SUBROUTINES

                        ;////////////////////////////////////////////////////////////////////////////
                        ;/      THE GLOBAL SUBROUTINES ARE CALLED BY MORE THAN ONE TEST
                        ;////////////////////////////////////////////////////////////////////////////


                        ;;*************************************************************************
                        ;
                        ;
                        ;;*************************************************************************

                        ;;*************************************************************************
                        ; CALL MACRO - CALL ROUTINE = JSR PC, ROUTINE
                        ;              (NOTE: RETURN IS  EQUATED TO A RTS PC)
                        ;;*************************************************************************
                                .MACRO  CALL    ROUTIN
                                .IF     B, ROUTIN
                                .ERROR  ROUTINE; ## MISSING ROUTINE-EXPANSION ABORT ##
                                .MEXIT
                                .ENDC
                                JSR     PC,ROUTIN
                                .ENDM


                        ;;*************************************************************************
                        ; PUSH REGS MACRO
                        ;
                        ;;*************************************************************************
                                .MACRO  PUSH REGS
                                .IRP    X,<REGS>
                                MOV     X,-(SP)         ;PUSH REG ON STACK.
                                .ENDR
                                .ENDM   PUSH

                        ;;*************************************************************************
                        ; POP REGS MACRO
                        ;
                        ;;*************************************************************************
                                .MACRO  POP REGS
                                .IRP    X,<REGS>
                                MOV     (SP)+,X         ;POP REG OFF STACK.
                                .ENDR
                                .ENDM   POP


                        ;;*************************************************************************
                        ; WAIT MACRO
                        ;
                        ;;*************************************************************************

                                .MACRO  WAIT    $BIT,ADDRESS
                                .IF     B, $BIT
                                .ERROR ROUTINE;  ## MISSING ROUTINE-EXAPNSION ABORT ##
                                .MEXIT
                                .ENDC
```

```
                        .NLIST
                        .LIST ME
                        .LIST

                                                ;******** MACRO EXPANSION ********
                        .IF     B, ADDRESS
                        .IF     IDN $BIT, TBE
                        JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
                                .WORD   TBE     ;WAIT FOR TBE TO BE SET
                                .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                        .IFF
                        JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
                                .WORD   $BIT    ;WAIT FOR BIT TO BE SET
                                .WORD   RXCSR   ;IN RECEIVER  CSR.
                        .ENDC
                        .IFF
                        JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
                                .WORD   $BIT    ;WAIT FOR BIT TO BE SET
                                .WORD   ADDRESS ;IN THE GIVEN ADDRESS.
                        .ENDC
                                                ;**********************************

                        .NLIST ME
                        .ENDM



;;*****************************************************************************
; DELAY MACRO
;
;;*****************************************************************************

        .MACRO  $DELAY  $TIME
        .IF     B, $TIME
        .ERROR ROUTINE;  ## MISSING ROUTINE-EXAPNSION ABORT ##
        .MEXIT
        .ENDC

        .NLIST
        .LIST ME
        .LIST

                                ;******** MACRO EXPANSION ********
        JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
                .WORD   $TIME   ;NUMBER OF DELAY LOOPS
                                ;**********************************

        .NLIST ME
        .ENDM
```

GLOBAL SUBROUTINES

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $WAIT
                        ;
                        ;               FUNCTION -  TO WAIT FOR A BIT TO BE SET IN A GIVEN
                        ;                           ADDRESS (USUALLY A DPV REGISTER).
                        ;
                        ;       CALLING FORMAT:         JSR     PC,$WAIT
                        ;                               .WORD           ;BIT
                        ;                               .WORD           ;ADDRESS
                        ;
                        ;       ENTRY CONDITIONS -
                        ;
                        ;       EXIT CONDITIONS  - EXIT WHEN BIT SET OR UPON TIME OUT.
                        ;                          IF TIME OUT, PRINT TIME OUT ERROR.
                        ;
                        ;       CALLED BY        - TESTS 4,5,7
                        ;
                        ;    REGISTERS DESTROYED - R0-R2 SAVED AND RESTORED
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
003724                  $WAIT:
003724  011637  002416          MOV     (SP),SUBRPC     ;SAVE THE PC THAT CALLED THE ROUTINE.
003730  162737  000004  002416  SUB     #4,SUBRPC       ;CORRECT THE PC.
003736  017637  000000  002320  MOV     @(SP),BITS      ;SAVE THE BITS THAT WE ARE CHECKING.
003744  062716  000002          ADD     #2,(SP)         ;UPDATE THE ADDRESS ON THE STACK.
003750  017637  000000  002374  MOV     @(SP),REG       ;SAVE THE ADDRESS OF THE CSR POINTER
003756  017737  176412  002374  MOV     @REG,REG        ;SAVE THE ACTUAL CSR ADDRESS.
003764  062716  000002          ADD     #2,(SP)         ;UPDATE THE ADDRESS ON THE STACK.
003770                          PUSH    <R2,R1,R0>      ;PUSH REGS ON THE STACK
003776  005000                  CLR     R0              ;USE R0 AS A LOOP TIMER.
                        ;
004000                  10$:
004000  017701  176370          MOV     @REG,R1         ;SAVE THE CONTENTS OF THE CSR.
004004  033701  002320          BIT     BITS,R1         ;IS THE BIT SET ?
004010  001026                  BNE     20$             ;BRANCH IF SET
004012                          BREAK                   ;BREAK FOR SUPERVISOR.
004012  104422                                                  TRAP    C$BRK
004014  005300                  DEC     R0              ;DECREMENT TIMER
004016  001370                  BNE     10$             ;CONTINUE IF TIMER NOT EXPIRED.
004020  010102                  MOV     R1,R2           ;SAVE EXPECTED RESULTS FOR ERROR MESSAGE.
004022  053702  002320          BIS     BITS,R2         ;SET THE EXPECTED BITS.
004026                          ERRDF   0,EMG1,ERRG12   ;PRINT TIME OUT ERROR.
004026  104455                                                  TRAP    C$ERDF
004030  000000                                                  .WORD   0
004032  013462                                                  .WORD   EMG1
004034  010214                                                  .WORD   ERRG12
004036  032737  000004  002320  BIT     #TBE,BITS       ;WERE WE WAITING FOR TBE?
004044  001410                  BEQ     20$             ;IF NOT, EXIT.
004046                          PRINTB  #FMS1           ;SUGGEST THAT THE XMIT CLOCK IS INOP.
004046  012746  004102                                          MOV     #FMS1,-(SP)
004052  012746  000001                                          MOV     #1,-(SP)
004056  010600                                                  MOV     SP,R0
```

```
   004060  104414                                                                          TRAP    C$PNTB
   004062  062706  000004                                                                  ADD     #4,SP
   004066                              20$:
   004066                                      POP     <R0,R1,R2>      ;POP REGISTERS OFF STACK.
   004074  005037  002416                      CLR     SUBRPC

   004100  000207                              RETURN

   004102     045     101     050      FMS1:   .ASCIZ  /%A(CHECK THE XMIT CLOCK)%N/
   004105     103     110     105
   004110     103     113     040
   004113     124     110     105
   004116     040     130     115
   004121     111     124     040
   004124     103     114     117
   004127     103     113     051
   004132     045     116     000
                                               .EVEN
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $RESET
                        ;
                        ;               FUNCTION -  TO PERFORM A MASTER RESET AND TO CHECK THAT
                        ;                           THE DPV IS IN THE PROPER INIT STATE.
                        ;
                        ;       CALLING FORMAT:         JSR     PC,$RESET
                        ;
                        ;       ENTRY CONDITIONS -
                        ;
                        ;       EXIT CONDITIONS  - DEVICE IS RESET CORRECTLY OR AN ERROR IS REPORTED
                        ;
                        ;       CALLED BY        - TESTS 2-43
                        ;
                        ;    REGISTERS NOT AFFECTED
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
004136                  $RESET:
004136  012777  000001  176126          MOV     #RESET,@TXCSR   ;RESET THE DPV.
004144  105777  176116                  TSTB    @RXCSR          ;IS THE RECEIVE CSR = 0?
004150  001015                          BNE     10$             ;IF NOT ERROR.
004152  005777  176112                  TST     @RDSR           ;IS THE RECEIVE STATUS AND DATA REG = 0?
004156  001012                          BNE     10$             ;IF NOT, ERROR.
004160  032777  000004  176104          BIT     #4,@TXCSR       ;IS TBE SET?
004166  001406                          BEQ     10$             ;IF NOT, ERROR.
004170  105777  176106                  TSTB    @PCR            ;IS THE PARAMETER CONTROL REG = 0?
004174  001003                          BNE     10$             ;IF NOT, ERROR.
004176  005777  176072                  TST     @TDSR           ;IS THE XMIT STATUS AND DATA REG = 0?
004202  001413                          BEQ     20$             ;IF YES - RESET OK.
004204                          10$:
004204  011637  002416                  MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
004210  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
004216                                  ERRDF   1,EMG3,ERRG11   ;PRINT ERROR MESSAGE
C04216  104455                                                          TRAP    C$ERDF
004220  000001                                                          .WORD   1
004222  013540                                                          .WORD   EMG3
004224  007572                                                          .WORD   ERRG11
004226  005037  002416                  CLR     SUBRPC          ;CLEAR THE FLAG
004232                          20$:
004232  017737  176030  002444          MOV     @RXCSR,MODEM    ;SAVE THE MODEM STATUS.
004240  042737  006760  002444          BIC     #6760,MODEM     ;CLEAR ALL BUT MODEM
004246  032777  000040  176016          BIT     #TM,@TXCSR      ;IS TEST MODE SET?
004254  001417                          BEQ     30$             ;IF NOT OK
004256  052737  000040  002444          BIS     #TM,MODEM       ;OTHERWISE SET TM IN MODEM
                                                                ;ALSO CHECK FOR -12V
004264  122777  000162  176004          CMPB    #162,@CSR1      ;ARE RING, CTS, CD AND DM ALSO SET?
004272  001010                          BNE     30$             ;IF NOT, PROBABLY HAVE -12V
004274                                  PRINTB  #FMG9           ;PROMPT USER TO CHECK -12V.
004274  012746  011522                                                  MOV     #FMG9,-(SP)
004300  012746  000001                                                  MOV     #1,-(SP)
004304  010600                                                          MOV     SP,R0
004306  104414                                                          TRAP    C$PNTB
004310  062706  000004                                                  ADD     #4,SP
```

GLOBAL SUBROUTINES

```
     49 004314                          30$:
     50
     51 004314  000207                          RETURN
     52
```

```
                ;*****************************************************************************
                ;*****************************************************************************
                ;
                ;                       SUBROUTINE $BUFRS
                ;
                ;               FUNCTION -  TO SET UP THE TRANSMIT BUFFER WITH A DATA
                ;                           PATTERN AND TO CLEAR THE RECEIVE BUFFER
                ;
                ;       CALLING FORMAT:         JSR     PC,$BUFRS
                ;
                ;       ENTRY CONDITIONS - IPCSAR  = IMAGE OF THE PCSAR (CSR 2 OF THE DPV)
                ;                          IPCR    = IMAGE OF THE PCR (CSR 5 OF THE DPV)
                ;                          XTYPE   = ADDRESS OF THE XMIT TYPE
                ;                          XCOUNT  = # OF CHARACTERS TO TRANSMIT
                ;                          LENGTH  = CHARACTER LENGTH
                ;                          MODE    = PROTOCOL TYPE (BCP OR BOP)
                ;
                ;       EXIT CONDITIONS  - ECOUNT  = # OF CHARACTERS TO TRANSMIT (MODIFIED
                ;                                    XCOUNT)
                ;                          XMTBUF  = CONTAINS XMIT DATA TYPE PATTERN
                ;                          RCVBUF  = RECEIVE BUFFER CLEARED
                ;
                ;       CALLED BY        - TESTS 15-40
                ;
                ;    REGISTERS R1-R4 DESTROYED
                ;
                ;*****************************************************************************
                ;*****************************************************************************
004316          $BUFRS:
004316  013701  002352          MOV     LENGTH,R1       ;GET THE CHARACTER LENGTH
004322  013702  002470          MOV     XTYPE,R2        ;ADDRESS OF DATA TYPE
004326  012703  002673          MOV     #XMTBUF,R3      ;ADDRESS OF TRANSMIT BUFFER.
004332  013704  002472          MOV     XCOUNT,R4       ;CHARACTER COUNT.
004336  005737  002362          TST     MODE            ;WHAT MODE?
004342  001444                  BEQ     10$             ;IF BCP, SKIP ADDRESS CHECK.
                
004344  032737  100000  002344  BIT     #APA,IPCSAR     ;IS APA DESIRED?
004352  001403                  BEQ     5$              ;IF NOT CHECK SECONDARY ADDRESS.
004354  112723  000377          MOVB    #377,(R3)+      ;PUT APA IN THE XMIT BUFFER
004360  000422                  BR      7$
004362          5$:
004362  032737  010000  002344  BIT     #SECADR,IPCSAR  ;IS THE SECONDARY ADDRESS DESIRED?
004370  001403                  BEQ     6$              ;IF NOT  - JUST LOAD DATA
004372  113723  002344          MOVB    IPCSAR,(R3)+    ;PUT SECONDARY ADDRESS IN THE XMIT BUFFER.
004376  000413                  BR      7$
004400          6$:
004400  112223                  MOVB    (R2)+,(R3)+     ;LOAD ADDRESS CHARACTER
004402  032737  000020  002342  BIT     #EXADD,IPCR     ;IS EXTENDED ADDRESS REQUESTED?
004410  001406                  BEQ     7$              ;BR IF NOT
004412  142763  000001  177777  BICB    #BIT0,-1(R3)    ;MAKE SURE THE LSB OF THE ADDRESS IS 0
004420  112223                  MOVB    (R2)+,(R3)+     ;GET THE EXTENDED ADDRESS BYTE.
004422  005237  002472          INC     XCOUNT          ;COMPENSATE TRANSMIT COUNT.
004426          7$:
004426  112223                  MOVB    (R2)+,(R3)+     ;LOAD CONTROL CHARACTER
004430  032737  000010  002342  BIT     #EXCON,IPCR     ;IS EXTENDED CONTROL DESIRED?
```

GLOBAL SUBROUTINES

```
                                                BEQ     8$              ;BR IF NOT
                                                MOVB    (R2)+,(R3)+     ;LOAD EXTENDED CONTROL
                                                INC     XCOUNT          ;COMPENSATE TRANSMIT COUNT
                                        8$:
                                                ADD     #2,XCOUNT       ;COMPENSATE TRANSMIT COUNT
                                        10$:
                                                MOV     XCOUNT,ECOUNT   ;TRANSMIT COUNT IS THE END COUNT IN BCP MODE.
                                        11$:
                                                MOVB    (R2)+,(R3)      ;SAVE THE DATA IN THE TRANSMIT BUFFER
                                                BICB    MASK(R1),(R3)+  ;CLEAR UNUSED BITS (DEPENDS ON CHAR LENGTH)
                                                DEC     R4              ;DECREMENT COUNTER.
                                                BNE     11$             ;LOOP UNTIL THE TRANSMIT BUFFER IS LOADED.

                                                MOV     #RCVBUF,R1      ;GET THE ADDRESS OF THE RECEIVE BUFFER
                                                MOV     #RSIZE,R2       ;GET THE LENGTH OF THE BUFFER.
                                        20$:
                                                CLRB    (R1)+           ;CLEAR THE ENTIRE BUFFER
                                                DEC     R2              ;DECREMENT THE COUNTER
                                                BNE     20$             ;LOOP UNTIL THE ENTIRE RECEIVE BUFFER IS CLEAR

                                                RETURN

 000   376   374   MASK:   .BYTE   0,376,374,370,360,340,300,200,0
 370   360   340
 300   200   000

                                                .EVEN
```

```
                ;*****************************************************************************
                ;*****************************************************************************
                ;
                ;                       SUBROUTINE $DATA
                ;
                ;               FUNCTION -
                ;
                ;       CALLING FORMAT:         JSR     PC,$DATA
                ;                               JSR     PC,$DATA1
                ;
                ;
                ;       ENTRY CONDITIONS - RCVBUF  = CLEARED RECEIVE BUFFER
                ;                          XMTBUF  = XMIT BUFFER
                ;                          MAINT   = MAINTENANCE MODE FLAG
                ;                                    IF SET, MAINT. MODE DESIRED
                ;                          RXMINI  = RECEIVER INIT WITH MAINTENANCE MODE SET.
                ;                          RXINIT  = USER SELECTED RECEIVER INIT WORD.
                ;                          TXMINI  = XMIT INIT WORD WITH MAINTENANCE MODE SET.
                ;                          TXINIT  = USER SELECTED XMIT INIT WORD
                ;                          TIMER   = TIME OUT VALUE (DETERMINED IN INIT -
                ;                                    DEPENDENT ON PROCESSOR TYPE)
                ;                          EXERR   = FLAG FOR EXPECTED ERROR.
                ;                                      0 = NO ERROR EXPECTED.
                ;                                    NON0 = ERROR EXPECTED.
                ;
                ;
                ;       EXIT CONDITIONS  - IF A CORRECT DATA TRANSMISSION - CARRY CLEAR
                ;                          IF ERROR IN TRANSMISSION - CARRY SET AND ERROR
                ;                          FLAG SET. IF ERROR WAS NOT EXPECTED, A MESSAGE
                ;                          WILL BE OUTPUT.
                ;
                ;       CALLED BY        - $DATA  - TESTS 15-28 & 30 - 40
                ;                          $DATA1 - TESTS 41 -43
                ;
                ;
                ;    REGISTERS R1-R5 DESTROYED
                ;
                ;*****************************************************************************
                ;*****************************************************************************
004526          $DATA:
                ;
004526 005037 002376            CLR     RFLAG           ;CLEAR THE RECEIVE FLAG
004532 005037 002424            CLR     TFLAG           ;CLEAR THE TRANSMIT FLAG
004536 005037 002360            CLR     MCFLAG          ;CLEAR THE MODEM CONTROL FLAG
004542 005037 002330            CLR     ERROR           ;ERROR CONDITION FLAG
004546 005037 002426            CLR     TIMEO           ;CLEAR TIMEOUT FLAG
004552 005037 002476            CLR     XMITD           ;CLEAR XMIT COUNTER.
                ;
004556 012701 003273            MOV     #RCVBUF,R1      ;RECEIVE BUFFER
004562 012702 002673            MOV     #XMTBUF,R2      ;TRANSMIT BUFFER
004566 013703 002472            MOV     XCOUNT,R3       ;TRANSMIT COUNTER
004572 005037 002500            CLR     RCOUNT          ;CLEAR RECEIVE COUNTER.
                                                        ;SET UP THE VECTORS.
004576 005737 002340            TST     HIGH            ;IS THIS A HIGH SPEED TEST?
004602 001435                   BEQ     5$              ;BRANCH IF LOW SPEED
                                                        ;SET VECTORS WITH THE HIGH SPEED ISRS
```

GLOBAL SUBROUTINES

```
     58 004604                                          SETVEC  XMTVEC,#XDATA2,#PRI04 ;HIGH SPEED BOP XMIT ISR.
        004604  012746  000200                                                        MOV     #PRI04,-(SP)
        004610  012746  017512                                                        MOV     #XDATA2,-(SP)
        004614  013746  002264                                                        MOV     XMTVEC,-(SP)
        004620  012746  000003                                                        MOV     #3,-(SP)
        004624  104437                                                                TRAP    C$SVEC
        004626  062706  000010                                                        ADD     #10,SP
     59 004632                                          SETVEC  RCVEC,#RDATA2,#PRI04  ;HIGH SPEED RECV VECTOR
        004632  012746  000200                                                        MOV     #PRI04,-(SP)
        004636  012746  017164                                                        MOV     #RDATA2,-(SP)
        004642  013746  002262                                                        MOV     RCVEC,-(SP)
        004646  012746  000003                                                        MOV     #3,-(SP)
        004652  104437                                                                TRAP    C$SVEC
        004654  062706  000010                                                        ADD     #10,SP
     60 004660  042737  000040  002404          BIC     #DSITEN,RXINIT  ;IGNORE DATA SET INTERRUPTS IN HIGH SPEED.
     61 004666  013737  002472  002322          MOV     XCOUNT,COUNTER  ;SET UP COUNTER FOR INT SERVICE ROUTINE RDATA2
     62 004674  000426                          BR      7$
     63 004676                              5$:
     64 004676                                          SETVEC  XMTVEC,#XDATA,#PRI04  ;XMIT VECTOR
        004676  012746  000200                                                        MOV     #PRI04,-(SP)
        004702  012746  017340                                                        MOV     #XDATA,-(SP)
        004706  013746  002264                                                        MOV     XMTVEC,-(SP)
        004712  012746  000003                                                        MOV     #3,-(SP)
        004716  104437                                                                TRAP    C$SVEC
        004720  062706  000010                                                        ADD     #10,SP
     65 004724                                          SETVEC  RCVEC,#RDATA,#PRI04   ;RECV VECTOR
        004724  012746  000200                                                        MOV     #PRI04,-(SP)
        004730  012746  016732                                                        MOV     #RDATA,-(SP)
        004734  013746  002262                                                        MOV     RCVEC,-(SP)
        004740  012746  000003                                                        MOV     #3,-(SP)
        004744  104437                                                                TRAP    C$SVEC
        004746  062706  000010                                                        ADD     #10,SP
     66 004752                              7$:
     67 004752                                  SETPRI  #PRI00          ;ENABLE INTERRUPTS
        004752  012700  000000                                                        MOV     #PRI00,R0
        004756  104441                                                                TRAP    C$SPRI
     68 004760  005737  002356                  TST     MAINT           ;SET MAINTENANCE MODE?
     69 004764  001407                          BEQ     $DATA1          ;BR IF NOT
     70 004766  053777  002406  175272          BIS     RXMINI,@RXCSR   ;INIT RECEIVER WITH MAINTENANCE MODE
     71 004774  053777  002442  175270          BIS     TXMINI,@TXCSR   ;INIT TRANSMITTER WITH MAINT. MODE.
     72 005002  000411                          BR      $GO
     73
     74 005004                              $DATA1:
     75 005004  053777  002404  175254          BIS     RXINIT,@RXCSR   ;ISSUE RECEIVER INIT (DETERMINED IN INIT CODE)
     76 005012  053777  002440  175252          BIS     TXINIT,@TXCSR   ;ISSUE XMIT INIT (DETERMINED IN INIT CODE)
     77 005020  052737  000040  002404          BIS     #DSITEN,RXINIT  ;RESET THE DATA SET INTERRUPT (MAY BE CLEARED
     78                                                                 ;IF THIS IS A HIGH SPEED TEST).
     79 005026                              $GO:
     80 005026  011637  002416                  MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
     81 005032  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
     82 005040  013704  002430                  MOV     TIMER,R4        ;SET UP TIMER
     83 005044                              8$:
     84 005044  012705  001000                  MOV     #1000,R5        ;INNER LOOP COUNTER
     85 005050                              10$:
     86 005050  005777  175220                  TST     @TDSR           ;IS THERE A TRANSMITTER ERROR?
     87 005054  100426                          BMI     20$             ;BR IF YES
     88 005056  005737  002376                  TST     RFLAG           ;IS THE RECEIVER DONE?
```

```
                                        BNE     22$             ;EXIT LOOP IF YES
                                        DEC     R5              ;DECREMENT INNER LOOP COUNTER
                                        BNE     10$             ;LOOP UNTIL DONE
                                        CMP     #2,TURN         ;IS THIS RS422?
                                        BEQ     11$             ;IF YES - DON'T ALLOW A SUPERVISOR BREAK.
                                        BREAK                   ;BREAK FOR SUPERVISOR INTERRUPT
                                                                                        TRAP    C$BRK
                                11$:
                                        DEC     R4              ;DECREMENT OUTSIDE LOOP COUNTER
                                        BNE     8$              ;LOOP UNTIL DONE
                                        INC     TIMEO           ;SET TIME OUT FLAG.

                                        TST     EXERR           ;WAS AN ERROR EXPECTED?
                                        BNE     25$             ;IF YES - EXIT WITHOUT ERROR MESSAGE.
                                        ERRDF   2,EMG2,ERRG2    ;TIME OUT
                                                                                        TRAP    C$ERDF
                                                                                        .WORD   2
                                                                                        .WORD   EMG2
                                                                                        .WORD   ERRG2
                                        BR      24$
                                20$:
                                        BIC     #TXENA,@TXCSR   ;DISABLE THE TRANSMITTER.
                                        ERRDF   3,EMG30,ERRG2   ;TRANSMIT UNDERRUN
                                                                                        TRAP    C$ERDF
                                                                                        .WORD   3
                                                                                        .WORD   EMG30
                                                                                        .WORD   ERRG2
                                        BR      24$
                                22$:
                                        TST     RFLAG           ;WAS THIS THE END OF MESSAGE?
                                        BPL     25$             ;OK - IF YES
                                        TST     EXERR           ;WAS AN ERROR EXPECTED?
                                        BNE     25$             ;IF YES - EXIT WITHOUT ERROR MESSAGE.
                                        ERRDF   4,EMG31,ERRG2   ;RECEIVER ERROR
                                                                                        TRAP    C$ERDF
                                                                                        .WORD   4
                                                                                        .WORD   EMG31
                                                                                        .WORD   ERRG2
                                24$:
                                        MOV     #1,ERROR        ;FLAG ERROR
                                        CLR     SUBRPC          ;CLEAR THE SUBR PC FLAG
                                        SEC                     ;SET CARRY - ERROR
                                        BR      30$

                                25$:
                                        CLC                     ;CLEAR CARRY - NO ERROR
                                        CLR     SUBRPC          ;CLEAR THE SUBR PC FLAG
                                30$:
                                        BIS     #RESET,@TXCSR   ;RESET THE DPV
                                        CLRVEC  XMTVEC          ;RESTORE VECTORS
                                                                                        MOV     XMTVEC,R0
                                                                                        TRAP    C$CVEC
                                        CLRVEC  RCVEC           ;
                                                                                        MOV     RCVEC,R0
                                                                                        TRAP    C$CVEC
                                        RETURN
```

```
                        ;*****************************************************************************
                        ;*****************************************************************************
                        ;
                        ;                       SUBROUTINE  $CHECK
                        ;
                        ;               FUNCTION - AFTER A DATA TRANSMISSION CHECK
                        ;                          1. THE ERROR CHECK BIT 2. THAT THE XMIT AND RCV
                        ;                          CHARACTER COUNTS ARE EQUAL 3. THAT THE XMIT AND
                        ;                          RCV BUFFERS ARE IDENTICAL
                        ;
                        ;       CALLING FORMAT:          JSR     PC,$CHECK
                        ;                                JSR     PC,$CHK1
                        ;
                        ;
                        ;       ENTRY CONDITIONS - IRDSR  = IMAGE OF THE LAST RECEIVED RDSR
                        ;                          XCOUNT = TRANSMIT CHARACTER COUNT.
                        ;                          RCOUNT = RECEIVER CHARACTER COUNT.
                        ;                          XMTBUF = THE TRANSMIT BUFFER STARTING ADDRESS.
                        ;                          RCVBUF = THE RECEIVE BUFFER STARTING ADDRESS.
                        ;                          MODE   = PROTOCOL MODE: 0 = BCP,  NON0 = BOP
                        ;
                        ;       EXIT CONDITIONS  - IF ERROR DETECTED, A MESSAGE WILL BE OUTPUT.
                        ;
                        ;       CALLED BY        - $CHECK - TESTS 15, 17-23, 29-40
                        ;                          $CHK1  - TESTS 41-43
                        ;
                        ;    REGISTERS R1 - R3 DESTROYED
                        ;
                        ;*****************************************************************************
                        ;*****************************************************************************
005246                  $CHECK:
                                .ENABL  LSB             ;ENABLE LOCAL SYMBOL BLOCK.
                        
005246  005737  002340          TST     HIGH            ;IS THIS A HIGH SPEED TEST (HIGH SPEED ISRS)
005252  001046                  BNE     5$              ;IF YES SKIP CRC ERROR CHECK AND
005254  005737  002362          TST     MODE            ;IS THIS BCP MODE?
005260  001404                  BEQ     1$              ;BR IF YES
005262  005737  002350          TST     IRDSR           ;IS THE ERROR BIT SET (BIT 15)
005266  100410                  BMI     3$              ;IF YES - CRC ERROR.
005270  000421                  BR      4$
005272                  1$:
005272  032737  002000  002344  BIT     #BIT10,IPCSAR   ;WAS CRC16 USED? (ONLY TIME BIT 10 IS SET)
005300  001015                  BNE     4$              ;IF NOT DON'T CHECK BIT.
005302  005737  002350          TST     IRDSR           ;IS THE ERROR BIT SET (BIT 15)?
005306  100412                  BMI     4$              ;IF YES - OK
005310                  3$:
005310  011637  002416          MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
005314  162737  000004  002416  SUB     #4,SUBRPC       ;ADJUST THE PC
005322                          ERRDF   5,EMG37,ERRG1   ;CRC ERROR
005322  104455                                                          TRAP    C$ERDF
005324  000005                                                          .WORD   5
005326  015226                                                          .WORD   EMG37
005330  006652                                                          .WORD   ERRG1
005332  000444                  BR      30$
005334                  4$:
005334  023737  002472  002500  CMP     XCOUNT,RCOUNT   ;ARE THE CHARACTER COUNTS THE SAME.
```

```
                                                BEQ     5$              ;IF YES - CONTINUE
                                                MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
                                                SUB     #4,SUBRPC       ;ADJUST THE PC
                                                ERRDF   6,EMG25,ERRG14  ;CHARACTER COUNTS DIFFERENT
005356  104455                                                                  TRAP    C$ERDF
005360  000006                                                                  .WORD   6
005362  014725                                                                  .WORD   EMG25
005364  010760                                                                  .WORD   ERRG14
                                                BR      30$
                                        5$:
                                                MOV     #XMTBUF,R1      ;GET THE ADDRESS OF THE XMIT BUFFER.
                                                MOV     #RCVBUF,R2      ;GET THE ADDRESS OF THE RECV BUFFER.
                                                MOV     XCOUNT,R3       ;GET THE CHARACTER COUNT
                                        $CHK1:
                                                CMPB    (R1)+,(R2)+     ;ARE THE CHARACTERS THE SAME
                                                BNE     20$             ;IF NOT, REPORT THE ERROR
                                                DEC     R3              ;DECREMENT THE COUNT.
                                                BEQ     30$             ;LOOP UNTIL DONE
                                                BR      $CHK1
                                        20$:
                                                MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
                                                SUB     #4,SUBRPC       ;ADJUST THE PC
                                                DEC     R1              ;POINT TO DATA IN ERROR
                                                DEC     R2              ;POINT TO DATA IN ERROR.
                                                ERRDF   7,EMG26,ERRG3   ;CHARACTERS DON'T MATCH
005434  104455                                                                  TRAP    C$ERDF
005436  000007                                                                  .WORD   7
005440  014753                                                                  .WORD   EMG26
005442  007014                                                                  .WORD   ERRG3
                                        30$:
005444  005037  002416                        CLR     SUBRPC          ;CLEAR THE SUBR PC FLAG
                                                .DSABL  LSB             ;DISABLE LOCAL SYMBOL BLOCK.
005450  000207                                RETURN
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $MODEM
                        ;
                        ;               FUNCTION - TO PRINT OUT THE MODEM STATUS FROM A TEST
                        ;
                        ;       CALLING FORMAT:         JSR     PC,$MODEM
                        ;
                        ;
                        ;       ENTRY CONDITIONS - ERROR  = FLAG SET IF THERE WAS AN ERROR IN $DATA
                        ;                          MCFLAG = # OF MODEM CONTROL INTERRUPTS RECEIVED.
                        ;                                   ALSO USED AS THE INDEX INTO THE MODEM
                        ;                                   STATUS TABLE.
                        ;                          MODEM  = ADDRESS OF MODEM STATUS TABLE
                        ;
                        ;
                        ;       EXIT CONDITIONS  - IF THERE IS AN ERROR OR MORE THAT 1 MODEM
                        ;                          CONTROL INTERRUPT, PRINT OUT MODED STATUS.
                        ;                          OTHERWISE, UNEVENTFUL EXIT.
                        ;
                        ;       CALLED BY        - TESTS 30-40
                        ;
                        ;    REGISTERS R1-R3 DESTROYED
                        ;
                        ;*****************************************************************************
                        ;*****************************************************************************
005452                  $MODEM:
005452  011637  002416          MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
005456  162737  000004  002416  SUB     #4,SUBRPC       ;ADJUST THE PC
005464  005737  002330          TST     ERROR           ;WAS THERE AN ERROR IN THE $DATA ROUTINE
005470  001041                  BNE     1$              ;IF YES PRINT OUT STATUS
005472  022737  000001  002360  CMP     #1,MCFLAG       ;WAS THERE MORE THAN 1 MODEM CONTROL INT?
005500  002152                  BGE     35$             ;IF NOT - SKIP PRINT OUT
005502                          ERRDF   8,EMG40,ERRG1   ;MULTIPLE INTERRUPTS RECEIVED
005502  104455                                                          TRAP    C$ERDF
005504  000010                                                          .WORD   8
005506  015321                                                          .WORD   EMG40
005510  006652                                                          .WORD   ERRG1
005512                          PRINTB  #FMODEM,MCFLAG  ;PRINT THE NUMBER OF INTERRUPTS.
005512  013746  002360                                                  MOV     MCFLAG,-(SP)
005516  012746  006030                                                  MOV     #FMODEM,-(SP)
005522  012746  000002                                                  MOV     #2,-(SP)
005526  010600                                                          MOV     SP,R0
005530  104414                                                          TRAP    C$PNTB
005532  062706  000006                                                  ADD     #6,SP
005536  022737  000011  002360  CMP     #9.,MCFLAG      ;WERE MORE THAN NINE INTERRUPTS RECEIVED?
005544  002013                  BGE     1$              ;IF NOT, SKIP THE NEXT MESSAGE.
005546  012737  000011  002360  MOV     #9.,MCFLAG      ;ONLY PRINT OUT 9 INTERRUPTS
005554                          PRINTB  #FMODE6         ;INFORM THE USER INTERRUPTS DISABLED.
005554  012746  006325                                                  MOV     #FMODE6,-(SP)
005560  012746  000001                                                  MOV     #1,-(SP)
005564  010600                                                          MOV     SP,R0
005566  104414                                                          TRAP    C$PNTB
005570  062706  000004                                                  ADD     #4,SP
005574                  1$:
```

```
     43 005574  012701  002444                MOV     #MODEM,R1       ;ADDRESS OF MODEM STATUS
     44 005600                                 PRINTB  #FMODE0
        005600  012746  006115                                                  MOV     #FMODE0,-(SP)
        005604  012746  000001                                                  MOV     #1,-(SP)
        005610  010600                                                          MOV     SP,R0
        005612  104414                                                          TRAP    C$PNTB
        005614  062706  000004                                                  ADD     #4,SP
     45 005620                                 PRINTB  #FMODE1         ;PRINT INITIAL MODEM STATUS
        005620  012746  006144                                                  MOV     #FMODE1,-(SP)
        005624  012746  000001                                                  MOV     #1,-(SP)
        005630  010600                                                          MOV     SP,R0
        005632  104414                                                          TRAP    C$PNTB
        005634  062706  000004                                                  ADD     #4,SP
     46 005640                                 PRINTB  #FMODE2
        005640  012746  006233                                                  MOV     #FMODE2,-(SP)
        005644  012746  000001                                                  MOV     #1,-(SP)
        005650  010600                                                          MOV     SP,R0
        005652  104414                                                          TRAP    C$PNTB
        005654  062706  000004                                                  ADD     #4,SP
     47 005660  005002                         CLR     R2              ;CLEAR COUNTER
     48 005662                          5$:
     49 005662  012703  006420                 MOV     #MMASK,R3
     50 005666  012704  000012                 MOV     #10.,R4         ;# OF BITS TO CHECK IN THE MODEM STATUS
     51
     52 005672                          10$:
     53 005672  032311                         BIT     (R3)+,(R1)      ;CHECK THE BIT
     54 005674  001011                         BNE     12$             ;IS IT SET?
     55 005676                                 PRINTB  #FMODE3         ;IF NOT, PRINT A 0
        005676  012746  006257                                                  MOV     #FMODE3,-(SP)
        005702  012746  000001                                                  MOV     #1,-(SP)
        005706  010600                                                          MOV     SP,R0
        005710  104414                                                          TRAP    C$PNTB
        005712  062706  000004                                                  ADD     #4,SP
     56 005716  000410                         BR      15$
     57 005720                          12$:
     58 005720                                 PRINTB  #FMODE4         ;PRINT A 1
        005720  012746  006266                                                  MOV     #FMODE4,-(SP)
        005724  012746  000001                                                  MOV     #1,-(SP)
        005730  010600                                                          MOV     SP,R0
        005732  104414                                                          TRAP    C$PNTB
        005734  062706  000004                                                  ADD     #4,SP
     59 005740                          15$:
     60 005740  005304                         DEC     R4              ;DECREMENT BIT COUNTER
     61 005742  001353                         BNE     10$             ;LOOP UNTIL DONE.
     62
     63
     64 005744  005737  002360                 TST     MCFLAG          ;IS THIS THE LAST STATUS
     65 005750  001416                         BEQ     30$             ;IF YES, EXIT
     66 005752  005721                         TST     (R1)+           ;INCREMENT MODEM STATUS POINTER.
     67 005754  005337  002360                 DEC     MCFLAG          ;DECREMENT MC FLAG
     68 005760  005202                         INC     R2              ;INCREMENT COUNTER.
     69
     70 005762                                 PRINTB  #FMODE5,R2      ;PRINT NEXT MODEM
        005762  010246                                                          MOV     R2,-(SP)
        005764  012746  006275                                                  MOV     #FMODE5,-(SP)
        005770  012746  000002                                                  MOV     #2,-(SP)
        005774  010600                                                          MOV     SP,R0
```

```
    005776  104414                                                                          TRAP    C$PNTB
    006000  062706  000006                                                                  ADD     #6,SP
    006004  000726                          BR      5$
    006006                          30$:
    006006                                  PRINTB  #FMG6           ;PRINT CARRIAGE RETURN.
    006006  012746  011410                                                                  MOV     #FMG6,-(SP)
    006012  012746  000001                                                                  MOV     #1,-(SP)
    006016  010600                                                                          MOV     SP,R0
    006020  104414                                                                          TRAP    C$PNTB
    006022  062706  000004                                                                  ADD     #4,SP
    006026                          35$:
    006026  000207                          RETURN

    006030     045     101     116  FMODEM: .ASCIZ  /%ANUMBER OF MODEM CONTROL INTERRUPTS RECEIVED: %D2%N/
    006033     125     115     102
    006036     105     122     040
    006041     117     106     040
    006044     115     117     104
    006047     105     115     040
    006052     103     117     116
    006055     124     122     117
    006060     114     040     111
    006063     116     124     105
    006066     122     122     125
    006071     120     124     123
    006074     040     122     105
    006077     103     105     111
    006102     126     105     104
    006105     072     040     045
    006110     104     062     045
    006113     116     000
    006115     045     116     045  FMODE0: .ASCIZ  /%N%AMODEM STATUS%N%S14/
    006120     101     115     117
    006123     104     105     115
    006126     040     123     124
    006131     101     124     125
    006134     123     045     116
    006137     045     123     061
    006142     064     000
    006144     045     101     040  FMODE1: .ASCIZ  /%A     RL  DTR  RTS   LL   TM  DSR   CD  CTS  RING CNG/
    006147     040     040     040
    006152     040     122     114
    006155     040     040     104
    006160     124     122     040
    006163     040     122     124
    006166     123     040     040
    006171     040     114     114
    006174     040     040     040
    006177     124     115     040
    006202     040     104     123
    006205     122     040     040
    006210     040     103     104
    006213     040     040     103
    006216     124     123     040
    006221     040     122     111
    006224     116     107     040
    006227     103     116     107
```

GLOBAL SUBROUTINES

```
                006232  000
     80         006233  045     116     045  FMODE2: .ASCIZ  /%N%AMODEM ON RESET:/
                006236  101     115     117
                006241  104     105     115
                006244  040     117     116
                006247  040     122     105
                006252  123     105     124
                006255  072     000
     81         006257  045     123     064  FMODE3: .ASCIZ  /%S4%A0/
                006262  045     101     060
                006265  000
     82         006266  045     123     064  FMODE4: .ASCIZ  /%S4%A1/
                006271  045     101     061
                006274  000
     83         006275  045     116     045  FMODE5: .ASCIZ  /%N%AMODEM CHANGE %D1%A:/
                006300  101     115     117
                006303  104     105     115
                006306  040     103     110
                006311  101     116     107
                006314  105     040     045
                006317  104     061     045
                006322  101     072     000
     84         006325  045     101     052  FMODE6: .ASCIZ  /%A** MODEM CONTROL INTERRUPT DISABLED AFTER 9 CHANGES **%N/
                006330  052     040     115
                006333  117     104     105
                006336  115     040     103
                006341  117     116     124
                006344  122     117     114
                006347  040     111     116
                006352  124     105     122
                006355  122     125     120
                006360  124     040     104
                006363  111     123     101
                006366  102     114     105
                006371  104     040     101
                006374  106     124     105
                006377  122     040     071
                006402  040     103     110
                006405  101     116     107
                006410  105     123     040
                006413  052     052     045
                006416  116     000
     85                                         .EVEN
     86                                                 ;MASKS OF EACH BIT
     87         006420  000001  000002  000004  MMASK:  .WORD   SF,DTR,RTS,LL,TM,DM,RR,CTS,IC,DSCNG
                006426  000010  000040  001000
                006434  010000  020000  040000
                006442  100000
     88
     89
     90
```

```
                        ;*******************************************************************************
                        ;*******************************************************************************
                        ;
                        ;                       SUBROUTINE $TURN
                        ;
                        ;               FUNCTION - DETERMINE IF TURNAROUND IS AVAILABLE
                        ;
                        ;       CALLING FORMAT:         JSR     PC,$TURN
                        ;
                        ;       ENTRY CONDITIONS -      TURN - 0 = TURNAROUND OFF
                        ;                               STARES   = START RESTART COUNT
                        ;
                        ;
                        ;       EXIT CONDITIONS  -      TURNAROUND ON  - CARRY CLEAR (DO THE TEST)
                        ;                               TURNAROUND OFF - CARRY SET (DON'T DO THE TEST)
                        ;                               IF TURNAROUND OFF AND IF ON FIRST PASS, OUTPUT
                        ;                               A MESSAGE TO THE  USER.
                        ;
                        ;       CALLED BY       - TESTS 12 - 14
                        ;
                        ;    REGISTERS NOT EFFECTED
                        ;
                        ;*******************************************************************************
                        ;*******************************************************************************
006444                  $TURN:
006444  005737  002306          TST     TURN            ;IS THERE A TURNAROUND
006450  001022                  BNE     5$              ;IF YES - CLEAR CARRY TO DO THE TEST.
006452  022737  000001  002314  CMP     #1,STARES       ;IS THIS THE FIRST PASS
006460  001014                  BNE     1$              ;IF NOT, DON'T OUTPUT MESSAGE JUST SET FLAG.
006462                          PRINTX  #FMG0,L$TEST,LOGDEV ;INFORM THE USER THAT TEST CAN'T BE RUN
006462  013746  002354                                                          MOV     LOGDEV,-(SP)
006466  013746  002114                                                          MOV     L$TEST,-(SP)
006472  012746  011070                                                          MOV     #FMG0,-(SP)
006476  012746  000003                                                          MOV     #3,-(SP)
006502  010600                                                                  MOV     SP,R0
006504  104415                                                                  TRAP    C$PNTX
006506  062706  000010                                                          ADD     #10,SP
                                                    ;WITHOUT THE TURNAROUND.
006512                  1$:
006512  000261                  SEC                     ;FLAG NOT TO DO THE TEST.
CJ6514  000401                  BR      10$             ;BR TO RETURN
006516                  5$:
006516  000241                  CLC                     ;FLAG TO DO THE TEST.
006520                  10$:
006520  000207                  RETURN
```

```
                ;*****************************************************************************
                ;*****************************************************************************
                ;
                ;                       SUBROUTINE $SPEED
                ;
                ;             FUNCTION - DETERMINE IF THE TEST CAN BE RUN WITH
                ;                        WITH THE SELECTED TURNAROUND AND/OR PROCESSOR.
                ;
                ;       CALLING FORMAT:          JSR     PC,$SPEED
                ;
                ;       ENTRY CONDITIONS -       TURN = 1 - RS423
                ;                                TURN = 2 - RS422
                ;                                CPU  = 0 - LSI 11 OR LSI 11/2
                ;                                CPU  = 3 - LSI 11/23
                ;
                ;
                ;       EXIT CONDITIONS  -       OK TO RUN TEST - CARRY CLEAR
                ;                                DON'T RUN TEST - CARRY SET
                ;                                IF TEST CAN'T BE RUN, THE USER WILL BE
                ;                                INFORMED ON THE FIRST PASS.
                ;
                ;       CALLED BY        - $SPEED CALLED BY TESTS 29 - 41
                ;
                ;    REGISTERS NOT EFFECTED
                ;
                ;*****************************************************************************
                ;*****************************************************************************
006522          $SPEED:
006522  005737  002324            TST     CPU             ;IS THIS A LSI 11/23?
006526  001024                    BNE     5$              ;IF YES - CLEAR CARRY TO DO THE TEST.
006530  022737  000002  002306    CMP     #2,TURN         ;IS THIS RS422?
006536  001020                    BNE     5$              ;IF NOT - CLEAR CARRY AND DO THE TEST.
006540  022737  000001  002314    CMP     #1,STARES       ;IS THIS THE FIRST PASS?
006546  001012                    BNE     1$              ;IF NOT, DON'T OUTPUT MESSAGE JUST SET FLAG.
006550                            PRINTX  #FMG27,L$TEST   ;INFORM THE USER THAT THE TEST CAN'T BE RUN
006550  013746  002114                                                    MOV     L$TEST,-(SP)
006554  012746  013011                                                    MOV     #FMG27,-(SP)
006560  012746  000002                                                    MOV     #2,-(SP)
006564  010600                                                            MOV     SP,R0
006566  104415                                                            TRAP    C$PNTX
006570  062706  000006                                                    ADD     #6,SP
                                                ;WITH THIS CPU AND RS422.
006574          1$:
006574  000261                    SEC                     ;FLAG NOT TO DO THE TEST.
006576  000401                    BR      10$             ;BR TO RETURN.
006600          5$:
006600  000241                    CLC                     ;FLAG TO DO THE TEST.
006602          10$:
006602  000207                    RETURN
```

GLOBAL SUBROUTINES

```
                        ;*****************************************************************************
                        ;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $DLAY
                        ;
                        ;               FUNCTION - TO SAVE PROGRAM SPACE BY USING ONLY 1
                        ;                          EXPANSION OF THE SUPERVISOR MACRO "DELAY"
                        ;
                        ;       CALLING FORMAT:         JSR     PC,$DLAY
                        ;                               .WORD   #
                        ;
                        ;       ENTRY CONDITIONS -      @(SP) = # OF DELAY LOOPS TO USE.
                        ;
                        ;
                        ;       EXIT CONDITIONS  -
                        ;
                        ;       CALLED BY       - TESTS  2, 5-9, 12, 13
                        ;
                        ;    REGISTER R0 RESTORED
                        ;
                        ;*****************************************************************************
                        ;*****************************************************************************
006604                  $DLAY:
006604  017600  000000          MOV     @(SP),R0        ;GET THE # OF DELAY LOOPS
006610  062716  000002          ADD     #2,(SP)         ;UPDATE THE PC
006614                  10$:
006614                          DELAY   1               ;1 DELAY LOOP
006614  012727  000001                                                  MOV     #1,(PC)+
006620  000000                                                          .WORD   0
006622  013727  002116                                                  MOV     L$DLY,(PC)+
006626  000000                                                          .WORD   0
006630  005367  177772                                                  DEC     -6(PC)
006634  001375                                                          BNE     .-4
006636  005367  177756                                                  DEC     -22(PC)
006642  001367                                                          BNE     .-20
006644  005300                  DEC     R0              ;DECREMENT VARIABLE LOOP COUNTER
006646  001362                  BNE     10$             ;LOOP UNTIL DONE
006650  000207                  RETURN
```

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

006652                          BGNMSG  ERRG1
006652                                                                          ERRG1::
006652                                  PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
006652  013746  002416                                                        MOV     SUBRPC,-(SP)
006656  012746  011260                                                        MOV     #FMG3,-(SP)
006662  012746  000002                                                        MOV     #2,-(SP)
006666  010600                                                                MOV     SP,R0
006670  104414                                                                TRAP    C$PNTB
006672  062706  000006                                                        ADD     #6,SP
006676                          ENDMSG
006676                                                                  L10001:
006676  104423                                                                TRAP    C$MSG

006700                          BGNMSG  ERRG2
006700                                                                          ERRG2::
006700  005737  002416                  TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
006704  001412                          BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
006706                                  PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
006706  013746  002416                                                        MOV     SUBRPC,-(SP)
006712  012746  011260                                                        MOV     #FMG3,-(SP)
006716  012746  000002                                                        MOV     #2,-(SP)
006722  010600                                                                MOV     SP,R0
006724  104414                                                                TRAP    C$PNTB
006726  062706  000006                                                        ADD     #6,SP
006732                          10$:
006732                                  PRINTB  #FMG1,@CSR0,@CSR2 ;PRINT CSR0 AND CSR2 CONTENTS.
006732  017746  173332                                                        MOV     @CSR2,-(SP)
006736  017746  173324                                                        MOV     @CSR0,-(SP)
006742  012746  011166                                                        MOV     #FMG1,-(SP)
006746  012746  000003                                                        MOV     #3,-(SP)
006752  010600                                                                MOV     SP,R0
006754  104414                                                                TRAP    C$PNTB
006756  062706  000010                                                        ADD     #10,SP
006762                                  PRINTB  #FMG2,@CSR4,@CSR6 ;PRINT CSR4 AND CSR2 CONTENTS.
006762  017746  173306                                                        MOV     @CSR6,-(SP)
006766  017746  173300                                                        MOV     @CSR4,-(SP)
006772  012746  011223                                                        MOV     #FMG2,-(SP)
006776  012746  000003                                                        MOV     #3,-(SP)
007002  010600                                                                MOV     SP,R0
007004  104414                                                                TRAP    C$PNTB
007006  062706  000010                                                        ADD     #10,SP
007012                          ENDMSG
007012                                                                  L10002:
007012  104423                                                                TRAP    C$MSG

007014                          BGNMSG  ERRG3
007014                                                                          ERRG3::
007014                                  PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
007014  013746  002416                                                        MOV     SUBRPC,-(SP)
```

```
                                                                                        MOV     #FMG3,-(SP)
                                                                                        MOV     #2,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #6,SP
                        PRINTB  #FMG8,<B,@R1>,<B,@R2>
                                                                                        CLR     -(SP)
                                                                                        BISB    @R2,(SP)
                                                                                        CLR     -(SP)
                                                                                        BISB    @R1,(SP)
                                                                                        MOV     #FMG8,-(SP)
                                                                                        MOV     #3,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #10,SP
                ENDMSG
                                                                                L10003:
                                                                                        TRAP    C$MSG

                BGNMSG  ERRG4
                                                                                ERRG4::
                        PRINTB  #FMG4                   ;PRINT HEADER
                                                                                        MOV     #FMG4,-(SP)
                                                                                        MOV     #1,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #4,SP
                        PRINTB  #FMG7,CSR0,<B,@CSR0>    ;PRINT THE LOW BYTE OF CSR0
                                                                                        CLR     -(SP)
                                                                                        BISB    @CSR0,(SP)
                                                                                        MOV     CSR0,-(SP)
                                                                                        MOV     #FMG7,-(SP)
                                                                                        MOV     #3,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #10,SP
                        PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
                                                                                        CLR     -(SP)
                                                                                        BISB    R1,(SP)
                                                                                        MOV     #FMG5,-(SP)
                                                                                        MOV     #2,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #6,SP
                ENDMSG
                                                                                L10004:
                                                                                        TRAP    C$MSG


                BGNMSG  ERRG7
                                                                                ERRG7::
                        PRINTB  #FMG4                   ;PRINT HEADER
                                                                                        MOV     #FMG4,-(SP)
                                                                                        MOV     #1,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
```

```
    007206  062706  000004                                                        ADD     #4,SP
 37 007212                          PRINTB  #FMG10,CSR4,<B,@CSR4>    ;PRINT THE LOW BYTE OF CSR4
    007212  005046                                                                CLR     -(SP)
    007214  157716  173052                                                        BISB    @CSR4,(SP)
    007220  013746  002272                                                        MOV     CSR4,-(SP)
    007224  012746  011574                                                        MOV     #FMG10,-(SP)
    007230  012746  000003                                                        MOV     #3,-(SP)
    007234  010600                                                                MOV     SP,R0
    007236  104414                                                                TRAP    C$PNTB
    007240  062706  000010                                                        ADD     #10,SP
 38 007244                          PRINTB  #FMG5,<B,R1>             ;PRINT EXPECTED CONTENTS
    007244  005046                                                                CLR     -(SP)
    007246  150116                                                                BISB    R1,(SP)
    007250  012746  011377                                                        MOV     #FMG5,-(SP)
    007254  012746  000002                                                        MOV     #2,-(SP)
    007260  010600                                                                MOV     SP,R0
    007262  104414                                                                TRAP    C$PNTB
    007264  062706  000006                                                        ADD     #6,SP
 39 007270                  ENDMSG
    007270                                                             L10005:
    007270  104423                                                                TRAP    C$MSG
 40
 41 007272                  BGNMSG  ERRG8
    007272                                                             ERRG8::
 42 007272                          PRINTB  #FMG4                    ;PRINT HEADER
    007272  012746  011332                                                        MOV     #FMG4,-(SP)
    007276  012746  000001                                                        MOV     #1,-(SP)
    007302  010600                                                                MOV     SP,R0
    007304  104414                                                                TRAP    C$PNTB
    007306  062706  000004                                                        ADD     #4,SP
 43 007312                          PRINTB  #FMG11,CSR5,<B,@PCR>     ;PRINT THE HIGH BYTE OF CSR4
    007312  005046                                                                CLR     -(SP)
    007314  157716  172762                                                        BISB    @PCR,(SP)
    007320  013746  002302                                                        MOV     CSR5,-(SP)
    007324  012746  011640                                                        MOV     #FMG11,-(SP)
    007330  012746  000003                                                        MOV     #3,-(SP)
    007334  010600                                                                MOV     SP,R0
    007336  104414                                                                TRAP    C$PNTB
    007340  062706  000010                                                        ADD     #10,SP
 44 007344                          PRINTB  #FMG5,<B,R1>             ;PRINT EXPECTED CONTENTS
    007344  005046                                                                CLR     -(SP)
    007346  150116                                                                BISB    R1,(SP)
    007350  012746  011377                                                        MOV     #FMG5,-(SP)
    007354  012746  000002                                                        MOV     #2,-(SP)
    007360  010600                                                                MOV     SP,R0
    007362  104414                                                                TRAP    C$PNTB
    007364  062706  000006                                                        ADD     #6,SP
 45 007370                  ENDMSG
    007370                                                             L10006:
    007370  104423                                                                TRAP    C$MSG
 46
 47 007372                  BGNMSG  ERRG9
    007372                                                             ERRG9::
 48 007372                          PRINTB  #FMG4                    ;PRINT HEADER
    007372  012746  011332                                                        MOV     #FMG4,-(SP)
    007376  012746  000001                                                        MOV     #1,-(SP)
    007402  010600                                                                MOV     SP,R0
```

```
     007404  104414                                                                        TRAP    C$PNTB
     007406  062706  000004                                                                ADD     #4,SP
  49 007412                               PRINTB  #FMG12,CSR6,<B,@CSR6>   ;PRINT THE LOW BYTE OF CSR6
     007412  005046                                                                        CLR     -(SP)
     007414  157716  172654                                                                BISB    @CSR6,(SP)
     007420  013746  002274                                                                MOV     CSR6,-(SP)
     007424  012746  011704                                                                MOV     #FMG12,-(SP)
     007430  012746  000003                                                                MOV     #3,-(SP)
     007434  010600                                                                        MOV     SP,R0
     007436  104414                                                                        TRAP    C$PNTB
     007440  062706  000010                                                                ADD     #10,SP
  50 007444                               PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
     007444  005046                                                                        CLR     -(SP)
     007446  150116                                                                        BISB    R1,(SP)
     007450  012746  011377                                                                MOV     #FMG5,-(SP)
     007454  012746  000002                                                                MOV     #2,-(SP)
     007460  010600                                                                        MOV     SP,R0
     007462  104414                                                                        TRAP    C$PNTB
     007464  062706  000006                                                                ADD     #6,SP
  51 007470                       ENDMSG
     007470                                                                        L10007:
     007470  104423                                                                        TRAP    C$MSG
  52
  53 007472                       BGNMSG  ERRG10
     007472                                                                        ERRG10::
  54 007472                               PRINTB  #FMG4                   ;PRINT HEADER
     007472  012746  011332                                                                MOV     #FMG4,-(SP)
     007476  012746  000001                                                                MOV     #1,-(SP)
     007502  010600                                                                        MOV     SP,R0
     007504  104414                                                                        TRAP    C$PNTB
     007506  062706  000004                                                                ADD     #4,SP
  55 007512                               PRINTB  #FMG13,CSR7,<B,@CSR7>   ;PRINT THE HIGH BYTE OF CSR6
     007512  005046                                                                        CLR     -(SP)
     007514  157716  172564                                                                BISB    @CSR7,(SP)
     007520  013746  002304                                                                MOV     CSR7,-(SP)
     007524  012746  011750                                                                MOV     #FMG13,-(SP)
     007530  012746  000003                                                                MOV     #3,-(SP)
     007534  010600                                                                        MOV     SP,R0
     007536  104414                                                                        TRAP    C$PNTB
     007540  062706  000010                                                                ADD     #10,SP
  56 007544                               PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
     007544  005046                                                                        CLR     -(SP)
     007546  150116                                                                        BISB    R1,(SP)
     007550  012746  011377                                                                MOV     #FMG5,-(SP)
     007554  012746  000002                                                                MOV     #2,-(SP)
     007560  010600                                                                        MOV     SP,R0
     007562  104414                                                                        TRAP    C$PNTB
     007564  062706  000006                                                                ADD     #6,SP
  57 007570                       ENDMSG
     007570                                                                        L10010:
     007570  104423                                                                        TRAP    C$MSG
  58
  59
  60 007572                       BGNMSG  ERRG11
     007572                                                                        ERRG11::
  61 007572  005737  002416               TST     SUBRPC                  ;WAS THE RESET ERROR FOUND IN THE SUB
  62 007576  001412                       BEQ     5$                      ;IF NOT SKIP
```

```
     63 007600                                  PRINTB  #FMG23,SUBRPC          ;PRINT WHERE CALLED
        007600  013746  002416                                                  MOV     SUBRPC,-(SP)
        007604  012746  012536                                                  MOV     #FMG23,-(SP)
        007610  012746  000002                                                  MOV     #2,-(SP)
        007614  010600                                                          MOV     SP,R0
        007616  104414                                                          TRAP    C$PNTB
        007620  062706  000006                                                  ADD     #6,SP
     64 007624                               5$:
     65 007624                                  PRINTB  #FMG4                   ;PRINT HEADER
        007624  012746  011332                                                  MOV     #FMG4,-(SP)
        007630  012746  000001                                                  MOV     #1,-(SP)
        007634  010600                                                          MOV     SP,R0
        007636  104414                                                          TRAP    C$PNTB
        007640  062706  000004                                                  ADD     #4,SP
     66 007644                                  PRINTB  #FMG7,CSR0,<B,@CSR0>    ;PRINT THE LOW BYTE OF CSR0
        007644  005046                                                          CLR     -(SP)
        007646  157716  172414                                                  BISB    @CSR0,(SP)
        007652  013746  002266                                                  MOV     CSR0,-(SP)
        007656  012746  011413                                                  MOV     #FMG7,-(SP)
        007662  012746  000003                                                  MOV     #3,-(SP)
        007666  010600                                                          MOV     SP,R0
        007670  104414                                                          TRAP    C$PNTB
        007672  062706  000010                                                  ADD     #10,SP
     67 007676                                  PRINTB  #FMG5,#0                ;PRINT EXPECTED CONTENTS
        007676  012746  000000                                                  MOV     #0,-(SP)
        007702  012746  011377                                                  MOV     #FMG5,-(SP)
        007706  012746  000002                                                  MOV     #2,-(SP)
        007712  010600                                                          MOV     SP,R0
        007714  104414                                                          TRAP    C$PNTB
        007716  062706  000006                                                  ADD     #6,SP
     68 007722                                  PRINTB  #FMG10,CSR4,<B,@CSR4>   ;PRINT THE LOW BYTE OF CSR4
        007722  005046                                                          CLR     -(SP)
        007724  157716  172342                                                  BISB    @CSR4,(SP)
        007730  013746  002272                                                  MOV     CSR4,-(SP)
        007734  012746  011574                                                  MOV     #FMG10,-(SP)
        007740  012746  000003                                                  MOV     #3,-(SP)
        007744  010600                                                          MOV     SP,R0
        007746  104414                                                          TRAP    C$PNTB
        007750  062706  000010                                                  ADD     #10,SP
     69 007754                                  PRINTB  #FMG5,#TBE              ;PRINT EXPECTED CONTENTS
        007754  012746  000004                                                  MOV     #TBE,-(SP)
        007760  012746  011377                                                  MOV     #FMG5,-(SP)
        007764  012746  000002                                                  MOV     #2,-(SP)
        007770  010600                                                          MOV     SP,R0
        007772  104414                                                          TRAP    C$PNTB
        007774  062706  000006                                                  ADD     #6,SP
     70 010000                                  PRINTB  #FMG11,PCR,<B,@PCR>     ;PRINT THE HIGH BYTE OF CSR4
        010000  005046                                                          CLR     -(SP)
        010002  157716  172274                                                  BISB    @PCR,(SP)
        010006  013746  002302                                                  MOV     PCR,-(SP)
        010012  012746  011640                                                  MOV     #FMG11,-(SP)
        010016  012746  000003                                                  MOV     #3,-(SP)
        010022  010600                                                          MOV     SP,R0
        010024  104414                                                          TRAP    C$PNTB
        010026  062706  000010                                                  ADD     #10,SP
     71 010032                                  PRINTB  #FMG5,#0                ;PRINT EXPECTED CONTENTS
        010032  012746  000000                                                  MOV     #0,-(SP)
```

```
        010036  012746  011377                                                          MOV     #FMG5,-(SP)
        010042  012746  000002                                                          MOV     #2,-(SP)
        010046  010600                                                                   MOV     SP,R0
        010050  104414                                                                   TRAP    C$PNTB
        010052  062706  000006                                                           ADD     #6,SP
    72  010056                          PRINTB  #FMG12,CSR6,<B,@CSR6>   ;PRINT THE LOW BYTE OF CSR6
        010056  005046                                                                   CLR     -(SP)
        010060  157716  172210                                                          BISB    @CSR6,(SP)
        010064  013746  002274                                                          MOV     CSR6,-(SP)
        010070  012746  011704                                                          MOV     #FMG12,-(SP)
        010074  012746  000003                                                          MOV     #3,-(SP)
        010100  010600                                                                  MOV     SP,R0
        010102  104414                                                                  TRAP    C$PNTB
        010104  062706  000010                                                          ADD     #10,SP
    73  010110                          PRINTB  #FMG5,#0                ;PRINT EXPECTED CONTENTS
        010110  012746  000000                                                          MOV     #0,-(SP)
        010114  012746  011377                                                          MOV     #FMG5,-(SP)
        010120  012746  000002                                                          MOV     #2,-(SP)
        010124  010600                                                                  MOV     SP,R0
        010126  104414                                                                  TRAP    C$PNTB
        010130  062706  000006                                                          ADD     #6,SP
    74  010134                          PRINTB  #FMG13,CSR7,<B,@CSR7>   ;PRINT THE HIGH BYTE OF CSR6
        010134  005046                                                                  CLR     -(SP)
        010136  157716  172142                                                         BISB    @CSR7,(SP)
        010142  013746  002304                                                         MOV     CSR7,-(SP)
        010146  012746  011750                                                         MOV     #FMG13,-(SP)
        010152  012746  000003                                                         MOV     #3,-(SP)
        010156  010600                                                                 MOV     SP,R0
        010160  104414                                                                 TRAP    C$PNTB
        010162  062706  000010                                                         ADD     #10,SP
    75  010166                          PRINTB  #FMG5,#0                ;PRINT EXPECTED CONTENTS
        010166  012746  000000                                                         MOV     #0,-(SP)
        010172  012746  011377                                                         MOV     #FMG5,-(SP)
        010176  012746  000002                                                         MOV     #2,-(SP)
        010202  010600                                                                 MOV     SP,R0
        010204  104414                                                                 TRAP    C$PNTB
        010206  062706  000006                                                         ADD     #6,SP
    76  010212                  ENDMSG
        010212                                                                  L10011:
        010212  104423                                                                 TRAP    C$MSG
    77
    78  010214                  BGNMSG  ERRG12
        010214                                                                  ERRG12::
    79  010214                          PRINTB  #FMG3,SUBRPC            ;PC THAT SUBROUTINE WAS CALLED.
        010214  013746  002416                                                         MOV     SUBRPC,-(SP)
        010220  012746  011260                                                         MOV     #FMG3,-(SP)
        010224  012746  000002                                                         MOV     #2,-(SP)
        010230  010600                                                                 MOV     SP,R0
        010232  104414                                                                 TRAP    C$PNTB
        010234  062706  000006                                                         ADD     #6,SP
    80  010240                          PRINTB  #FMG14,REG,R1,R2        ;PRINT TIME OUT ERROR
        010240  010246                                                                 MOV     R2,-(SP)
        010242  010146                                                                 MOV     R1,-(SP)
        010244  013746  002374                                                         MOV     REG,-(SP)
        010250  012746  012014                                                         MOV     #FMG14,-(SP)
        010254  012746  000004                                                         MOV     #4,-(SP)
        010260  010600                                                                 MOV     SP,R0
```

```
      010262  104414                                                                           TRAP    C$PNTB
      010264  062706  000012                                                                   ADD     #12,SP
   81 010270                               ENDMSG
      010270                                                                           L10012:
      010270  104423                                                                           TRAP    C$MSG
   82
   83 010272                               BGNMSG  ERRG13
      010272                                                                           ERRG13::
   84 010272  032777  000004  171766               BIT     #RTS,@RXCSR         ;IS RTS SET
   85 010300  001413                               BEQ     5$
   86 010302  012701  030004                       MOV     #RTS!CTS!RR,R1      ;SET UP THE EXPECTED RESULTS
   87 010306                                       PRINTB  #FMG17
      010306  012746  012144                                                                   MOV     #FMG17,-(SP)
      010312  012746  000001                                                                   MOV     #1,-(SP)
      010316  010600                                                                           MOV     SP,R0
      010320  104414                                                                           TRAP    C$PNTB
      010322  062706  000004                                                                   ADD     #4,SP
   88 010326  000544                               BR      20$
   89 010330                               5$:
   90 010330  032777  000002  171730               BIT     #DTR,@RXCSR         ;IS DTR SET?
   91 010336  001413                               BEQ     10$                 ;BR IF NOT
   92 010340  012701  040002                       MOV     #DTR!IC,R1          ;SET UP THE EXPECTED RESULTS
   93 010344                                       PRINTB  #FMG18
      010344  012746  012221                                                                   MOV     #FMG18,-(SP)
      010350  012746  000001                                                                   MOV     #1,-(SP)
      010354  010600                                                                           MOV     SP,R0
      010356  104414                                                                           TRAP    C$PNTB
      010360  062706  000004                                                                   ADD     #4,SP
   94 010364  000525                               BR      20$
   95 010366                               10$:
   96 010366  032777  000010  171672               BIT     #LL,@RXCSR          ;IS LOCAL LOOP SET
   97 010374  001433                               BEQ     15$
   98 010376  012701  001010                       MOV     #LL!DM,R1           ;SET UP THE EXPECTED RESULTS
   99 010402                                       PRINTB  #FMG19
      010402  012746  012270                                                                   MOV     #FMG19,-(SP)
      010406  012746  000001                                                                   MOV     #1,-(SP)
      010412  010600                                                                           MOV     SP,R0
      010414  104414                                                                           TRAP    C$PNTB
      010416  062706  000004                                                                   ADD     #4,SP
  100 010422                                       PRINTB  #FMG21
      010422  012746  012422                                                                   MOV     #FMG21,-(SP)
      010426  012746  000001                                                                   MOV     #1,-(SP)
      010432  010600                                                                           MOV     SP,R0
      010434  104414                                                                           TRAP    C$PNTB
      010436  062706  000004                                                                   ADD     #4,SP
  101 010442                                       PRINTB  #FMG29
      010442  012746  013221                                                                   MOV     #FMG29,-(SP)
      010446  012746  000001                                                                   MOV     #1,-(SP)
      010452  010600                                                                           MOV     SP,R0
      010454  104414                                                                           TRAP    C$PNTB
      010456  062706  000004                                                                   ADD     #4,SP
  102 010462  000466                               BR      20$
  103
  104 010464                               15$:
  105 010464  032777  000001  171574               BIT     #SF,@RXCSR          ;IS SEL FREQ SET?
  106 010472  001520                               BEQ     25$                 ;IF NONE OF THOSE BITS SET - ERROR
  107 010474  012701  000040                       MOV     #SQ,R1              ;SET UP THE EXPECTED RESULTS
```

```
    108 010500                          PRINTB  #FMG20
        010500  012746  012335                                                   MOV     #FMG20,-(SP)
        010504  012746  000001                                                   MOV     #1,-(SP)
        010510  010600                                                            MOV     SP,R0
        010512  104414                                                            TRAP    C$PNTB
        010514  062706  000004                                                    ADD     #4,SP
    109 010520                          PRINTB  #FMG21
        010520  012746  012422                                                   MOV     #FMG21,-(SP)
        010524  012746  000001                                                   MOV     #1,-(SP)
        010530  010600                                                            MOV     SP,R0
        010532  104414                                                            TRAP    C$PNTB
        010534  062706  000004                                                    ADD     #4,SP
    110 010540                          PRINTB  #FMG4                   ;PRINT HEADER
        010540  012746  011332                                                   MOV     #FMG4,-(SP)
        010544  012746  000001                                                   MOV     #1,-(SP)
        010550  010600                                                            MOV     SP,R0
        010552  104414                                                            TRAP    C$PNTB
        010554  062706  000004                                                    ADD     #4,SP
    111 010560                          PRINTB  #FMG10,CSR4,<B,@CSR4>   ;PRINT THE LOW BYTE OF CSR4
        010560  005046                                                           CLR     -(SP)
        010562  157716  171504                                                   BISB    @CSR4,(SP)
        010566  013746  002272                                                   MOV     CSR4,-(SP)
        010572  012746  011574                                                   MOV     #FMG10,-(SP)
        010576  012746  000003                                                   MOV     #3,-(SP)
        010602  010600                                                            MOV     SP,R0
        010604  104414                                                            TRAP    C$PNTB
        010606  062706  000010                                                    ADD     #10,SP
    112 010612                          PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
        010612  005046                                                           CLR     -(SP)
        010614  150116                                                           BISB    R1,(SP)
        010616  012746  011377                                                   MOV     #FMG5,-(SP)
        010622  012746  000002                                                   MOV     #2,-(SP)
        010626  010600                                                            MOV     SP,R0
        010630  104414                                                            TRAP    C$PNTB
        010632  062706  000006                                                    ADD     #6,SP
    113 010636  000447                  BR      30$
    114
    115 010640                      20$:
    116 010640                          PRINTB  #FMG4                   ;PRINT HEADER
        010640  012746  011332                                                   MOV     #FMG4,-(SP)
        010644  012746  000001                                                   MOV     #1,-(SP)
        010650  010600                                                            MOV     SP,R0
        010652  104414                                                            TRAP    C$PNTB
        010654  062706  000004                                                    ADD     #4,SP
    117 010660                          PRINTB  #FMG15,CSR0,@CSR0       ;PRINT THE LOW BYTE OF CSR0
        010660  017746  171402                                                   MOV     @CSR0,-(SP)
        010664  013746  002266                                                   MOV     CSR0,-(SP)
        010670  012746  012071                                                   MOV     #FMG15,-(SP)
        010674  012746  000003                                                   MOV     #3,-(SP)
        010700  010600                                                            MOV     SP,R0
        010702  104414                                                            TRAP    C$PNTB
        010704  062706  000010                                                    ADD     #10,SP
    118 010710                          PRINTB  #FMG16,R1               ;PRINT EXPECTED CONTENTS
        010710  010146                                                           MOV     R1,-(SP)
        010712  012746  012133                                                   MOV     #FMG16,-(SP)
        010716  012746  000002                                                   MOV     #2,-(SP)
        010722  010600                                                           MOV     SP,R0
```

```
    010724  104414                                                                  TRAP    C$PNTB
    010726  062706  000006                                                          ADD     #6,SP
    010732  000411                          BR      30$
    010734                          25$:
    010734                                  PRINTB  #FMG22,R2               ;PRINT BIT THAT ISN'T WRITTEN.
    010734  010246                                                                  MOV     R2,-(SP)
    010736  012746  012471                                                          MOV     #FMG22,-(SP)
    010742  012746  000002                                                          MOV     #2,-(SP)
    010746  010600                                                                  MOV     SP,R0
    010750  104414                                                                  TRAP    C$PNTB
    010752  062706  000006                                                          ADD     #6,SP
    010756                          30$:
    010756                          ENDMSG
    010756                                                                  L10013:
    010756  104423                                                                  TRAP    C$MSG

    010760                          BGNMSG  ERRG14
    010760                                                                  ERRG14::
    010760  005737  002416                  TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
    010764  001412                          BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
    010766                                  PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
    010766  013746  002416                                                          MOV     SUBRPC,-(SP)
    010772  012746  011260                                                          MOV     #FMG3,-(SP)
    010776  012746  000002                                                          MOV     #2,-(SP)
    011002  010600                                                                  MOV     SP,R0
    011004  104414                                                                  TRAP    C$PNTB
    011006  062706  000006                                                          ADD     #6,SP
    011012                          10$:
    011012                                  PRINTB  #FMG24,XMITD,RCOUNT     ;PRINT CHARACTERS XMITTED AND RCVD.
    011012  013746  002500                                                          MOV     RCOUNT,-(SP)
    011016  013746  002476                                                          MOV     XMITD,-(SP)
    011022  012746  012605                                                          MOV     #FMG24,-(SP)
    011026  012746  000003                                                          MOV     #3,-(SP)
    011032  010600                                                                  MOV     SP,R0
    011034  104414                                                                  TRAP    C$PNTB
    011036  062706  000010                                                          ADD     #10,SP
    011042                          ENDMSG
    011042                                                                  L10014:
    011042  104423                                                                  TRAP    C$MSG

    011044                          BGNMSG  ERRG15
    011044                                                                  ERRG15::
    011044                                  PRINTB  #FMG25,R2               ;PRINT BIT THAT ISN'T CLEARED.
    011044  010246                                                                  MOV     R2,-(SP)
    011046  012746  012652                                                          MOV     #FMG25,-(SP)
    011052  012746  000002                                                          MOV     #2,-(SP)
    011056  010600                                                                  MOV     SP,R0
    011060  104414                                                                  TRAP    C$PNTB
    011062  062706  000006                                                          ADD     #6,SP
    011066                          ENDMSG
    011066                                                                  L10015:
    011066  104423                                                                  TRAP    C$MSG

    011070     045     101     125  FMG0:   .ASCIZ  /%AUNABLE TO RUN TEST %D2%A ON UNIT %D2%A WITHOUT TURNAROUND%N/
    011073     116     101     102
    011076     114     105     040
    011101     124     117     040
```

```
        011104  122  125  116
        011107  040  124  105
        011112  123  124  040
        011115  045  104  062
        011120  045  101  040
        011123  117  116  040
        011126  125  116  111
        011131  124  040  045
        011134  104  062  045
        011137  101  040  127
        011142  111  124  110
        011145  117  125  124
        011150  040  124  125
        011153  122  116  101
        011156  122  117  125
        011161  116  104  045
        011164  116  000
138     011166  045  101  122  FMG1:   .ASCIZ  /%ARXCSR: %O6%N%ARDSR : %O6%N/
        011171  130  103  123
        011174  122  072  040
        011177  045  117  066
        011202  045  116  045
        011205  101  122  104
        011210  123  122  040
        011213  072  040  045
        011216  117  066  045
        011221  116  000
139     011223  045  101  120  FMG2:   .ASCIZ  /%APCSCR: %O6%N%ATDSR : %O6%N/
        011226  103  123  103
        011231  122  072  040
        011234  045  117  066
        011237  045  116  045
        011242  101  124  104
        011245  123  122  040
        011250  072  040  045
        011253  117  066  045
        011256  116  000
140     011260  045  101  105  FMG3:   .ASCIZ  /%AERROR IN SUBROUTINE CALLED AT PC: %O6%N/
        011263  122  122  117
        011266  122  040  111
        011271  116  040  123
        011274  125  102  122
        011277  117  125  124
        011302  111  116  105
        011305  040  103  101
        011310  114  114  105
        011313  104  040  101
        011316  124  040  120
        011321  103  072  040
        011324  045  117  066
        011327  045  116  000
141     011332  045  123  071  FMG4:   .ASCIZ  /%S9%S9%S9%S3%AFOUND:%S2%AEXPECTED:%N/
        011335  045  123  071
        011340  045  123  071
        011343  045  123  063
        011346  045  101  106
        011351  117  125  116
```

```
        011354      104      072      045
        011357      123      062      045
        011362      101      105      130
        011365      120      105      103
        011370      124      105      104
        011373      072      045      116
        011376      000
    142 011377      045      123      067  FMG5:    .ASCIZ  /%S7%03%N/
        011402      045      117      063
        011405      045      116      000
    143 011410      045      116      000  FMG6:    .ASCIZ  /%N/
    144 011413      045      101      122  FMG7:    .ASCIZ  /%ARXCSR    = %06%A (EXTERNAL):  %03/
        011416      130      103      123
        011421      122      040      040
        011424      040      040      075
        011427      040      045      117
        011432      066      045      101
        011435      040      050      105
        011440      130      124      105
        011443      122      116      101
        011446      114      051      072
        011451      040      040      045
        011454      117      063      000
    145 011457      045      101      130  FMG8:    .ASCIZ  /%AXMIT DATA: %03%A RCV DATA: %03%N/
        011462      115      111      124
        011465      040      104      101
        011470      124      101      072
        011473      040      045      117
        011476      063      045      101
        011501      040      122      103
        011504      126      040      104
        011507      101      124      101
        011512      072      040      045
        011515      117      063      045
        011520      116      000
    146 011522      045      116      045  FMG9:    .ASCIZ  /%N%A** CHECK -V FROM THE CHARGE PUMP **%N/
        011525      101      052      052
        011530      040      103      110
        011533      105      103      113
        011536      040      055      126
        011541      040      106      122
        011544      117      115      040
        011547      124      110      105
        011552      040      103      110
        011555      101      122      107
        011560      105      040      120
        011563      125      115      120
        011566      040      052      052
        011571      045      116      000
    147 011574      045      101      120  FMG10:   .ASCIZ  /%APCSCR    = %06%A (EXTERNAL):  %03/
        011577      103      123      103
        011602      122      040      040
        011605      040      040      075
        011610      040      045      117
        011613      066      045      101
        011616      040      050      105
        011621      130      124      105
```

```
                011624      122      116      101
                011627      114      051      072
                011632      040      040      045
                011635      117      063      000
    148         011640      045      101      120  FMG11:   .ASCIZ  /%APCR      = %O6%A (USYNRT R7): %O3/
                011643      103      122      040
                011646      040      040      040
                011651      040      040      075
                011654      040      045      117
                011657      066      045      101
                011662      040      050      125
                011665      123      131      116
                011670      122      124      040
                011673      122      067      051
                011676      072      040      045
                011701      117      063      000
    149         011704      045      101      124  FMG12:   .ASCIZ  /%AT. DATA  = %O6%A (USYNRT R2): %O3/
                011707      056      040      104
                011712      101      124      101
                011715      040      040      075
                011720      040      045      117
                011723      066      045      101
                011726      040      050      125
                011731      123      131      116
                011734      122      124      040
                011737      122      062      051
                011742      072      040      045
                011745      117      063      000
    150         011750      045      101      124  FMG13:   .ASCIZ  /%AT. STATUS= %O6%A (USYNRT R3): %O3/
                011753      056      040      123
                011756      124      101      124
                011761      125      123      075
                011764      040      045      117
                011767      066      045      101
                011772      040      050      125
                011775      123      131      116
                012000      122      124      040
                012003      122      063      051
                012006      072      040      045
                012011      117      063      000
    151         012014      045      101      103  FMG14:   .ASCIZ  /%ACONTENTS OF %O6%A = %O6%A   EXPECTED %O6%N/
                012017      117      116      124
                012022      105      116      124
                012025      123      040      117
                012030      106      040      045
                012033      117      066      045
                012036      101      040      075
                012041      040      045      117
                012044      066      045      101
                012047      040      040      040
                012052      105      130      120
                012055      105      103      124
                012060      105      104      040
                012063      045      117      066
                012066      045      116      000
    152         012071      045      101      122  FMG15:   .ASCIZ  /%ARXCSR    = %O6%A (EXTERNAL): %O6/
                012074      130      103      123
```

```
        012077      122      040      040
        012102      040      075      040
        012105      045      117      066
        012110      045      101      040
        012113      050      105      130
        012116      124      105      122
        012121      116      101      114
        012124      051      072      040
        012127      045      117      066
        012132      000
    153 012133      045      123      063  FMG16:  .ASCIZ  /%S3%06%N/
        012136      045      117      066
        012141      045      116      000
    154 012144      045      101      122  FMG17:  .ASCIZ  /%ARTS NOT TURNED AROUND TO CTS AND RR (CD)%N/
        012147      124      123      040
        012152      116      117      124
        012155      040      124      125
        012160      122      116      105
        012163      104      040      101
        012166      122      117      125
        012171      116      104      040
        012174      124      117      040
        012177      103      124      123
        012202      040      101      116
        012205      104      040      122
        012210      122      040      050
        012213      103      104      051
        012216      045      116      000
    155 012221      045      101      104  FMG18:  .ASCIZ  /%ADTR NOT TURNED AROUND TO IC (RING)%N/
        012224      124      122      040
        012227      116      117      124
        012232      040      124      125
        012235      122      116      105
        012240      104      040      101
        012243      122      117      125
        012246      116      104      040
        012251      124      117      040
        012254      111      103      040
        012257      050      122      111
        012262      116      107      051
        012265      045      116      000
    156 012270      045      101      114  FMG19:  .ASCIZ  /%ALL NOT TURNED AROUND TO DM (DSR)%N/
        012273      114      040      116
        012276      117      124      040
        012301      124      125      122
        012304      116      105      104
        012307      040      101      122
        012312      117      125      116
        012315      104      040      124
        012320      117      040      104
        012323      115      040      050
        012326      104      123      122
        012331      051      045      116
        012334      000
    157 012335      045      101      122  FMG20:  .ASCIZ  /%ARL NOT TURNED AROUND TO TEST MODE (SIG. QUALITY)%N/
        012340      114      040      116
        012343      117      124      040
```

```
        012346      124     125     122
        012351      116     105     104
        012354      040     101     122
        012357      117     125     116
        012362      104     040     124
        012365      117     040     124
        012370      105     123     124
        012373      040     115     117
        012376      104     105     040
        012401      050     123     111
        012404      107     056     040
        012407      121     125     101
        012412      114     111     124
        012415      131     051     045
        012420      116     000
   158  012422      045     101     103  FMG21:  .ASCIZ  /%ACHECK THAT THE JUMPER IS INSTALLED%N/
        012425      110     105     103
        012430      113     040     124
        012433      110     101     124
        012436      040     124     110
        012441      105     040     112
        012444      125     115     120
        012447      105     122     040
        012452      111     123     040
        012455      111     116     123
        012460      124     101     114
        012463      114     105     104
        012466      045     116     000
   159  012471      045     101     103  FMG22:  .ASCIZ  /%ACAN'T WRITE BIT %06%A INTO RXCSR%N/
        012474      101     116     047
        012477      124     040     127
        012502      122     111     124
        012505      105     040     102
        012510      111     124     040
        012513      045     117     066
        012516      045     101     040
        012521      111     116     124
        012524      117     040     122
        012527      130     103     123
        012532      122     045     116
        012535      000
   160  012536      045     101     122  FMG23:  .ASCIZ  /%ARESET SUBROUTINE CALLED AT PC: %06%N/
        012541      105     123     105
        012544      124     040     123
        012547      125     102     122
        012552      117     125     124
        012555      111     116     105
        012560      040     103     101
        012563      114     114     105
        012566      104     040     101
        012571      124     040     120
        012574      103     072     040
        012577      045     117     066
        012602      045     116     000
   161  012605      045     101     124  FMG24:  .ASCIZ  /%ATRANSMITTED: %D2%A RECEIVED: %D2%N/
        012610      122     101     116
        012613      123     115     111
```

```
        012616  124  124  105
        012621  104  072  040
        012624  045  104  062
        012627  045  101  040
        012632  122  105  103
        012635  105  111  126
        012640  105  104  072
        012643  040  045  104
        012646  062  045  116
        012651  000
    162 012652  045  101  103  FMG25:  .ASCIZ  /%ACAN'T CLEAR BIT %O6%A IN RXCSR%N/
        012655  101  116  047
        012660  124  040  103
        012663  114  105  101
        012666  122  040  102
        012671  111  124  040
        012674  045  117  066
        012677  045  101  040
        012702  111  116  040
        012705  122  130  103
        012710  123  122  045
        012713  116  000
    163 012715  045  101  116  FMG26:  .ASCIZ  /%ANOTE: DATA SET INTERRUPT MAY BE DISABLED - CHECK JUMPER%N/
        012720  117  124  105
        012723  072  040  104
        012726  101  124  101
        012731  040  123  105
        012734  124  040  111
        012737  116  124  105
        012742  122  122  125
        012745  120  124  040
        012750  115  101  131
        012753  040  102  105
        012756  040  104  111
        012761  123  101  102
        012764  114  105  104
        012767  040  055  040
        012772  103  110  105
        012775  103  113  040
        013000  112  125  115
        013003  120  105  122
        013006  045  116  000
    164 013011  045  101  124  FMG27:  .ASCII  /%ATEST %D2%A WILL ONLY RUN WITH RS422 ON A LSI-11/
        013014  105  123  124
        013017  040  045  104
        013022  062  045  101
        013025  040  127  111
        013030  114  114  040
        013033  117  116  114
        013036  131  040  122
        013041  125  116  040
        013044  127  111  124
        013047  110  040  122
        013052  123  064  062
        013055  062  040  117
        013060  116  040  101
        013063  040  114  123
```

```
        013066  111     055     061
        013071  061
    165 013072  057                             .BYTE   57
    166 013073  062     063     045             .ASCIZ  /23%N/
        013076  116     000
    167 013100  045     101     111     FMG28:  .ASCII  /%AIF CPU IS A M7264 WITH MEMORY REFRESH ENABLED, A HIGH/
        013103  106     040     103
        013106  120     125     040
        013111  111     123     040
        013114  101     040     115
        013117  067     062     066
        013122  064     040     127
        013125  111     124     110
        013130  040     115     105
        013133  115     117     122
        013136  131     040     122
        013141  105     106     122
        013144  105     123     110
        013147  040     105     116
        013152  101     102     114
        013155  105     104     054
        013160  040     101     040
        013163  110     111     107
        013166  110
    168 013167  045     101     040             .ASCIZ  /%A SPEED TEST CAN'T RUN%N/
        013172  123     120     105
        013175  105     104     040
        013200  124     105     123
        013203  124     040     103
        013206  101     116     047
        013211  124     040     122
        013214  125     116     045
        013217  116     000
    169 013221  045     101     052     FMG29:  .ASCIZ  /%A** IF M8020 JUMPERED FOR RS422, THIS ERROR EXPECTED **%N/
        013224  052     040     111
        013227  106     040     115
        013232  070     060     062
        013235  060     040     112
        013240  125     115     120
        013243  105     122     105
        013246  104     040     106
        013251  117     122     040
        013254  122     123     064
        013257  062     062     054
        013262  040     124     110
        013265  111     123     040
        013270  105     122     122
        013273  117     122     040
        013276  105     130     120
        013301  105     103     124
        013304  105     104     040
        013307  052     052     045
        013312  116     000
    170 013314  045     101     052     FMG30:  .ASCIZ  /%A** CHECK BYTE OP SIGNAL - STUCK LOW ?? **%N/
        013317  052     040     103
        013322  110     105     103
        013325  113     040     102
```

```
        013330      131     124     105
        013333      040     117     120
        013336      040     123     111
        013341      107     116     101
        013344      114     040     055
        013347      040     123     124
        013352      125     103     113
        013355      040     114     117
        013360      127     040     077
        013363      077     040     052
        013366      052     045     116
        013371      000
    171
    172 013372      122     105     123  EMG0:   .ASCIZ  /RESET ERROR AFTER BUS RESET (DETECTED ONLY ON 1ST PASS)/
        013375      105     124     040
        013400      105     122     122
        013403      117     122     040
        013406      101     106     124
        013411      105     122     040
        013414      102     125     123
        013417      040     122     105
        013422      123     105     124
        013425      040     050     104
        013430      105     124     105
        013433      103     124     105
        013436      104     040     117
        013441      116     114     131
        013444      040     117     116
        013447      040     061     123
        013452      124     040     120
        013455      101     123     123
        013460      051     000
    173 013462      124     111     115  EMG1:   .ASCIZ  /TIME OUT/
        013465      105     040     117
        013470      125     124     000
    174 013473      124     111     115  EMG2:   .ASCIZ  /TIME OUT - DURING INTERRUPT EXERCISE/
        013476      105     040     117
        013501      125     124     040
        013504      055     040     104
        013507      125     122     111
        013512      116     107     040
        013515      111     116     124
        013520      105     122     122
        013523      125     120     124
        013526      040     105     130
        013531      105     122     103
        013534      111     123     105
        013537      000
    175 013540      122     105     123  EMG3:   .ASCIZ  /RESET ERROR/
        013543      105     124     040
        013546      105     122     122
        013551      117     122     000
    176 013554      103     123     122  EMG4:   .ASCIZ  /CSR READ-WRITE ERROR/
        013557      040     122     105
        013562      101     104     055
        013565      127     122     111
        013570      124     105     040
```

```
        013573      105      122      122
        013576      117      122      000
    177 013601      125      123      131  EMG5:   .ASCIZ  /USYNRT XMIT ACTIVE NOT SET/
        013604      116      122      124
        013607      040      130      115
        013612      111      124      040
        013615      101      103      124
        013620      111      126      105
        013623      040      116      117
        013626      124      040      123
        013631      105      124      000
    178 013634      125      123      131  EMG6:   .ASCIZ  /USYNRT XMIT ACTIVE NOT CLEAR/
        013637      116      122      124
        013642      040      130      115
        013645      111      124      040
        013650      101      103      124
        013653      111      126      105
        013656      040      116      117
        013661      124      040      103
        013664      114      105      101
        013667      122      000
    179 013671      124      102      105  EMG7:   .ASCIZ  /TBE NOT CLEAR/
        013674      040      116      117
        013677      124      040      103
        013702      114      105      101
        013705      122      000
    180 013707      124      102      105  EMG8:   .ASCIZ  /TBE NOT SET/
        013712      040      116      117
        013715      124      040      123
        013720      105      124      000
    181 013723      130      115      111  EMG9:   .ASCIZ  /XMIT INTERRUPT NOT RECEIVED/
        013726      124      040      111
        013731      116      124      105
        013734      122      122      125
        013737      120      124      040
        013742      116      117      124
        013745      040      122      105
        013750      103      105      111
        013753      126      105      104
        013756      000
    182 013757      130      115      111  EMG10:  .ASCIZ  /XMIT INTERRUPT RECEIVED WHEN NOT EXPECTED/
        013762      124      040      111
        013765      116      124      105
        013770      122      122      125
        013773      120      124      040
        013776      122      105      103
        014001      105      111      126
        014004      105      104      040
        014007      127      110      105
        014012      116      040      116
        014015      117      124      040
        014020      105      130      120
        014023      105      103      124
        014026      105      104      000
    183 014031      122      105      103  EMG11:  .ASCIZ  /RECEIVER NOT DEACTIVATED/
        014034      105      111      126
        014037      105      122      040
```

```
                014042  116     117     124
                014045  040     104     105
                014050  101     103     124
                014053  111     126     101
                014056  124     105     104
                014061  000
    184         014062  122     105     103     EMG12:  .ASCIZ  /RECEIVER NOT ACTIVE/
                014065  105     111     126
                014070  105     122     040
                014073  116     117     124
                014076  040     101     103
                014101  124     111     126
                014104  105     000
    185         014106  122     105     103     EMG13:  .ASCIZ  /RECEIVER NOT INITIALIZED AFTER RECEIVER DISABLED/
                014111  105     111     126
                014114  105     122     040
                014117  116     117     124
                014122  040     111     116
                014125  111     124     111
                014130  101     114     111
                014133  132     105     104
                014136  040     101     106
                014141  124     105     122
                014144  040     122     105
                014147  103     105     111
                014152  126     105     122
                014155  040     104     111
                014160  123     101     102
                014163  114     105     104
                014166  000
    186         014167  122     105     103     EMG14:  .ASCIZ  /RECEIVER ACTIVE BEFORE FIRST DATA CHARACTER/
                014172  105     111     126
                014175  105     122     040
                014200  101     103     124
                014203  111     126     105
                014206  040     102     105
                014211  106     117     122
                014214  105     040     106
                014217  111     122     123
                014222  124     040     104
                014225  101     124     101
                014230  040     103     110
                014233  101     122     101
                014236  103     124     105
                014241  122     000
    187         014243  122     103     126     EMG15:  .ASCIZ  /RCV INTERRUPT NOT RECEIVED/
                014246  040     111     116
                014251  124     105     122
                014254  122     125     120
                014257  124     040     116
                014262  117     124     040
                014265  122     105     103
                014270  105     111     126
                014273  105     104     000
    188         014276  122     103     126     EMG16:  .ASCIZ  /RCV INTERRUPT RECEIVED BEFORE EXPECTED/
                014301  040     111     116
                014304  124     105     122
```

```
                014307      122     125     120
                014312      124     040     122
                014315      105     103     105
                014320      111     126     105
                014323      104     040     102
                014326      105     106     117
                014331      122     105     040
                014334      105     130     120
                014337      105     103     124
                014342      105     104     000
    189         014345      122     103     126  EMG17:  .ASCIZ  /RCV END OF MESSAGE NOT RECEIVED/
                014350      040     105     116
                014353      104     040     117
                014356      106     040     115
                014361      105     123     123
                014364      101     107     105
                014367      040     116     117
                014372      124     040     122
                014375      105     103     105
                014400      111     126     105
                014403      104     000
    190         014405      122     103     126  EMG18:  .ASCIZ  /RCV STATUS NOT CLEARED/
                014410      040     123     124
                014413      101     124     125
                014416      123     040     116
                014421      117     124     040
                014424      103     114     105
                014427      101     122     105
                014432      104     000
    191         014434      122     103     126  EMG19:  .ASCIZ  /RCV OVERRUN NOT RECEIVED/
                014437      040     117     126
                014442      105     122     122
                014445      125     116     040
                014450      116     117     124
                014453      040     122     105
                014456      103     105     111
                014461      126     105     104
                014464      000
    192         014465      122     103     126  EMG20:  .ASCIZ  /RCV ABORT NOT RECEIVED/
                014470      040     101     102
                014473      117     122     124
                014476      040     116     117
                014501      124     040     122
                014504      105     103     105
                014507      111     126     105
                014512      104     000
    193         014514      122     103     126  EMG21:  .ASCIZ  /RCV STATUS INTERRUPT NOT RECEIVED/
                014517      040     123     124
                014522      101     124     125
                014525      123     040     111
                014530      116     124     105
                014533      122     122     125
                014536      120     124     040
                014541      116     117     124
                014544      040     122     105
                014547      103     105     111
                014552      126     105     104
```

```
        014555  000
    194 014556  115     117     104  EMG22:  .ASCIZ  /MODEM LOOPBACK ERROR/
        014561  105     115     040
        014564  114     117     117
        014567  120     102     101
        014572  103     113     040
        014575  105     122     122
        014600  117     122     000
    195 014603  115     117     104  EMG23:  .ASCIZ  /MODEM STATUS INTERRUPT RECEIVED WHEN DISABLED/
        014606  105     115     040
        014611  123     124     101
        014614  124     125     123
        014617  040     111     116
        014622  124     105     122
        014625  122     125     120
        014630  124     040     122
        014633  105     103     105
        014636  111     126     105
        014641  104     040     127
        014644  110     105     116
        014647  040     104     111
        014652  123     101     102
        014655  114     105     104
        014660  000
    196 014661  115     117     104  FMG24:  .ASCIZ  /MODEM STATUS INTERRUPT NOT RECEIVED/
        014664  105     115     040
        014667  123     124     101
        014672  124     125     123
        014675  040     111     116
        014700  124     105     122
        014703  122     125     120
        014706  124     040     116
        014711  117     124     040
        014714  122     105     103
        014717  105     111     126
        014722  105     104     000
    197 014725  103     110     101  EMG25:  .ASCIZ  /CHARACTER COUNT ERROR/
        014730  122     101     103
        014733  124     105     122
        014736  040     103     117
        014741  125     116     124
        014744  040     105     122
        014747  122     117     122
        014752  000
    198 014753  104     101     124  EMG26:  .ASCIZ  /DATA ERROR/
        014756  101     040     105
        014761  122     122     117
        014764  122     000
    199 014766  130     115     111  EMG30:  .ASCIZ  /XMIT UNDERRUN/
        014771  124     040     125
        014774  116     104     105
        014777  122     122     125
        015002  116     000
    200 015004  122     105     103  EMG31:  .ASCIZ  /RECEIVER ERROR/
        015007  105     111     126
        015012  105     122     040
        015015  105     122     122
```

```
            015020      117     122     000
    201     015023      101     102     117     EMG32:  .ASCIZ  /ABORT NOT RECEIVED/
            015026      122     124     040
            015031      116     117     124
            015034      040     122     105
            015037      103     105     111
            015042      126     105     104
            015045      000
    202     015046      107     117     040     EMG33:  .ASCIZ  /GO AHEAD NOT RECEIVED/
            015051      101     110     105
            015054      101     104     040
            015057      116     117     124
            015062      040     122     105
            015065      103     105     111
            015070      126     105     104
            015073      000
    203     015074      101     102     117     EMG34:  .ASCIZ  /ABORT RECEIVED WHEN NOT EXPECTED/
            015077      122     124     040
            015102      122     105     103
            015105      105     111     126
            015110      105     104     040
            015113      127     110     105
            015116      116     040     116
            015121      117     124     040
            015124      105     130     120
            015127      105     103     124
            015132      105     104     000
    204     015135      101     104     104     EMG35:  .ASCIZ  /ADDRESS INCORRECTLY RECOGNIZED/
            015140      122     105     123
            015143      123     040     111
            015146      116     103     117
            015151      122     122     105
            015154      103     124     114
            015157      131     040     122
            015162      105     103     117
            015165      107     116     111
            015170      132     105     104
            015173      000
    205     015174      101     123     123     EMG36:  .ASCIZ  /ASSEMBLED BIT COUNT ERROR/
            015177      105     115     102
            015202      114     105     104
            015205      040     102     111
            015210      124     040     103
            015213      117     125     116
            015216      124     040     105
            015221      122     122     117
            015224      122     000
    206     015226      103     122     103     EMG37:  .ASCIZ  /CRC ERROR/
            015231      040     105     122
            015234      122     117     122
            015237      000
    207     015240      103     122     103     EMG38:  .ASCIZ  /CRC ERROR NOT DETECTED/
            015243      040     105     122
            015246      122     117     122
            015251      040     116     117
            015254      124     040     104
            015257      105     124     105
```

```
                015262  103     124     105
                015265  104     000
    208         015267  120     101     122     EMG39:  .ASCIZ  /PARITY ERROR NOT DETECTED/
                015272  111     124     131
                015275  040     105     122
                015300  122     117     122
                015303  040     116     117
                015306  124     040     104
                015311  105     124     105
                015314  103     124     105
                015317  104     000
    209         015321  115     125     114     EMG40:  .ASCIZ  /MULTIPLE MODEM CONTROL INTERRUPTS/
                015324  124     111     120
                015327  114     105     040
                015332  115     117     104
                015335  105     115     040
                015340  103     117     116
                015343  124     122     117
                015346  114     040     111
                015351  116     124     105
                015354  122     122     125
                015357  120     124     123
                015362  000
    210                                         .EVEN
    211
```

LOAD DEVICE PROTECTION TABLE

```
                                .SBTTL  LOAD DEVICE PROTECTION TABLE

                                ;////////////////////////////////////////////////////////////////////////////////
                                ;/ THIS TABLE IDENTIFIES THE LOAD DEVICE TO THE SUPERVISOR, SO THAT IT CAN BE
                                ;/ PROTECTED FROM TESTING. IF DESIRED.
                                ;////////////////////////////////////////////////////////////////////////////////

015364                                  BGNPROT
015364                                                                  L$PROT::

015364  177777                          .WORD   -1              ;DON'T CHECK CSR ADDRESS
015366  177777                          .WORD   -1              ;DON'T CHECK MASSBUS UNIT NUMBER
015370  177777                          .WORD   -1              ;DON'T CHECK DRIVE NUMBER

015372                                  ENDPROT
```

```
                        .SBTTL  INITIALIZE SECTION

                        ;////////////////////////////////////////////////////////////////////
                        ;/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                        ;/ AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
                        ;////////////////////////////////////////////////////////////////////

 015372                 BGNINIT
 015372                                                                  L$INIT::

 015372                         SETPRI  #PRI07          ;SET DIAGNOSTIC PRIORITY = 7
 015372 012700 000340                                                    MOV     #PRI07,R0
 015376 104441                                                           TRAP    C$SPRI
 015400 010637 002372           MOV     SP,PSTACK       ;STORE BASE LEVEL PROGRAM STACK POINTER
 015404 005037 002416           CLR     SUBRPC          ;CLEAR STORAGE WORD FOR SUBROUTINE PC CALL
 015410 005037 002330           CLR     ERROR           ;CLEAR ERROR FLAGS
                                                        ;CLEAR MISC. FLAGS
 015414 005037 002334           CLR     FLAG
 015420 005037 002376           CLR     RFLAG
 015424 005037 002424           CLR     TFLAG
 015430 005037 002366           CLR     NXMFLG
 015434 005037 002316           CLR     ABORT
 015440 005037 002432           CLR     TOGGLE
 015444 005037 002370           CLR     OVER
 015450 005037 002340           CLR     HIGH

 015454 005737 002310           TST     FRSTIM          ;IS THIS THE TIME THROUGH AFTER LOAD?
 015460 001005                  BNE     1$              ;IF NOT - ERROR TRAP VECTOR ALREADY SAVED
 015462 012737 000001 002310    MOV     #1,FRSTIM       ;FLAG THAT WE'VE BEEN THRU THE 1ST TIME
 015470 005037 002312           CLR     FRSPAS          ;CLEAR COUNTER FOR # OF PASSES AFTER LOAD

 015474                 1$:
 015474                         CLRVEC  #4              ;ENSURE VECTOR 4 IS IN NORMAL STATE.
 015474 012700 000004                                                    MOV     #4,R0
 015500 104436                                                           TRAP    C$CVEC

 015502                         READEF  #EF.START       ;IS THIS JUST STARTED?
 015502 012700 000040                                                    MOV     #EF.START,R0
 015506 104447                                                           TRAP    C$REFG
 015510                         BCOMPLETE STARST        ;IF YES - BRANCH.
 015510 103416                                                           BCS     STARST
 015512                         READEF  #EF.RESTART     ;IS THIS A RESTART ?
 015512 012700 000037                                                    MOV     #EF.RESTART,R0
 015516 104447                                                           TRAP    C$REFG
 015520                         BCOMPLETE STARST        ;IF YES - BRANCH.
 015520 103412                                                           BCS     STARST
 015522                         READEF  #EF.NEW         ;IS THIS A NEW PASS?
 015522 012700 000035                                                    MOV     #EF.NEW,R0
 015526 104447                                                           TRAP    C$REFG
 015530                         BCOMPLETE NEWST         ;IF YES - BRANCH
 015530 103410                                                           BCS     NEWST
 015532                         READEF  #EF.CONTINUE    ;IS THIS A CONTINUATION?
 015532 012700 000036                                                    MOV     #EF.CONTINUE,R0
 015536 104447                                                           TRAP    C$REFG
 015540                         BNCOMPLETE GETPRM       ;IF NOT - GET PARAMETERS
 015540 103013                                                           BCC     GETPRM
 015542 000137 016310           JMP     END             ;OTHERWISE - DON'T INITIALIZE.
```

```

   015546                                   STARST:
   015546   005037  002314                          CLR     STARES          ;CLEAR THE FLAG TO SHOW START/RESTART.

   015552                                   NEWST:
   015552   012737  177777  002354                  MOV     #-1,LOGDEV      ;INITIALIZE LOGICAL UNIT NUMBER.
   015560   005237  002312                          INC     FRSPAS          ;INCREMENT # OF PASSES AFTER LOAD.
   015564   005237  002314                          INC     STARES          ;INCREMENT # OF PASSES SINCE START/RESTART.
   015570                                   GETPRM:
   015570   005237  002354                          INC     LOGDEV          ;NEXT LOGICAL UNIT TO BE TESTED
   015574   023737  002354  002012                  CMP     LOGDEV,L$UNIT   ;IS THE MAXIMUM UNIT # EXCEEDED?
   015602   002363                                  BGE     NEWST           ;IF YES - DO A NEW START
   015604                                           GPHARD  LOGDEV,R1       ;GET THE P-TABLE POINTER INTO R1
   015604   013700  002354                                                                          MOV     LOGDEV,R0
   015610   104442                                                                                  TRAP    C$GPHRD
   015612   010001                                                                                  MOV     R0,R1
   015614                                           BNCOMPLETE  GETPRM      ;IF NOT AVAILABLE, GET THE NEXT ONE
   015614   103365                                                                                  BCC     GETPRM
   015616   011100                                  MOV     (R1),R0         ;SAVE THE ADDRESS
   015620   032700  000007                          BIT     #7,R0           ;DOES THIS DEVICE ADDRESS END IN NON-ZERO?
   015624   001414                                  BEQ     10$             ;IF NOT - OK (76XXX0)
   015626   042711  000007                          BIC     #7,(R1)         ;MAKE IT 76XXX0
   015632                                           PRINTB  #FINIT1,(R1),R0 ;INFORM THE USER
   015632   010046                                                                                  MOV     R0,-(SP)
   015634   011146                                                                                  MOV     (R1),-(SP)
   015636   012746  016312                                                                          MOV     #FINIT1,-(SP)
   015642   012746  000003                                                                          MOV     #3,-(SP)
   015646   010600                                                                                  MOV     SP,R0
   015650   104414                                                                                  TRAP    C$PNTB
   015652   062706  000010                                                                          ADD     #10,SP
   015656                                   10$:
   015656   011137  002266                          MOV     (R1),CSR0       ;CSR ADDRESS 0 = RECEIVER CSR (RXCSR)
                                                                            ;                READ/WRITE
   015662   013737  002266  002276                  MOV     CSR0,CSR1       ;SAVE HIGH BYTE ADDRESS
   015670   005237  002276                          INC     CSR1
   015674   011137  002270                          MOV     (R1),CSR2
   015700   062737  000002  002270                  ADD     #2,CSR2         ;CSR ADDRESS 2 = RECEIVE DATA/STATUS (RDSR)
                                                                            ;                READ ONLY
                                                                            ;CSR ADDRESS 2 = PARAMETER CONTROL/SYNCH ADDR
                                                                            ;                (PCSAR) - WRITE ONLY
   015706   013737  002270  002300                  MOV     CSR2,CSR3       ;SAVE HIGH BYTE ADDRESS
   015714   005237  002300                          INC     CSR3
   015720   011137  002272                          MOV     (R1),CSR4
   015724   062737  000004  002272                  ADD     #4,CSR4         ;CSR ADDRESS 4 = TRANSMITTER CSR (TXCSR)
                                                                            ;                READ/WRITE

   015732   013737  002272  002302                  MOV     CSR4,CSR5       ;CSR ADDRESS 5 = PARAMETER CONTROL REG (PCR)
                                                                            ;                READ/WRITE
   015740   005237  002302                          INC     CSR5            ;                PCR IS HI BYTE OF TXCSR
   015744   012137  002274                          MOV     (R1)+,CSR6
   015750   062737  000006  002274                  ADD     #6,CSR6         ;CSR ADDRESS 6 = TRANSMIT DATA/STATUS (TDSR)
                                                                            ;                READ/WRITE
   015756   013737  002274  002304                  MOV     CSR6,CSR7       ;SAVE HIGH BYTE ADDRESS
   015764   005237  002304                          INC     CSR7
   015770   011100                                  MOV     (R1),R0         ;GET VECTOR
   015772   032700  000007                          BIT     #7,R0           ;DOES THIS VECTOR END IN NON-ZERO?
   015776   001414                                  BEQ     11$             ;IF NOT - OK (XX0)
```

```
     87 016000  042711  000007                BIC     #7,(R1)          ;MAKE IT XX0
     88 016004                                PRINTB  #FINIT2,(R1),R0 ;INFORM THE USER
        016004  010046                                                                  MOV     R0,-(SP)
        016006  011146                                                                  MOV     (R1),-(SP)
        016010  012746  016405                                                          MOV     #FINIT2,-(SP)
        016014  012746  000003                                                          MOV     #3,-(SP)
        016020  010600                                                                  MOV     SP,R0
        016022  104414                                                                  TRAP    C$PNTB
        016024  062706  000010                                                          ADD     #10,SP
     89 016030                        11$:
     90 016030  011137  002262                MOV     (R1),RCVEC       ;RCV. VECTOR
     91 016034  012137  002264                MOV     (R1)+,XMTVEC     ;TRANSMIT VECTOR
     92 016040  062737  000004  002264        ADD     #4,XMTVEC        ;ADJUST XMIT VECTOR
     93
     94 016046  011137  002306                MOV     (R1),TURN        ;TURNAROUND.
     95 016052  012737  000020  002402        MOV     #RXENA,RXINI     ;RECEIVER INIT WORD
     96 016060  012737  000020  002436        MOV     #TXENA,TXINI     ;TRANSMITTER INIT WORD
     97 016066  005737  002306                TST     TURN             ;WHAT WAS THE TURNAROUND
     98 016072  001004                        BNE     15$              ;IF ACTUAL TURNAROUND DON'T SET MAINT MODE
     99 016074  052737  000010  002436        BIS     #MM,TXINI        ;SET THE MAINT. MODE BIT.
    100 016102  000422                        BR      20$
    101 016104                        15$:
    102 016104  052737  000004  002402        BIS     #RTS,RXINI       ;SET RTS FOR TURNAROUND LOOP.
    103 016112  022737  000003  002306        CMP     #3,TURN          ;LOCAL LOOPBACK?
    104 016120  001004                        BNE     17$              ;IF NOT SKIP.
    105 016122  052737  000012  002402        BIS     #LL!DTR,RXINI    ;SET LOCAL LOOP AND DTR.
    106 016130  000407                        BR      20$
    107 016132                        17$:
    108 016132  022737  000004  002306        CMP     #4,TURN          ;REMOTE LOOPBACK?
    109 016140  001003                        BNE     20$
    110 016142  052737  000003  002402        BIS     #DTR!RL,RXINI    ;SET REMOTE LOOP AND DTR
    111 016150                        20$:
    112 016150  013737  002402  002404        MOV     RXINI,RXINIT     ;SAVE RECEIVER INIT WORD
    113 016156  052737  000140  002404        BIS     #RXITEN!DSITEN,RXINIT ;MAKE IT AN INTERRUPT INIT WORD
    114 016164  013737  002436  002440        MOV     TXINI,TXINIT     ;SAVE TRANSMITTER INIT WORD
    115 016172  052737  000100  002440        BIS     #TXIE,TXINIT     ;MAKE IT AN INTERRUPT INIT WORD
    116 016200  012737  000120  002406        MOV     #RXITEN!RXENA,RXMINI    ;RCV INIT FOR MAINT. LOOP.
    117 016206  012737  000130  002442        MOV     #TXIE!TXENA!MM,TXMINI   ;TRANS INIT WITH MAINT. LOOP.
    118                                                  ;DETERMINE PROCESSOR TYPE
    119 016214                               SETVEC  #10,#ILLGL,#PRI07 ;SET UP ILLEGAL INSTRUCTION TRAP
        016214  012746  000340                                                          MOV     #PRI07,-(SP)
        016220  012746  017744                                                          MOV     #ILLGL,-(SP)
        016224  012746  000010                                                          MOV     #10,-(SP)
        016230  012746  000003                                                          MOV     #3,-(SP)
        016234  104437                                                                  TRAP    C$SVEC
        016236  062706  000010                                                          ADD     #10,SP
    120 016242  000007                       MFPT                     ;MOVE PROCESSOR TYPE TO R0
    121                                                               ;FOR AN LSI 11/23 R0 = 3
    122                                                               ;FOR OTHER LSI THIS WILL RESULT IN AN
    123                                                               ;ILLEGAL INSTRUCTION (R0=0).
    124 016244  010037  002324               MOV     R0,CPU           ;SAVE THE PROCESSOR TYPE
    125 016250                               CLRVEC  #10              ;RESTORE TRAP TO THE SUPERVISOR
        016250  012700  000010                                                          MOV     #10,R0
        016254  104436                                                                  TRAP    C$CVEC
    126 016256  005737  002324               TST     CPU              ;IS THE CPU A LSI11/23 ?
    127 016262  001004                       BNE     25$              ;BR IF YES
    128 016264  012737  000020  002430        MOV     #20,TIMER        ;SET THE TIMER FOR A LSI11 OR 11/2.
```

```
    129 016272  000403                        BR      30$
    130 016274                          25$:
    131 016274  012737  000050  002430        MOV     #50,TIMER       ;SET THE TIMER FOR A LSI-11/23.
    132 016302                          30$:
    133 016302  013737  002430  002412        MOV     TIMER,SAVTIM    ;STORE THE TIMER VALUE.
    134 016310                          END:
    135 016310                          ENDINIT
                                                                                        L10017:
        016310                                                                                  TRAP    C$INIT
        016310  104411
    136 016312     045     101     052  FINIT1: .ASCIZ  /%A** WARNING - WILL ASSUME DPV ADDRESS %06%A (NOT %06%A)%N/
        016315     052     040     127
        016320     101     122     116
        016323     111     116     107
        016326     040     055     040
        016331     127     111     114
        016334     114     040     101
        016337     123     123     125
        016342     115     105     040
        016345     104     120     126
        016350     040     101     104
        016353     104     122     105
        016356     123     123     040
        016361     045     117     066
        016364     045     101     040
        016367     050     116     117
        016372     124     040     045
        016375     117     066     045
        016400     101     051     045
        016403     116     000
    137 016405     045     101     052  FINIT2: .ASCIZ  /%A** WARNING - WILL ASSUME DPV VECTOR  %03%A (NOT %03%A)%N/
        016410     052     040     127
        016413     101     122     116
        016416     111     116     107
        016421     040     055     040
        016424     127     111     114
        016427     114     040     101
        016432     123     123     125
        016435     115     105     040
        016440     104     120     126
        016443     040     126     105
        016446     103     124     117
        016451     122     040     040
        016454     045     117     063
        016457     045     101     040
        016462     050     116     117
        016465     124     040     045
        016470     117     063     045
        016473     101     051     045
        016476     116     000
    138                                 .EVEN
    139
    140
    141
    142
    143
```

```
                                .SBTTL  AUTO DROP UNIT SECTION

                                ;////////////////////////////////////////////////////////////////////////
                                ;/ THE AUTO DROP CODING DETERMINES WHETHER OR NOT THE DEVICE WHOSE P-TABLE
                                ;/ WAS JUST OBTAINED IS READY FOR TESTING, AND IT IS DROPPED IF NOT READY.
                                ;////////////////////////////////////////////////////////////////////////

016500                          BGNAUTO
016500                                                                          L$AUTO::

                                        SETVEC  #4,#NXM,#PRI07  ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
016500  012746  000340                                                          MOV     #PRI07,-(SP)
016504  012746  017734                                                          MOV     #NXM,-(SP)
016510  012746  000004                                                          MOV     #4,-(SP)
016514  012746  000003                                                          MOV     #3,-(SP)
016520  104437                                                                  TRAP    C$SVEC
016522  062706  000010                                                          ADD     #10,SP
016526  005037  002366                CLR     NXMFLG          ;CLEAR FLAG USED IN TEST
016532  005777  163530                TST     @CSR0           ;REFERENCE MEMORY ADDRESS FOR THE DEVICE
                                                                ;TO SEE IF IT EXISTS.

                                ;;**************************************************************************
                                ; IF THE DEVICE DOESN'T EXIST THE RESULTANT TRAP TO VECTOR 04 WILL
                                ; CAUSE THE DEVICE TO BE DROPPED (SEE INTERRUPT ROUTINE 'DROP04').
                                ; OTHERWISE THE MEMORY REFERENCE IS UNEVENTFUL AND THE DEVICE IS READY.
                                ;;**************************************************************************
016536  005737  002366                TST     NXMFLG          ;WAS THERE A TRAP?
016542  001407                        BEQ     10$             ;BR IF NOT
016544                                  DODU    LOGDEV          ;DROP THE DEVICE
016544  013700  002354                                                          MOV     LOGDEV,R0
016550  104451                                                                  TRAP    C$DODU
016552                                  DOCLN                   ;CLEAN UP CODE.
016552  104444                                                                  TRAP    C$DCLN
016554                                  CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
016554  012700  000004                                                          MOV     #4,R0
016560  104436                                                                  TRAP    C$CVEC
016562                          10$:

016562                          ENDAUTO
016562                                                                  L10020:
016562  104461                                                                  TRAP    C$AUTO
```

CLEANUP CODING SECTION

```
                                .SBTTL  CLEANUP CODING SECTION

                                ;////////////////////////////////////////////////////////////////////////////////
                                ;/  THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED AT THE
                                ;/  END OF THE TEST SEQUENCE ON A PARTICULAR UNIT.  THIS SECTION IS REQUIRED
                                ;/  EVEN IF IT IS A NULL CLEANUP
                                ;////////////////////////////////////////////////////////////////////////////////

016564                          BGNCLN
016564                                                                          L$CLEAN::
016564  005737  002366                  TST     NXMFLG          ;WAS THERE A NXM TRAP
016570  001003                          BNE     10$             ;IF YES, SKIP RESET
016572  012777  000001  163472          MOV     #RESET,@TXCSR   ;RESET THE DPV
016600                          10$:
016600                          ENDCLN
016600                                                                          L10021:
016600  104412                                                                          TRAP    C$CLEAN
```

```
                                .SBTTL  GLOBAL INTERRUPT HANDLING ROUTINES

                                ;////////////////////////////////////////////////////////////////////
                                ;/ THE INTERRUPT HANDLING SECTION CONTAINS CODING REQUIRED TO USE
                                ;/ THE 'SETVEC' MACRO.  NOTE EVERY INTERRUPT ROUTINE SHOULD SAVE
                                ;/ AND RESTORE R0.
                                ;////////////////////////////////////////////////////////////////////

                                ;*********************************************************************
                                ;       RINT -  INTERRUPT SERVICE ROUTINE
                                ;
                                ;       FUNCTION - RECEIVE INTERRUPT ROUTINE THAT SETS FLAGS WHEN
                                ;                  A RECEIVE INTERRUPT CONDITON IS RECEIVED.
                                ;
                                ;       ENTRY CONDTIONS
                                ;                       TOGGLE = IF NON ZERO, XOR THE BITS IN TOGGLE
                                ;                                INTO THE RXCSR
                                ;
                                ;       EXIT CONDITIONS RFLAG =  1 SET - DATA RECEIVED
                                ;                            =  2 SET - STATUS RECEIVED
                                ;                       IRXCSR=  IMAGE OF RXCSR
                                ;                       RSAVE =  IMAGE OF RDSR
                                ;                       MCFLAG=  MODEM CONTROL INTERRUPT COUNT.
                                ;
                                ;       USED IN TESTS: 8,10,11,13,14
                                ;
                                ;*********************************************************************


016602                          BGNSRV  RINT                                            RINT::
016602                          1$:
016602  017737  163460  002346          MOV     @RXCSR,IRXCSR   ;SAVE RXCSR
016610  100011                          BPL     5$              ;BR IF NOT
016612  005237  002360                  INC     MCFLAG          ;INCREMENT MODEM CONTROL FLAG.
016616  022737  000002  002360          CMP     #2,MCFLAG       ;HAS THERE BEEN MORE THAN 2 INTERRUPTS?
016624  002003                          BGE     5$              ;IF NOT, PROCEED.
016626  042777  000040  163432          BIC     #DSITEN,@RXCSR  ;DISABLE THE INTERRUPT.
016634                          5$:
016634  032737  000200  002346          BIT     #RDATRY,IRXCSR  ;IS DATA READY?
016642  001414                          BEQ     10$             ;IF NOT - CHECK STATUS.
016644  052737  000001  002376          BIS     #1,RFLAG        ;FLAG FOR DATA
016652  005737  002432                  TST     TOGGLE          ;TOGGLE ?
016656  001406                          BEQ     10$             ;IF NOT, SKIP TOGGLE
016660  013702  002432                  MOV     TOGGLE,R2       ;GET THE TOGGLE VALUE
016664  005037  002432                  CLR     TOGGLE          ;ONLY TOGGLE ONCE.
016670  074277  163372                  XOR     R2,@RXCSR       ;TOGGLE RTS.
016674                          10$:
016674  032737  002000  002346          BIT     #RSTARY,IRXCSR  ;IS STATUS READY?
016702  001404                          BEQ     20$             ;IF NOT - DON'T SET THE FLAG.
016704  052737  000002  002376          BIS     #2,RFLAG        ;SET THE FLAG
016712  000403                          BR      25$
016714                          20$:
016714  005737  002370                  TST     OVER            ;CREATE AN OVERRUN?
016720  001330                          BNE     1$              ;IF YES - DON'T READ THE DATA
                                                                ;UNTIL THE STATUS FLAG IS SET.
016722                          25$:
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
     57 016722  017737  163342  002400          MOV     @RDSR,RSAVE     ;SAVE RECEIVE DATA AND STATUS.
     58
     59 016730                          ENDSRV
        016730                                                                          L10022:
        016730  000002                                                                          RTI
     60
```

```
                        ;*****************************************************************************
                        ;       RDATA - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - GENERAL PURPOSE RECEIVE INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDTIONS
                        ;                       ECOUNT = # OF CHARACTERS TO BE RECEIVED.
                        ;                       R1     = ADDRESS OF BUFFER FOR NEXT CHARACTER
                        ;
                        ;       EXIT CONDITIONS
                        ;                       IRXCSR = IMAGE OF RXCSR
                        ;                       IRDSR  = IMAGE OF RDSR
                        ;                       RCOUNT = COUNT OF CHARACTERS RECEIVED
                        ;                       MODE   = PROTOCOL MODE ( 0 = BCP, NON 0 = BOP)
                        ;                       MCFLAG = COUNT OF MODEM CONTROL INTERRUPTS RECEIVED
                        ;                       MODEM  = ADDRESS OF MODEM CONTROL INTERRUPT TABLE
                        ;                       RFLAG  = RECEIVE END FLAG ( 1 = NO ERROR, -1 = ERROR)
                        ;                       R1     = INCREMENTED TO NEXT BYTE IN BUFFER.
                        ;
                        ;       USED IN TESTS: 15-28 & 30-40 (CALLED IN SUBROUTINE $DATA), 41
                        ;
                        ;*****************************************************************************

016732                  BGNSRV  RDATA
016732                                                                  RDATA::

016732  017737  163330  002346        MOV     @RXCSR,IRXCSR   ;SAVE THE RXCSR
016740  100040                        BPL     10$             ;IS DATA SET CHANGE?  IF NOT SET, BR.

016742  032737  000040  002346        BIT     #DSITEN,IRXCSR  ;WAS THE DATA SET CHANGE INT. ENABLED?
016750  001434                        BEQ     10$             ;IF NOT - DON'T KEEP TRACK OF THE CHANGES.
016752  005237  002360                INC     MCFLAG          ;INCR MODEM CONTROL FLAG.
016756  022737  0C0011  002360        CMP     #9.,MCFLAG      ;WERE TOO MANY INTERRUPTS RECECEIVED?
016764  002004                        BGE     1$              ;IF NOT - PROCEED.
016766  042777  000040  163272        BIC     #DSITEN,@RXCSR  ;CLEAR MODEM CONTROL INTERRUPT.
016774  000422                        BR      10$
016776                          1$:
016776                              PUSH    <R5>            ;SAVE R5
017000  013705  002360                MOV     MCFLAG,R5       ;USE THE INTERRUPT # AS A TABLE INDEX.
017004  006305                        ASL     R5              ;CHANGE MODEM CONTROL TO ADDRESS OFFSET
017006  013765  002346  002444        MOV     IRXCSR,MODEM(R5);SAVE THE MODEM STATUS
017014  042765  006760  002444        BIC     #6760,MODEM(R5) ;SAVE ONLY THE MODEM STATUS.
017022  032777  000040  163242        BIT     #TM,@TXCSR      ;WAS THE TEST MODE BIT SET?
017030  001403                        BEQ     5$              ;BR IF NOT
017032  052765  000040  002444        BIS     #TM,MODEM(R5)   ;SAVE TEST MODE STATUS.
017040                          5$:
017040                              POP     <R5>            ;RESTORE R5

017042                          10$:
017042  032737  002200  002346        BIT     #RSTARY!RDATRY,IRXCSR ;IS THE DATA OR STATUS BIT SET
017050  001444                        BEQ     55$
017052  017737  163212  002350        MOV     @RDSR,IRDSR     ;SAVE THE DATA AND STATUS REG.
017060  032737  000200  002346        BIT     #RDATRY,IRXCSR  ;IS DATA SET?
017066  001404                        BEQ     20$
017070  113721  002350                MOVB    IRDSR,(R1)+     ;SAVE THE DATA.
017074  005237  002500                INC     RCOUNT          ;INCREMENT BYTE COUNT
017100                          20$:
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
     57 017100  032737  002000  002346          BIT     #RSTARY,IRXCSR  ;IS STATUS SET?
     58 017106  001410                          BEQ     50$
     59 017110  032737  106000  002350          BIT     #ERR!ROVER!RABORT,IRDSR ;WAS THERE AN ERROR?
     60 017116  001413                          BEQ     53$             ;IF NOT - MUST BE END OF MESSAGE.
     61 017120  012737  177777  002376          MOV     #-1,RFLAG       ;OTHERWISE, SET ERROR FLAG.
     62 017126  000412                          BR      54$
     63 017130                          50$:
     64 017130  005737  002362                  TST     MODE            ;IS THIS BCP?
     65 017134  001012                          BNE     55$             ;IF NOT - EXIT
     66 017136  023737  002500  002474          CMP     RCOUNT,ECOUNT   ;HAVE WE RECEIVED ALL THE CHARACTERS
     67 017144  001006                          BNE     55$             ;IF NOT - EXIT
     68 017146                          53$:
     69 017146  012737  000001  002376          MOV     #1,RFLAG        ;SET FLAG
     70 017154                          54$:
     71 017154  042777  000100  163104          BIC     #RXITEN,@RXCSR  ;DISABLE INTERRUPT
     72 017162                          55$:
     73
     74 017162                          ENDSRV
        017162                                                                  L10023:
        017162  000002                                                                  RTI
     75
     76
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
                        ;*****************************************************************
                        ;       RDATA2 - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - HIGH SPEED RECEIVE INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDTIONS
                        ;                       COUNTER= # OF CHARACTERS BE RECEIVED
                        ;                       R1     = ADDRESS OF BUFFER FOR NEXT CHARACTER
                        ;
                        ;       EXIT CONDITIONS
                        ;                       RCOUNT = COUNT OF CHARACTERS RECEIVED
                        ;                       RFLAG  = RECEIVE END FLAG ( 1 = NO ERROR, -1 = ERROR)
                        ;                       R1     = INCREMENTED TO NEXT BYTE IN BUFFER.
                        ;
                        ;       USED IN TESTS: 42 & 43
                        ;*****************************************************************

017164                  BGNSRV  RDATA2
017164                                                                  RDATA2::

017164  105777  163076          TSTB    @RXCSR          ;IS THIS DATA?
017170  100404                  BMI     5$
                                                        ;DATA OR STATUS?
017172  012737  177777  002376  MOV     #-1,RFLAG       ;FLAG FOR ERROR
017200  000410                  BR      20$

017202                  5$:
017202  117721  163062          MOVB    @RDSR,(R1)+     ;SAVE THE DATA.
017206  005337  002322          DEC     COUNTER         ;DECREMENT COUNT
017212  001006                  BNE     30$             ;BR IF NOT DONE.
017214  012737  000001  002376  MOV     #1,RFLAG        ;SET FLAG
017222                  20$:
017222  042777  000100  163036  BIC     #RXITEN,@RXCSR  ;DISABLE INTERRUPT
017230                  30$:

017230                  ENDSRV
017230                                                                  L10024:
017230  000002                                                                  RTI
```

```
                                ;*****************************************************************
                                ;       XINT -  INTERRUPT SERVICE ROUTINE
                                ;
                                ;       FUNCTION - TRANSMIT INTERRUPT ROUTINE. SET A FLAG WHEN INTERRUPT
                                ;                  GENERATED.  THIS ISR WILL TRANSMIT 4 DATA CHARACTERS AND
                                ;                  END A MESSAGE IN A SPECIFIED MANNER.
                                ;
                                ;       ENTRY CONDTIONS
                                ;                  ABORT = FLAG, SET IF TERMINATE BY AN ABORT IS DESIRED.
                                ;                  START = # OF START CHARACTERS (FLAGS OR SYNCHS) TO
                                ;                          BE SENT.
                                ;
                                ;       EXIT CONDITIONS
                                ;                  TFLAG = FLAG SET WHEN THIS INTERRUPT IS SERVICED
                                ;                  DATA  = # OF DATA CHARACTERS TRANSMITTED
                                ;
                                ;       USED IN TESTS:  6, 8-11, 14
                                ;*****************************************************************

017232                          BGNSRV  XINT
017232                                                                          XINT::
017232  012737  000001  002424          MOV     #1,TFLAG        ;SET THE TRANSMIT FLAG
017240  005737  002414          TST     START           ;SEND START
017244  001410                  BEQ     5$              ;IS THIS DATA OR A START
017246  012777  000400  163020          MOV     #TSOM,@TDSR     ;TRANSMIT A SYNCH/FLAG.
017254  005337  002414          DEC     START           ;DECREMENT START COUNTER.
017260  005037  002326          CLR     DATA            ;CLEAR DATA COUNTER
017264  000424                  BR      20$
017266                          5$:
017266  022737  000004  002326          CMP     #4,DATA         ;HAVE WE SENT 4 DATA CHARACTERS
017274  001013                  BNE     10$
017276  005737  002316          TST     ABORT           ;SEND AN ABORT?
017302  001404                  BEQ     7$
017304  052777  002000  162762          BIS     #TXABO,@TDSR    ;SEND AN ABORT
017312  000411                  BR      20$
017314                          7$:
017314  012777  001021  162752          MOV     #TEOM!21,@TDSR  ;SEND END OF MESSAGE
017322  000405                  BR      20$
017324                          10$:
017324  012777  000041  162742          MOV     #41,@TDSR       ;TRANSMIT DATA.
017332  005237  002326          INC     DATA            ;INCREMENT DATA
017336                          20$:
017336                          ENDSRV
017336                                                                  L10025:
017336  000002                                                                  RTI

```

```
                        ;*****************************************************************
                        ;       XDATA - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - GENERAL PURPOSE TRANSMIT INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDTIONS
                        ;                       START = # OF START CHARACTERS (FLAGS OR SYNCHS) TO
                        ;                               BE SENT.
                        ;                       TSTART= TRANSMIT START OF MESSAGE BIT/(OR BITS)
                        ;                       HEADER= # OF HEADER CHARACTERS (8 BIT CHARACTERS) TO
                        ;                               TRANSMIT BEFORE, SETTING THE SELECTED
                        ;                               CHARACTER LENGTH.
                        ;                       IPCR  = IMAGE OF PCR. CHARACTER LENGTH TO SET AFTER
                        ;                               THE HEADER CHARACTERS ARE SENT.
                        ;
                        ;       EXIT CONDITIONS
                        ;                       XMITD = # OF DATA CHARACTERS TRANSMITTED
                        ;                       RCOUNT= 0 (AFTER START OF MESSAGE TRANSMITTED)
                        ;
                        ;       USED IN TESTS: 15-28 & 30-40 (CALLED IN SUBROUTINE $DATA)
                        ;
                        ;*****************************************************************

                        BGNSRV  XDATA
017340                                                                  XDATA::

017340  005737  002414          TST     START           ;ANY STARTS LEFT TO SEND?
017344  001426                  BEQ     10$             ;IF NOT, SKIP.
017346  032737  000001  002434  BIT     #BIT0,TSTART    ;IS THIS SPECIAL START SEQUENCE.
017354  001407                  BEQ     2$              ;IF NOT - SKIP.
                                                        ;* NOTE: CERTAIN USYNRTS ONLY TRANSMIT
                                                        ;* A SPECIAL START SEQUENCE WHEN
                                                        ;* TRANSMIT START AND END OF MESSAGE
                                                        ;* ARE SET BY A BYTE OPERATION.
017356  113777  002434  162720      MOVB    TSTART,@CSR7    ;SEND SPECIAL SEQUENCE START OF MESSAGE.
017364  042737  000002  002434      BIC     #BIT1,TSTART    ;CLEAR END OF MESSAGE IN SPECIAL START
017372  000403                  BR      5$
017374                  2$:
017374  013777  002434  162672      MOV     TSTART,@TDSR    ;SEND START OF MESSAGE.
017402                  5$:
017402  005337  002414          DEC     START           ;DECREMENT COUNTER.
017406  001040                  BNE     20$             ;IF NOT LAST START EXIT.
017410  005037  002476          CLR     XMITD           ;CLEAR TRANSMIT COUNT.
017414  005037  002500          CLR     RCOUNT          ;CLEAR RECEIVER COUNT.
017420  000433                  BR      20$
017422                  10$:
017422  005737  002336          TST     HEADER          ;IS THIS A CONTROL CHARACTER?
017426  001407                  BEQ     15$             ;IF DONE WITH CONTROL CHAR, SET LENGTH
017430  100413                  BMI     16$             ;AFTERWARDS - BR TO TRANSMIT
017432  042777  000400  162634      BIC     #TSOM,@TDSR     ;CLEAR START OF MESSAGE.
017440  005337  002336          DEC     HEADER          ;DECREMENT HEADER COUNT.
017444  000405                  BR      16$             ;
017446                  15$:
017446  005337  002336          DEC     HEADER          ;MAKE HEADER FLAG - NEGATIVE
017452  153777  002342  162622      BISB    IPCR,@PCR       ;SET CHARACTER LENGTH (BOP MODE)
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
     57 017460                                  16$:
     58 017460  112277  162610                        MOVB    (R2)+,@TDSR     ;TRANSMIT A CHARACTER.
     59 017464  005237  002476                        INC     XMITD           ;INCR COUNT OF ACTUALLY SENT.
     60 017470  005303                             DEC     R3              ;DECREMENT COUNTER
     61 017472  001006                             BNE     20$
     62 017474  053777  002422  162572             BIS     TEND,@TDSR      ;TRANSMIT END OF MESSAGE.
     63 017502  042777  000100  162562             BIC     #TXIE,@TXCSR    ;DISABLE TRANSMITTER INTERRUPT.
     64 017510                                  20$:
     65
     66 017510                                  ENDSRV
        017510                                                                      L10026:
        017510  000002                                                                     RTI
     67
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
                                ;*****************************************************************************
                                ;       XDATA2 - INTERRUPT SERVICE ROUTINE
                                ;
                                ;       FUNCTION - HIGH SPEED TRANSMIT INTERRUPT ROUTINE FOR BOP MODE
                                ;
                                ;       ENTRY CONDTIONS
                                ;                       START = # OF START CHARACTERS (FLAGS OR SYNCHS) TO
                                ;                               BE SENT.
                                ;
                                ;       EXIT CONDITIONS
                                ;                       XMITD = # OF DATA CHARACTERS TRANSMITTED
                                ;
                                ;
                                ;       USED IN TESTS: 31,38,42,43
                                ;
                                ;*****************************************************************************

017512                          BGNSRV  XDATA2
017512                                                                          XDATA2::
017512  005737  002414                  TST     START           ;ANY STARTS LEFT TO SEND?
017516  100414                  BMI     20$             ;IF NEGATIVE SEND DATA
017520  001406                  BEQ     10$             ;IF NOT, SKIP.
017522  052777  000400  162544  BIS     #TSOM,@TDSR     ;SEND SYNCH (OR FLAG)
017530                          5$:
017530  005337  002414                  DEC     START           ;DECREMENT COUNTER.
017534  000430                  BR      30$
017536                          10$:
017536  005337  002414                  DEC     START           ;MAKE THE COUNTER NEGATIVE.
017542  042777  000400  162524  BIC     #TSOM,@TDSR     ;CLEAR START OF MESSAGE
017550                          20$:
017550  022737  000002  002476  CMP     #2,XMITD        ;IS THIS THE 3RD CHARACTER.
017556  001003                  BNE     25$             ;IF NOT SKIP
017560  113777  002342  162514  MOVB    IPCR,@PCR       ;CHANGE THE CHARACTER LENGTH
017566                          25$:
017566  112277  162502                  MOVB    (R2)+,@TDSR     ;TRANSMIT A CHARACTER.
017572  005237  002476                  INC     XMITD           ;INCR COUNT OF ACTUALLY SENT.
017576  005303                  DEC     R3              ;DECREMENT COUNTER
017600  001006                  BNE     30$
017602  052777  001000  162464  BIS     #TEOM,@TDSR     ;TRANSMIT END OF MESSAGE.
017610  042777  000100  162454  BIC     #TXIE,@TXCSR    ;DISABLE TRANSMITTER INTERRUPT.
017616                          30$:

017616                          ENDSRV
017616                                                                  L10027:
017616  000002                                                                  RTI
```

```
                        ;*****************************************************************************
                        ;       XDDCMP - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - DDCMP TRANSMIT INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDTIONS
                        ;                       START = # OF START CHARACTERS (FLAGS OR SYNCHS) TO
                        ;                               BE SENT.
                        ;                       HEADER= FLAG WHICH IS SET AFTER THE DDCMP HEADER HAS
                        ;                               BEEN TRANSMITTED
                        ;                       DDCMP2= # OF DATA CHARACTERS IN THE DDCMP DATA MESSAGE
                        ;
                        ;       EXIT CONDITIONS
                        ;                       XMITD = # OF DATA CHARACTERS TRANSMITTED
                        ;                       RCOUNT= 0 (AFTER START OF MESSAGE TRANSMITTED)
                        ;
                        ;
                        ;       USED IN TESTS: 41
                        ;*****************************************************************************
017620                  BGNSRV  XDDCMP
017620                                                                          XDDCMP::
017620  005737  002414          TST     START           ;ANY STARTS LEFT TO SEND?
017624  001413                  BEQ     10$             ;IF NOT, SKIP.
017626  012777  000400  162440  MOV     #TSOM,@TDSR     ;SEND START OF MESSAGE.
017634  005337  002414          DEC     START           ;DECREMENT COUNTER.
017640  001034                  BNE     20$             ;
017642  005037  002476          CLR     XMITD           ;CLEAR TRANSMIT COUNT.
017646  005037  002500          CLR     RCOUNT          ;CLEAR RECEIVER COUNT.
017652  000427                  BR      20$
017654                  10$:
017654  042777  001400  162412  BIC     #TEOM!TSOM,@TDSR ;CLEAR START OR END OF MESSAGE.
017662  112277  162406          MOVB    (R2)+,@TDSR     ;TRANSMIT A CHARACTER.
017666  005237  002476          INC     XMITD           ;INCR COUNT OF ACTUALLY SENT.
017672  005303                  DEC     R3              ;DECREMENT COUNTER
017674  001016                  BNE     20$
017676  052777  001000  162370  BIS     #TEOM,@TDSR     ;TRANSMIT END OF MESSAGE.
017704  005737  002336          TST     HEADER          ;IS THIS THE HEADER
017710  001005                  BNE     15$             ;IF NOT, DISABLE THE TRANSMITTER
017712  005237  002336          INC     HEADER          ;SET HEADER FLAG.
017716  012703  000015          MOV     #DDCMP2,R3      ;COUNTER FOR THE MESSAGE
017722  000403                  BR      20$
017724                  15$:
017724  042777  000100  162340  BIC     #TXIE,@TXCSR    ;DISABLE TRANSMITTER INTERRUPT.
017732                  20$:

017732                  ENDSRV
017732                                                                  L10030:
017732  000002                                                                  RTI
```

```
                                ;*****************************************************************************
                                ;       NXM -   INTERRUPT SERVICE ROUTINE
                                ;
                                ;       FUNCTION - NXM INTERRUPT ROUTINE.  THIS ROUTINE IS ASSIGNED
                                ;                  TO VECTOR 4 WHEN ADDRESSING THE DPV FOR THE FIRST
                                ;                  TIME.  IF THIS INTERRUPT IS GENERATED THE DPV IS
                                ;                  INCORRECTLY ADDRESSED.
                                ;
                                ;       ENTRY CONDTIONS
                                ;
                                ;       EXIT CONDITIONS
                                ;                       NXMFLG= FLAG SET WHEN THIS INTERRUPT IS SERVICED.
                                ;
                                ;       USED IN TESTS:  AUTO DROP
                                ;
                                ;*****************************************************************************
                                BGNSRV  NXM
017734                                                                          NXM::
017734
                                        MOV     #1,NXMFLG               ;SET FLAG IF MEMORY IS NON-EXISTENT.
017734  012737  000001  002366
                                ENDSRV
017742                                                                  L10031:
017742
017742  000002                                                                  RTI
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
                        ;*****************************************************************************
                        ;       ILLGL - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - ILLEGAL INSTRUCTION TRAP TO VECTOR 10
                        ;                  THIS TRAP WILL OCCUR IF THE PROCESSOR IS AN
                        ;                  LSI 11 OR LSI 11/2.  THIS TRAP IS USED TO
                        ;                  AUTO SIZE FOR PROCESSOR TYPE IN THE
                        ;                  INITIALIZATION SECTION.
                        ;
                        ;       ENTRY CONDTIONS
                        ;
                        ;       EXIT CONDITIONS
                        ;                       R0 = 0
                        ;
                        ;       USED IN TESTS:  INIT CODE
                        ;*****************************************************************************
                        
017744                  BGNSRV  ILLGL                                           ILLGL::
017744
                        
017744  005000                  CLR     R0
                        
017746                  ENDSRV                                                  L10032:
017746
017746  000002                                                                          RTI
                        
                        
                        
```

DROP UNIT SECTION

```
                                .SBTTL  DROP UNIT SECTION

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

017750                          BGNDU
017750                                                                  L$DU::
017750                                  BRESET                  ;ISSUE LSI-BUS RESET TO CLEAN UP
017750  104433                                                                  TRAP    C$RESET
017752                                  PRINTF  #FMDROP,LOGDEV
017752  013746  002354                                                          MOV     LOGDEV,-(SP)
017756  012746  020000                                                          MOV     #FMDROP,-(SP)
017762  012746  000002                                                          MOV     #2,-(SP)
017766  010600                                                                  MOV     SP,R0
017770  104417                                                                  TRAP    C$PNTF
017772  062706  000006                                                          ADD     #6,SP

017776                          ENDDU
017776                                                                  L10033:
017776  104453                                                                  TRAP    C$DU


020000  045 116 045 FMDROP: .ASCIZ  /%N%AUNIT %D2%A DROPPED/
020003  101 125 116
020006  111 124 040
020011  045 104 062
020014  045 101 040
020017  104 122 117
020022  120 120 105
020025  104 000
                                .EVEN
```

```
                                .SBTTL          TEST 1 - CSR ADDRESSING
                                ;
                                ;*************************************************************************
                                ;*                      TEST 1 - DPV-11
                                ;* VERIFY THAT ADDRESSING THE 4 LSI-BUS CSRS DOES NOT CAUSE A NON-
                                ;* EXISTENT MEMORY TRAP.
                                ;*
                                ;* THE DPV IS AN COMMUNICATION DEVICE RESIDING ON A LSI-BUS.
                                ;* COMMUNICATION BETWEEN THE MAIN CPU AND THE DPV IS ACCOMPLISHED
                                ;* THROUGH A SET OF FOUR 16-BIT LSI-BUS CONTROL AND STATUS REGISTERS
                                ;* (CSRS).  THE FOUR REGISTERS ARE ASSIGNED ADDRESSES IN THE I/O PAGE
                                ;* FLOATING ADDRESS SPACE: 76XXX0 - 76XXX6
                                ;*
                                ;* AN ERROR IN THIS TEST COULD MEAN THAT THE DEVICE IS INCORRECTLY
                                ;* CONFIGURED, THAT THE ADDRESS IS WRONG OR THAT THE CRYSTAL CLOCK
                                ;* ON THE DPV IS NOT WORKING.  THE SHIFT REGISTER CLOCK IS NEEDED
                                ;* FOR THE LS164 (E15) IN ORDER TO PROVIDE THE BUS REPLY (BRPLY/L ON
                                ;* PIN AF2).
                                ;*************************************************************************
 20 020030                      BGNTST
    020030                                                              T1::
 21
 22 020030                              SETVEC  #4,#LOCATE,#PRIO7 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
    020030  012746  000340                                                      MOV     #PRIO7,-(SP)
    020034  012746  020166                                                      MOV     #LOCATE,-(SP)
    020040  012746  000004                                                      MOV     #4,-(SP)
    020044  012746  000003                                                      MOV     #3,-(SP)
    020050  104437                                                              TRAP    C$SVEC
    020052  062706  000010                                                      ADD     #10,SP
 23 020056  005037  002366              CLR     NXMFLG          ;FLAG USED IN THE TRAP ROUTINE.
 24 020062  005001                      CLR     R1              ;USE REGISTER TO REMEMBER WHICH OF THE
 25                                                             ;4 CSRS WE ARE ADDRESSING.
 26
 27                             ;;*************************************************************************
 28                             ; IF ADDRESSING ANY ONE OF THE CSRS RESULTS IN A TRAP TO VECTOR 04, THE TRAP
 29                             ; WILL REPORT THE ERROR (SEE INTERRUPT ROUTINE 'LOCATE').  OTHERWISE THE
 30                             ; MEMORY REFERENCE IS UNEVENTFUL AND THE DEVICE IS READY FOR FURTHER TESTS
 31                             ;;*************************************************************************
 32
 33 020064  005777  162176              TST     @CSR0           ;TEST THE CSR AT 76XXX0
 34 020070  012701  000002              MOV     #2,R1           ;SAVE THE OFFSET OF THE NEXT CSR
 35 020074  005777  162170              TST     @CSR2           ;TEST THE CSR AT 76XXX2
 36 020100  012701  000004              MOV     #4,R1           ;SAVE THE OFFSET OF THE NEXT CSR
 37 020104  005777  162162              TST     @CSR4           ;TEST THE CSR AT 76XXX4
 38 020110  012701  000006              MOV     #6,R1           ;SAVE THE OFFSET OF THE NEXT CSR
 39 020114  005777  162154              TST     @CSR6           ;TEST THE CSR AT 76XXX6
 40 020120  005737  002366              TST     NXMFLG          ;WAS THERE A TRAP?
 41 020124  001414                      BEQ     10$             ;IF NOT - EXIT.
 42 020126                              PRINTX  #FMT1           ;SUGGEST THE PROBLEM. (
    020126  012746  020350                                                      MOV     #FMT1,-(SP)
    020132  012746  000001                                                      MOV     #1,-(SP)
    020136  010600                                                              MOV     SP,R0
    020140  104415                                                              TRAP    C$PNTX
    020142  062706  000004                                                      ADD     #4,SP
 43 020146                              DODU    LOGDEV          ;DROP THE DEVICE
    020146  013700  002354                                                      MOV     LOGDEV,R0
    020152  104451                                                             TRAP    C$DODU
```

```
     44 020154                              DOCLN                   ;CLEAN UP CODE - FORCE BACK TO INIT.
        020154  104444                                                                    TRAP    C$DCLN
     45
     46
     47 020156                      10$:
     48 020156                              CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
        020156  012700  000004                                                           MOV     #4,R0
        020162  104436                                                                   TRAP    C$CVEC
     49
     50 020164                      ENDTST
        020164                                                                  L10034:
        020164  104401                                                                   TRAP    C$ETST
     51
     52
     53 020166                      BGNSRV  LOCATE                  ;INTERRUPT SERVICE ROUTINE
        020166                                                                  LOCATE::
     54 020166  005737  002366              TST     NXMFLG          ;HAVE WE HAD AT LEAST 1 PREVIOUS TRAP?
     55 020172  001006                      BNE     10$             ;IF YES, DON'T BOTHER DECLARING ANOTHER
     56                                                             ;DEVICE FATAL ERROR
     57 020174                              ERRDF   9,EMT0          ;NON-EXISTENT DEVICE ERROR
        020174  104455                                                                   TRAP    C$ERDF
        020176  000011                                                                   .WORD   9
        020200  020240                                                                   .WORD   EMT0
        020202  000000                                                                   .WORD   0
     58 020204  005237  002366              INC     NXMFLG          ;SET THE FLAG
     59 020210                      10$:
     60 020210                              PRINTX  #FMT0,R1,CSR0(R1) ;PRINT THE CSR THAT DOESN'T RESPOND.
        020210  016146  002266                                                           MOV     CSR0(R1),-(SP)
        020214  010146                                                                   MOV     R1,-(SP)
        020216  012746  020276                                                           MOV     #FMT0,-(SP)
        020222  012746  000003                                                           MOV     #3,-(SP)
        020226  010600                                                                   MOV     SP,R0
        020230  104415                                                                   TRAP    C$PNTX
        020232  062706  000010                                                           ADD     #10,SP
     61 020236                      ENDSRV
        020236                                                                  L10035:
        020236  000002                                                                   RTI
     62
     63 020240    103    123    122  EMT0:   .ASCIZ  /CSR ADDRESSING ERROR - TRAP 4/
        020243    040    101    104
        020246    104    122    105
        020251    123    123    111
        020254    116    107    040
        020257    105    122    122
        020262    117    122    040
        020265    055    040    124
        020270    122    101    120
        020273    040    064    000
     64 020276    045    123    063  FMT0:   .ASCIZ  /%S3%ACSR%D1%A AT %O6%A DOES NOT RESPOND%N/
        020301    045    101    103
        020304    123    122    045
        020307    104    061    045
        020312    101    040    101
        020315    124    040    045
        020320    117    066    045
        020323    101    040    104
        020326    117    105    123
```

```
                020331      040     116     117
                020334      124     040     122
                020337      105     123     120
                020342      117     116     104
                020345      045     116     000
     65         020350      045     101     050  FMT1:    .ASCIZ  /%A(CONFIGURATION ERROR  OR  NO BUS REPLY SIGNAL)%N2/
                020353      103     117     116
                020356      106     111     107
                020361      125     122     101
                020364      124     111     117
                020367      116     040     105
                020372      122     122     117
                020375      122     040     040
                020400      117     122     040
                020403      040     116     117
                020406      040     102     125
                020411      123     040     122
                020414      105     120     114
                020417      131     040     123
                020422      111     107     116
                020425      101     114     051
                020430      045     116     062
                020433      000
     66                                         .EVEN
     67
     68
     69
```

```
                                .SBTTL          TEST 2 - DPV RESET

                                ;*****************************************************************************
                                ;*                      TEST 2 - DPV-11
                                ;* DPV RESET
                                ;* RESET THE DPV AND ENSURE THAT ALL REGISTERS ARE IN THEIR
                                ;* PROPER INITIALIZATION STATE.  THE RESET IS ASYNCHRONOUS TO ALL
                                ;* DATA SET TIMING AND ANY DATA PORT ACCESSES. THE FOLLOWING
                                ;* WILL BE CHECKED BY THE $RESET SUBROUTINE:
                                ;*      1. ALL BITS IN THE DATA PORT REGISTERS ARE CLEARED.
                                ;*      2. ALL OUTPUT INDICATORS ARE CLEARED.
                                ;*      3. TRANSMIT BUFFER EMPTY (TBE) IS SET
                                ;*
                                ;* SUBTEST 1 - AFTER RESET, CHECK THAT MAINTENANCE MODE AND
                                ;*             TRANSMITTER CAN BE SET. ALSO CHECK THAT TRANSMITTER
                                ;*             BUFFER EMPTY (TBE) IS CLEARED WHEN TDSR IS ACCESSED
                                ;*             WITHOUT SETTING TRANSMITTER ENABLE.
                                ;* SUBTEST 2 - ON THE FIRST PASS ONLY, CHECK THAT A BUS RESET, DOES
                                ;*             A DPV11 RESET.
                                ;*
                                ;* NOTE: DATA MODE, CTS, RR (RECEIVER READY) AND IC (INCOMING CALL)
                                ;*       ARE UNAFFECTED BY A RESET.
                                ;*
                                ;*****************************************************************************
020434                          BGNTST                                                  T2::
020434
020434                            BGNSUB                                                T2.1:
020434
020434  104402                                                                          TRAP    C$BSUB
020436                          CALL    $RESET          ;RESET THE DPV
020442                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
020442  104410                                                                          TRAP    C$ESCAPE
020444  000212                                                                          .WORD   L10036-.
020446  005001                  CLR     R1              ;BITS SHOULD BE CLEAR.
020450  005077  161620          CLR     @TDSR           ;CLEAR TBE
020454  005777  161612          TST     @TXCSR          ;IS TBE CLEARED?
020460  001035                  BNE     10$             ;ERROR IF NOT CLEAR
020462  012701  000010          MOV     #10,R1          ;REMEMBER BITS TO SET.
020466  050177  161600          BIS     R1,@TXCSR       ;SET THOSE BITS
020472  020177  161574          CMP     R1,@TXCSR       ;WERE THOSE BITS SET
020476  001026                  BNE     10$
020500  012701  000020          MOV     #20,R1          ;NEXT BIT TO SET
020504  110177  161562          MOVB    R1,@TXCSR
020510  020177  161556          CMP     R1,@TXCSR
020514  001017                  BNE     10$
020516  012701  000030          MOV     #30,R1
020522  112777  000030  161542  MOVB    #TXENA!MM,@TXCSR ;SET THE ENABLE AND MAINT. MODE.
020530  020177  161536          CMP     R1,@TXCSR       ;ARE THOSE BITS SET?
020534  001007                  BNE     10$             ;BR IF IN ERROR.
020536  012701  000100          MOV     #100,R1         ;SET TX INTERRUPT ENABLE.
020542  110177  161524          MOVB    R1,@TXCSR       ;SET THE INTERRUPT BIT
020546  020177  161520          CMP     R1,@TXCSR       ;IS THE BIT SET?
020552  001404                  BEQ     20$             ;IF YES - OK.
020554                  10$:
020554                          ERRDF   10,EMG4,ERRG7
020554  104455                                                                          TRAP    C$ERDF
020556  000012                                                                          .WORD   10
```

```
        020560  013554                                                                                    .WORD   EMG4
        020562  007172                                                                                    .WORD   ERRG7
    51  020564                             20$:
    52  020564                               ENDSUB
        020564                                                                              L10037:
        020564  104403                                                                                    TRAP    C$ESUB
    53
    54
    55
    56  020566                               BGNSUB
        020566                                                                              T2.2:
        020566  104402                                                                                    TRAP    C$BSUB
    57  020570  022737  000001  002314            CMP     #1,STARES       ;IS THIS THE FIRST PASS?
    58  020576  001026                            BNE     30$             ;IF NOT - SKIP THIS TEST.
    59  020600                                    BRESET                  ;BUS RESET.
        020600  104433                                                                                    TRAP    C$RESET
    60  020602                                    $DELAY  10              ;DELAY 1 MSEC.

                                                                          ;******** MACRO EXPANSION ********
        020602  004737  006604                    JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        020606  000010                                    .WORD   10      ;NUMBER OF DELAY LOOPS
                                                                          ;*********************************

    61  020610  005001                            CLR     R1              ;EXPECT 0 IN ALL R/W REGISTERS
    62  020612  105777  161450                    TSTB    @RXCSR          ;IS THE RECEIVE CSR 0?
    63  020616  001012                            BNE     20$             ;BRANCH ON ERROR.
    64  020620  005777  161444                    TST     @RDSR           ;EXPECT READ DATA/STATUS TO BE 0
    65  020624  001007                            BNE     20$             ;BR IF NOT
    66  020626  022777  000004  161436            CMP     #4,@TXCSR       ;EXPECT TBE TO BE SET.
    67  020634  001003                            BNE     20$             ;BR IF NOT
    68  020636  005777  161432                    TST     @TDSR           ;EXPECT XMIT. DATA/STATUS TO BE 0.
    69  020642  001404                            BEQ     30$             ;BRANCH IF OK.
    70  020644                             20$:
    71  020644                                    ERRDF   11,EMG0,ERRG11  ;PRINT ERROR MESSAGE
        020644  104455                                                                                    TRAP    C$ERDF
        020646  000013                                                                                    .WORD   11
        020650  013372                                                                                    .WORD   EMG0
        020652  007572                                                                                    .WORD   ERRG11
    72  020654                             30$:
    73  020654                               ENDSUB
        020654                                                                              L10040:
        020654  104403                                                                                    TRAP    C$ESUB
    74
    75  020656                             ENDTST
        020656                                                                              L10036:
        020656  104401                                                                                    TRAP    C$ETST
```

```
                                .SBTTL          TEST 3 - CSR READ/WRITE

                                ;*****************************************************************
                                ;*                  TEST 3 - DPV-11
                                ;* WRITE/READ DATA PATTERNS
                                ;* THIS TEST IS INTENDED TO TEST THE READ/WRITE BITS IN THE CSRS. THERE
                                ;* IS NO INTENTION TO CHECK THE USYNR/T; IT IS DESIRED TO ONLY CHECK THE
                                ;* READING AND WRITING OF THE CSRS.  IN ALL THE SUBTESTS THE BITS ARE
                                ;* CHECKED TOGETHER AND INDIVIDUALLY.
                                ;* SUBTEST 1 - RXCSR (LOW BYTE CSR0)
                                ;*             CHECK BITS 0-6
                                ;* SUBTEST 2 - PCR (HIGH BYTE CSR4)
                                ;*             CHECK BITS 0-7
                                ;* SUBTEST 3 - TDSR (LOW BYTE OF CSR6) - TRANSMIT DATA BUFFER
                                ;*             BITS 0-7
                                ;* SUBTEST 4 - TDSR (HIGH BYTE OF CSR6) - TRANSMIT STATUS REGISTER.
                                ;*             BITS 0-3
                                ;* SUBTEST 5 - TDSR  - CHECK BYTE OP SIGNAL FOR USYNRT
                                ;*
                                ;*****************************************************************
020660                          BGNTST
020660                                                                  T3::
020660                                  CALL    $RESET          ;RESET THE DPV
020664                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
020664  104410                                                                  TRAP    C$ESCAPE
020666  000520                                                                  .WORD   L10041-.

020670                          BGNSUB
020670                                                                  T3.1:
020670  104402                                                                  TRAP    C$BSUB
020672  012701  000001                  MOV     #BIT0,R1        ;START ROTATE PATTERN
020676  012702  000007                  MOV     #7,R2           ;COUNTER - WRITE INTO BITS 0-6.
020702                          10$:
020702  150177  161360                  BISB    R1,@RXCSR       ;WRITE BIT.
020706  120177  161354                  CMPB    R1,@RXCSR       ;IS THE BIT WRITTEN?
020712  001022                          BNE     20$             ;IF NOT - REPORT IT.
020714  006101                          ROL     R1              ;ROTATE THE BIT PATTERN.
020716  105077  161344                  CLRB    @RXCSR          ;CLEAR REGISTER
020722  005302                          DEC     R2
020724  001366                          BNE     10$             ;CONTINUE UNTIL DONE.

020726  012701  000137                  MOV     #137,R1         ;WRITE ALL BITS EXCEPT MODEM CONTROL INT.
                                                                ;MODEM CONTROL NOT WRITTEN BECAUSE WE DON'T
                                                                ;WANT TO ACTUALLY GENERATE AN INTERRUPT.
020732  110177  161330                  MOVB    R1,@RXCSR       ;WRITE BITS.
020736  120177  161324                  CMPB    R1,@RXCSR       ;IS THE PATTERN WRITTEN?
020742  001006                          BNE     20$             ;IF NOT REPORT IT
020744  005001                          CLR     R1              ;REMEMBER DATA PATTERN
020746  105077  161314                  CLRB    @RXCSR          ;CLEAR THOSE BITS.
020752  105777  161310                  TSTB    @RXCSR          ;ARE THOSE BITS CLEARED?
020756  001404                          BEQ     30$             ;IF YES, OK.
020760                          20$:
020760                                  ERRDF   12,EMG4,ERRG4
020760  104455                                                                  TRAP    C$ERDF
020762  000014                                                                  .WORD   12
020764  013554                                                                  .WORD   EMG4
020766  007072                                                                  .WORD   ERRG4
```

```
     020770                          30$:
     020770  105077  161272                  CLRB    @RXCSR          ;CLEAR THE REGISTER
     020774                        ENDSUB
     020774                                                                  L10042:
     020774  104403                                                                  TRAP    C$ESUB
     020776                        BGNSUB
     020776                                                                  T3.2:
     020776  104402                                                                  TRAP    C$BSUB
     021000  012701  000377              MOV     #377,R1         ;WRITE DATA PATTERN
     021004  110177  161272              MOVB    R1,@PCR         ;WRITE THE PATTERN.
     021010  120177  161266              CMPB    R1,@PCR         ;IS THE PATTERN WRITTEN?
     021014  001025                      BNE     20$             ;IF NOT REPORT IT
     021016  005001                      CLR     R1              ;REMEMBER THE DATA PATTERN
     021020  105077  161256              CLRB    @PCR            ;CLEAR THOSE BITS
     021024  105777  161252              TSTB    @PCR            ;WERE THE BITS CLEARED?
     021030  001017                      BNE     20$             ;IF NOT - REPORT IT
     021032  012701  000001              MOV     #BIT0,R1        ;START ROTATE PATTERN
     021036  012702  000006              MOV     #6,R2           ;ROTATE THE BIT 4 TIMES
     021042                          10$:
     021042  150177  161234              BISB    R1,@PCR         ;WRITE PATTERN
     021046  120177  161230              CMPB    R1,@PCR         ;IS THE PATTERN WRITTEN?
     021052  001006                      BNE     20$             ;IF NOT - REPORT IT.
     021054  006101                      ROL     R1              ;ROTATE THE PATTERN
     021056  105077  161220              CLRB    @PCR            ;CLEAR THE PCR.
     021062  005302                      DEC     R2
     021064  001366                      BNE     10$             ;CONTINUE UNTIL DONE.
     021066  000404                      BR      30$             ;EXIT - WHEN DONE
     021070                          20$:
     021070                              ERRDF   13,EMG4,ERRG8
     021070  104455                                                          TRAP    C$ERDF
     021072  000015                                                          .WORD   13
     021074  013554                                                          .WORD   EMG4
     021076  007272                                                          .WORD   ERRG8
     021100                          30$:
     021100  105077  161176              CLRB    @PCR            ;CLEAR THE PCR

     021104                        ENDSUB
     021104                                                                  L10043:
     021104  104403                                                                  TRAP    C$ESUB

     021106                        BGNSUB
     021106                                                                  T3.3:
     021106  104402                                                                  TRAP    C$BSUB

     021110  012701  000377              MOV     #377,R1         ;WRITE DATA PATTERN
     021114  110177  161154              MOVB    R1,@TDSR        ;WRITE THE PATTERN.
     021120  120177  161150              CMPB    R1,@TDSR        ;IS THE PATTERN WRITTEN?
     021124  001025                      BNE     20$             ;IF NOT REPORT IT
     021126  005001                      CLR     R1              ;REMEMBER DATA PATTERN
     021130  105077  161140              CLRB    @TDSR           ;CLEAR THOSE BITS
     021134  105777  161134              TSTB    @TDSR           ;IS THE DATA CLEAR?
     021140  001017                      BNE     20$             ;IF NOT - REPORT IT.
     021142  012701  000001              MOV     #BIT0,R1        ;START ROTATE PATTERN
     021146  012702  000006              MOV     #6,R2           ;ROTATE THE BIT 4 TIMES
```

```
     94 021152                          10$:
     95 021152  150177  161116                BISB    R1,@TDSR        ;WRITE PATTERN
     96 021156  120177  161112                CMPB    R1,@TDSR        ;IS THE PATTERN WRITTEN?
     97 021162  001006                        BNE     20$             ;IF NOT - REPORT IT.
     98 021164  105077  161104                CLRB    @TDSR           ;CLEAR THE DATA.
     99 021170  006101                        ROL     R1              ;ROTATE THE PATTERN
    100 021172  005302                        DEC     R2
    101 021174  001366                        BNE     10$             ;CONTINUE UNTIL DONE.
    102 021176  000404                        BR      30$             ;EXIT - WHEN DONE
    103 021200                          20$:
    104 021200                                ERRDF   14,EMG4,ERRG9
        021200  104455                                                                  TRAP    C$ERDF
        021202  000016                                                                  .WORD   14
        021204  013554                                                                  .WORD   EMG4
        021206  007372                                                                  .WORD   ERRG9
    105 021210                          30$:
    106 021210  105077  161060                CLRB    @TDSR           ;CLEAR THE TDSR
    107
    108
    109 021214                            ENDSUB
        021214                                                                  L10044:
        021214  104403                                                                  TRAP    C$ESUB
    110
    111 021216                            BGNSUB
        021216                                                                  T3.4:
        021216  104402                                                                  TRAP    C$BSUB
    112 021220  012701  000017                MOV     #17,R1          ;WRITE DATA PATTERN
    113 021224  110177  161054                MOVB    R1,@CSR7        ;WRITE THE PATTERN.
    114 021230  120177  161050                CMPB    R1,@CSR7        ;IS THE PATTERN WRITTEN?
    115 021234  001025                        BNE     20$             ;IF NOT REPORT IT
    116 021236  005001                        CLR     R1              ;REMEMBER DATA PATTERN.
    117 021240  105077  161040                CLRB    @CSR7           ;CLEAR THOSE BITS
    118 021244  105777  161034                TSTB    @CSR7           ;ARE THE STATUS BITS CLEAR?
    119 021250  001017                        BNE     20$             ;IF NOT - REPORT IT.
    120 021252  012701  000001                MOV     #BIT0,R1        ;START ROTATE PATTERN
    121 021256  012702  000003                MOV     #3,R2           ;ROTATE THE BIT 4 TIMES
    122 021262                          10$:
    123 021262  150177  161016                BISB    R1,@CSR7        ;WRITE PATTERN
    124 021266  120177  161012                CMPB    R1,@CSR7        ;IS THE PATTERN WRITTEN?
    125 021272  001006                        BNE     20$             ;IF NOT - REPORT IT.
    126 021274  105077  161004                CLRB    @CSR7           ;CLEAR STATUS BITS.
    127 021300  006101                        ROL     R1              ;ROTATE THE PATTERN
    128 021302  005302                        DEC     R2
    129 021304  001366                        BNE     10$             ;CONTINUE UNTIL DONE.
    130 021306  000404                        BR      30$             ;EXIT - WHEN DONE
    131 021310                          20$:
    132 021310                                ERRDF   15,EMG4,ERRG10
        021310  104455                                                                  TRAP    C$ERDF
        021312  000017                                                                  .WORD   15
        021314  013554                                                                  .WORD   EMG4
        021316  007472                                                                  .WORD   ERRG10
    133 021320                          30$:
    134 021320  105077  160760                CLRB    @CSR7           ;CLEAR THE XMIT STATUS REG.
    135
    136 021324                            ENDSUB
        021324                                                                  L10045:
        021324  104403                                                                  TRAP    C$ESUB
```

```
    137
    138 021326                          BGNSUB
         021326                                                                  T3.5:
         021326  104402                                                                TRAP    C$BSUB
    139 021330  012777  007777  160736          MOV     #7777,@TDSR     ;WRITE TO TDSR
    140 021336  105077  160742                  CLRB    @CSR7           ;CLEAR ONLY THE HIGH BYTE.
    141 021342  105777  160726                  TSTB    @CSR6           ;SEE IF THE LOW BYTE WAS ALSO CLEARED
    142 021346  001016                          BNE     10$             ;IF NOT, BYTE OP IS OK.
    143 021350  012701  000377                  MOV     #377,R1         ;DATA FOR ERROR PRINT OUT.
    144 021354                                  ERRDF   16,EMG4,ERRG9   ;PRINT ERROR
         021354  104455                                                                TRAP    C$ERDF
         021356  000020                                                                .WORD   16
         021360  013554                                                                .WORD   EMG4
         021362  007372                                                                .WORD   ERRG9
    145 021364                                  PRINTX  #FMG30          ;ALSO WARN THAT BYTE OP MAY BE STUCK LOW.
         021364  012746  013314                                                        MOV     #FMG30,-(SP)
         021370  012746  000001                                                        MOV     #1,-(SP)
         021374  010600                                                                MOV     SP,R0
         021376  104415                                                                TRAP    C$PNTX
         021400  062706  000004                                                        ADD     #4,SP
    146 021404                          10$:
    147
    148 021404                            ENDSUB
         021404                                                                  L10046:
         021404  104403                                                                TRAP    C$ESUB
    149
    150 021406                          ENDTST
         021406                                                                  L10041:
         021406  104401                                                                TRAP    C$ETST
    151
    152
    153
```

```
                                .SBTTL          TEST 4 - TRANSMIT ENABLE

                                ;*************************************************************************
                                ;*                      TEST 4 - DMR-11
                                ;* TRANSMIT ENABLE/ TRANSMIT ACTIVE
                                ;* AFTER A DEVICE RESET, SET TRANSMIT START OF MESSAGE (TSOM).  ENSURE
                                ;* THAT TRANSMIT ACTIVE (TXACT) IS SET.
                                ;*
                                ;* TXACT IS USED TO INDICATE THE CURRENT STATE OF THE TRANSMITTER
                                ;* DATA PATH.  THIS BIT WILL BE ASSERTED WHEN BOTH THE TRANSMITTER IS
                                ;* ENABLED AND TSOM ARE INTERNALLY SYNCHRONIZED.  TXACT WILL BE CLEARED
                                ;* UPON RESET OR WHEN THE TRANSMITTER ENTERS THE IDLE STATE.
                                ;*
                                ;*************************************************************************
 15 021410                      BGNTST
    021410                                                                      T4::
 16
 17 021410                        BGNSUB
    021410                                                                      T4.1:
    021410  104402                                                                      TRAP    C$BSUB
 18 021412                              CALL    $RESET          ;RESET THE DPV
 19 021416                              ESCAPE  TST             ;IF ERROR, EXIT THE TEST
    021416  104410                                                                      TRAP    C$ESCAPE
    021420  000330                                                                      .WORD   L10047-.
 20 021422  005737  002306              TST     TURN            ;TURNAROUND?
 21 021426  001003                      BNE     5$              ;BR IF EXTERNAL.
 22 021430  052777  000010  160634      BIS     #MM,@TXCSR      ;SET MAINTENANCE MODE.
 23 021436                      5$:
 24 021436  052777  000020  160626      BIS     #TXENA,@TXCSR   ;ENABLE THE TRANSMITTER.
 25 021444  052777  000400  160622      BIS     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE.
 26 021452                              WAIT    TBE             ;WAIT FOR TBE TO BE SET.

                                                                ;******** MACRO EXPANSION ********
    021452  004737  003724              JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
    021456  000004                              .WORD   TBE     ;WAIT FOR TBE TO BE SET
    021460  002272                              .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                                                                ;************************************

 27 021462                              ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
    021462  104410                                                                      TRAP    C$ESCAPE
    021464  000264                                                                      .WORD   L10047-.
 28 021466  032777  000002  160576      BIT     #TXACT,@TXCSR   ;IS THE TRANSMITTER ACTIVE?
 29 021474  001011                      BNE     10$             ;IF YES - OK.
 30 021476  017701  160570              MOV     @TXCSR,R1       ;SAVE THE TRANSMIT STATUS
 31 021502  052701  000020              BIS     #TXENA,R1       ;EXPECT TXENA TO BE SET.
 32 021506                              ERRDF   17,EMG5,ERRG7
    021506  104455                                                                      TRAP    C$ERDF
    021510  000021                                                                      .WORD   17
    021512  013601                                                                      .WORD   EMG5
    021514  007172                                                                      .WORD   ERRG7
 33 021516  000425                      BR      20$             ;SKIP THE REST OF THE SUBTEST.
 34
 35 021520                      10$:
 36 021520  005077  160550              CLR     @TDSR           ;CLEAR TSOM
 37 021524  042777  000020  160540      BIC     #TXENA,@TXCSR   ;DISABLE THE TRANSMITTER
 38 021532                              WAIT    TBE             ;WAIT FOR TBE TO BE SET.
```

```
                                                        ;******** MACRO EXPANSION ********
     021532  004737  003724                 JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
     021536  000004                         .WORD   TBE             ;WAIT FOR TBE TO BE SET
     021540  002272                         .WORD   TXCSR           ;IN TRANSMITTER  CSR.
                                                        ;**********************************

 39  021542                                 ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
     021542  104410                                                                 TRAP    C$ESCAPE
     021544  000204                                                                 .WORD   L10047-.
 40  021546  032777  000002  160516         BIT     #TXACT,@TXCSR   ;IS THE TRANSMIITER INACTIVE?
 41  021554  001406                         BEQ     20$             ;IF YES - OK.
 42  021556  012701  000004                 MOV     #TBE,R1         ;EXPECT ONLY TBE TO BE SET.
 43  021562                                 ERRDF   18,EMG6,ERRG7
     021562  104455                                                                 TRAP    C$ERDF
     021564  000022                                                                 .WORD   18
     021566  013634                                                                 .WORD   EMG6
     021570  007172                                                                 .WORD   ERRG7
 44
 45  021572                         20$:
 46  021572                                 ESCAPE TST              ;IF ERROR, BRANCH TO END OF TEST
     021572  104410                                                                 TRAP    C$ESCAPE
     021574  000154                                                                 .WORD   L10047-.
 47
 48  021576                          ENDSUB
     021576                                                                 L10050:
     021576  104403                                                                 TRAP    C$ESUB
 49
 50
 51  021600                          BGNSUB
     021600                                                                 T4.2:
     021600  104402                                                                 TRAP    C$BSUB
 52  021602                                 CALL    $RESET          ;RESET THE DPV
 53  021606                                 ESCAPE  TST             ;IF ERROR, EXIT THE TEST
     021606  104410                                                                 TRAP    C$ESCAPE
     021610  000140                                                                 .WORD   L10047-.
 54  021612  005737  002306                 TST     TURN            ;TURNAROUND?
 55  021616  001003                         BNE     5$              ;BR IF EXTERNAL.
 56  021620  052777  000010  160444         BIS     #MM,@TXCSR      ;SET MAINTENANCE MODE.
 57  021626                         5$:
 58  021626  052777  000020  160436         BIS     #TXENA,@TXCSR   ;ENABLE THE TRANSMITTER.
 59  021634  052777  000400  160432         BIS     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE.
 60  021642                                 WAIT    TBE             ;WAIT FOR TBE TO BE SET.

                                                        ;******** MACRO EXPANSION ********
     021642  004737  003724                 JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
     021646  000004                         .WORD   TBE             ;WAIT FOR TBE TO BE SET
     021650  002272                         .WORD   TXCSR           ;IN TRANSMITTER  CSR.
                                                        ;**********************************

 61  021652                                 ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
     021652  104410                                                                 TRAP    C$ESCAPE
     021654  000074                                                                 .WORD   L10047-.
 62  021656  032777  000002  160406         BIT     #TXACT,@TXCSR   ;IS THE TRANSMITTER ACTIVE?
 63  021664  001010                         BNE     10$             ;IF YES - OK.
 64  021666  017701  160400                 MOV     @TXCSR,R1       ;SAVE THE TRANSMIT STATUS
 65  021672  052701  000020                 BIS     #TXENA,R1       ;EXPECT TXENA TO BE SET.
 66  021676                                 ERRDF   19,EMG5,ERRG7
```

```
   021676  104455                                                                       TRAP    C$ERDF
   021700  000023                                                                       .WORD   19
   021702  013601                                                                       .WORD   EMG5
   021704  007172                                                                       .WORD   ERRG7

   021706                            10$:
   021706                                     CALL    $RESET          ;RESET THE DPV
   021712                                     ESCAPE  TST             ;IF ERROR, EXIT THE TEST
   021712  104410                                                                       TRAP    C$ESCAPE
   021714  000034                                                                       .WORD   L10047-.
   021716  032777  000002  160346             BIT     #TXACT,@TXCSR   ;IS THE TRANSMIITER INACTIVE?
   021724  001406                             BEQ     20$             ;IF YES - OK.
   021726  012701  000004                     MOV     #TBE,R1         ;EXPECT ONLY TBE TO BE SET.
   021732                                     ERRDF   20,EMG6,ERRG7
   021732  104455                                                                       TRAP    C$ERDF
   021734  000024                                                                       .WORD   20
   021736  013634                                                                       .WORD   EMG6
   021740  007172                                                                       .WORD   ERRG7

   021742                            20$:
   021742                                     ESCAPE TST              ;IF ERROR, BRANCH TO END OF TEST
   021742  104410                                                                       TRAP    C$ESCAPE
   021744  000004                                                                       .WORD   L10047-.

   021746                              ENDSUB
   021746                                                                      L10051:
   021746  104403                                                                       TRAP    C$ESUB


   021750                            ENDTST
   021750                                                                      L10047:
   021750  104401                                                                       TRAP    C$ETST
```

```
                        .SBTTL          TEST 5 - TRANSMIT BUFFER EMPTY

                        ;*************************************************************************
                        ;*              TEST 5 - DPV-11
                        ;* TRANSMIT BUFFER EMPTY
                        ;* VERIFY THAT TBE (TRANSMIT BUFFER EMPTY) IS ASSERTED WHENEVER
                        ;* THE DEVICE IS RESET OR WHENEVER THE TDSR IS AVAILABLE FOR DATA.
                        ;* TBE IS CLEARED AFTER WRITING TO THE TDSR.
                        ;*
                        ;*************************************************************************

021752                  BGNTST
021752                                                                  T5::

                          BGNSUB
021752                                                                  T5.1:
021752  104402                                                                  TRAP    C$BSUB
021754                          CALL    $RESET          ;RESET THE DPV
021760                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
021760  104410                                                                  TRAP    C$ESCAPE
021762  000220                                                                  .WORD   L10052-.
021764  005077  160304                 CLR     @TDSR           ;WRITE TO THE TDSR.
021770                          DELAY   5               ;DELAY 500 MICROSECONDS.  THIS WILL
021770  012727  000005                                                          MOV     #5,(PC)+
021774  000000                                                                  .WORD   0
021776  013727  002116                                                          MOV     L$DLY,(PC)+
022002  000000                                                                  .WORD   0
022004  005367  177772                                                          DEC     -6(PC)
022010  001375                                                                  BNE     .-4
022012  005367  177756                                                          DEC     -22(PC)
022016  001367                                                                  BNE     .-20
                                                ;US TO ENSURE THAT TBE IS NOT
                                                ;REASSERTED.  BECAUSE THE TRANSMITTER
                                                ;IS IDLE, TBE SHOULD STAY LOW.
022020  032777  000004  160244          BIT     #TBE,@TXCSR     ;IS TBE CLEARED?
022026  001410                         BEQ     10$             ;IF YES - OK
022030  017701  160240                 MOV     @TDSR,R1        ;SAVE THE TRANSMIT DATA/STATUS REG.
022034  042701  000004                 BIC     #TBE,R1         ;PUT EXPECTED RESULT IN R1 FOR MSG.
022040                          ERRDF   21,EMG7,ERRG7
022040  104455                                                                  TRAP    C$ERDF
022042  000025                                                                  .WORD   21
022044  013671                                                                  .WORD   EMG7
022046  007172                                                                  .WORD   ERRG7
022050                  10$:
022050                    ENDSUB
022050                                                                  L10053:
022050  104403                                                                  TRAP    C$ESUB

                          BGNSUB
022052                                                                  T5.2:
022052  104402                                                                  TRAP    C$BSUB
022054                          CALL    $RESET          ;RESET THE DPV
022060                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
022060  104410                                                                  TRAP    C$ESCAPE
022062  000120                                                                  .WORD   L10052-.
022064  005737  002306                 TST     TURN            ;TURNAROUND?
```

TEST 5 - TRANSMIT BUFFER EMPTY

```
     35 022070  001003                          BNE     1$                ;BR IF EXTERNAL.
     36 022072  052777  000010  160172          BIS     #MM,@TXCSR        ;SET MAINTENANCE MODE.
     37 022100                          1$:
     38
     39 022100  052777  000020  160164          BIS     #TXENA,@TXCSR     ;ENABLE THE TRANSMITTER.
     40 022106  012777  000400  160160          MOV     #TSOM,@TDSR       ;TRANSMIT START OF MESSAGE.
     41 022114                                  WAIT    TBE               ;WAIT FOR TBE TO BE SET.

                                                                          ;******** MACRO EXPANSION ********
        022114  004737  003724                  JSR     PC,$WAIT          ;CALL WAIT ROUTINE -
        022120  000004                                  .WORD   TBE       ;WAIT FOR TBE TO BE SET
        022122  002272                                  .WORD   TXCSR     ;IN TRANSMITTER  CSR.
                                                                          ;**********************************

     42 022124                                  ESCAPE  TST               ;IF ERROR, BRANCH TO END OF TEST.
        022124  104410                                                                    TRAP    C$ESCAPE
        022126  000054                                                                    .WORD   L10052-.
     43
     44 022130  012777  000014  160136          MOV     #14,@TDSR         ;TRANSMIT 1ST CHARACTER.
     45 022136                                  WAIT    TBE               ;WAIT FOR TBE TO BE SET.

                                                                          ;******** MACRO EXPANSION ********
        022136  004737  003724                  JSR     PC,$WAIT          ;CALL WAIT ROUTINE -
        022142  000004                                  .WORD   TBE       ;WAIT FOR TBE TO BE SET
        022144  002272                                  .WORD   TXCSR     ;IN TRANSMITTER  CSR.
                                                                          ;**********************************

     46 022146                                  ESCAPE  TST               ;IF ERROR, BRANCH TO END OF TEST.
        022146  104410                                                                    TRAP    C$ESCAPE
        022150  000032                                                                    .WORD   L10052-.
     47 022152  012701  001000                  MOV     #1000,R1          ;SET UP COUNTER
     48 022156                          5$:
     49 022156  005777  160112                  TST     @TDSR             ;CHECK FOR TRANSMIT ERROR.
     50 022162  100406                          BMI     10$               ;WHEN SET OK.
     51 022164  005301                          DEC     R1                ;DECREMENT COUNTER.
     52 022166  001373                          BNE     5$                ;CONTINUE UNTIL COUNTER 0
     53 022170                                  ERRDF   22,EMG8,ERRG2
        022170  104455                                                                   TRAP    C$ERDF
        022172  000026                                                                   .WORD   22
        022174  013707                                                                   .WORD   EMG8
        022176  006700                                                                   .WORD   ERRG2
     54 022200                          10$:
     55 022200                            ENDSUB
        022200                                                                  L10054:
        022200  104403                                                                   TRAP    C$ESUB
     56
     57
     58 022202                          ENDTST
        022202                                                                  L10052:
        022202  104401                                                                   TRAP    C$ETST
     59
     60
     61
```

```
                                .SBTTL          TEST 6 - TRANSMIT INTERRUPT
                                ;*****************************************************************
                                ;*              TEST 6 - DPV-11
                                ;* TRANSMIT INTERRUPT
                                ;* VERIFY THAT A TRANSMIT INTERRUPT IS RECEIVED WHEN TRANSMIT
                                ;* BUFFER EMPTY (TBE) IS ASSERTED.
                                ;*
                                ;*****************************************************************
022204                          BGNTST
022204                                                                          T6::

                                        CALL    $RESET          ;RESET THE DPV
022210                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
022210  104410                                                                  TRAP    C$ESCAPE
022212  000146                                                                  .WORD   L10055-.
022214  005037  002424                  CLR     TFLAG           ;CLEAR THE FLAG USED IN THE INTERRUPT ROUTINE.

022220                                  SETVEC  XMTVEC,#XINT,#PRI04
022220  012746  000200                                                          MOV     #PRI04,-(SP)
022224  012746  017232                                                          MOV     #XINT,-(SP)
022230  013746  002264                                                          MOV     XMTVEC,-(SP)
022234  012746  000003                                                          MOV     #3,-(SP)
022240  104437                                                                  TRAP    C$SVEC
022242  062706  000010                                                          ADD     #10,SP
022246                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
022246  012700  000000                                                          MOV     #PRI00,R0
022252  104441                                                                  TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR


022254  052777  000120  160010          BIS     #TXENA!TXIE,@TXCSR ;SET THE INTERRUPT ENABLE AND ENABLE
                                                                ;THE TRANSMITTER.
022262  005000                          CLR     R0              ;TIMER FOR LOOP
022264                          10$:
022264  005737  002424                  TST     TFLAG           ;WAS THE INTERRUPT RECEIVED?
022270  001006                          BNE     20$             ;IF YES - OK.
022272  005300                          DEC     R0              ;DECREMENT TIMER.
022274  001373                          BNE     10$             ;KEEP CHECKING UNTIL THE TIMER EXPIRES.
022276                                  ERRDF   23,EMG9,ERRG2   ;ERROR MESSAGE XMIT NOT RECEIVED.
022276  104455                                                                  TRAP    C$ERDF
022300  000027                                                                  .WORD   23
022302  013723                                                                  .WORD   EMG9
022304  006700                                                                  .WORD   ERRG2
022306                          20$:
022306  005037  002424                  CLR     TFLAG           ;CLEAR THE FLAG
022312  012777  000001  157752          MOV     #RESET,@TXCSR   ;RESET THE DPV
022320                                  $DELAY  1               ;WAIT FOR 100 MICROSECONDS.

                                                                ;******** MACRO EXPANSION ********
022320  004737  006604                                          JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
022324  000001                                                  .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                ;**********************************
```

TEST 6 - TRANSMIT INTERRUPT

```
     38 022326  005737  002334                  TST     FLAG            ;WAS AN INTERRUPT RECEIVED
     39 022332  001404                          BEQ     30$             ;IF NOT - OK. (RESET SHOULD CLEAR INT ENABLE)
     40 022334                                  ERRDF   24,EMG10,ERRG2  ;ERROR MESSAGE - TRANMSIT INT RECEIVED
        022334  104455                                                          TRAP    C$ERDF
        022336  000030                                                          .WORD   24
        022340  013757                                                          .WORD   EMG10
        022342  006700                                                          .WORD   ERRG2
     41 022344                          30$:
     42 022344                                  SETPRI  #PRI07          ;SET PROCESSOR PRIORITY TO 7 (FOR
        022344  012700  000340                                                  MOV     #PRI07,R0
        022350  104441                                                          TRAP    C$SPRI
     43                                                             ;LSI 11/03 THIS WILL DISABLE INTERRUPTS)
     44 022352                                  CLRVEC  XMTVEC          ;RESTORE THE XMIT INTERRUPT VECTOR
        022352  013700  002264                                                  MOV     XMTVEC,R0
        022356  104436                                                          TRAP    C$CVEC
     45
     46 022360                          ENDTST
        022360                                                                  L10055:
        022360  104401                                                          TRAP    C$ETST
     47
     48
     49
     50
```

```
                                .SBTTL          TEST 7 - RECEIVER ENABLE

                                ;*************************************************************************
                                ;*                  TEST 7 - DPV-11
                                ;* RECEIVER ENABLE, RECEIVER ACTIVE AND RECEIVER DATA READY
                                ;*                  MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
                                ;* ENABLE THE RECEIVER. AFTER TRANSMITTING A CHARACTER WAIT FOR
                                ;* RECEIVER DATA AVAILABLE AND CHECK THAT THE RECEIVER IS ACTIVE.
                                ;* AFTER CLEARING RECEIVER ENABLE, ENSURE THAT THE RECEIVER IS INACTIVE.
                                ;*
                                ;* RECEIVER ENABLE - CONTROLS THE OPERATION OF THE RECEIVER DATA PATH (RDP)
                                ;* RECEIVER ACTIVE - THIS OUTPUT IS ASSERTED WHEN THE RDP PRESENTS THE 1ST
                                ;*                   DATA CHARACTER OF A MESSAGE TO THE USYNRT.  IT REMAINS
                                ;*                   ASSERTED UNTIL THE RDP ENTERS THE IDLE STATE..
                                ;* RECEIVE DATA    - THIS OUTPUT IS SET WHEN THE RDP HAS ASSEMBLED A DATA
                                ;*                   CHARACTER THAT IS READY TO BE PRESENTED.
                                ;*************************************************************************
022362                          BGNTST
022362                                                                  T7::

                                        CALL    $RESET          ;RESET THE DPV
022362                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
022366                                                                  TRAP    C$ESCAPE
022366  104410                                                          .WORD   L10056-.
022370  000222
022372  012777  040252  157670        MOV     #40252,@PCSAR   ;SET BCP MODE AND SYNCH CHARACTER.
022400  012777  000020  157660        MOV     #RXENA,@RXCSR   ;ENABLE THE RECEIVER.
022406  012777  000030  157656        MOV     #TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER
                                                                ;SELECT THE MAINTENANCE LOOPBACK.
022414  052777  000400  157652        BIS     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE
022422                                  WAIT    TBE             ;WAIT FOR TBE TO BE SET.

                                                                ;******** MACRO EXPANSION ********
022422  004737  003724                JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
022426  000004                                .WORD   TBE     ;WAIT FOR TBE TO BE SET
022430  002272                                .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                                                                ;**********************************

022432                                  ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
022432  104410                                                          TRAP    C$ESCAPE
022434  000156                                                          .WORD   L10056-.
022436  032777  004200  157622        BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
022444  001056                          BNE     20$                     ;IF SET, REPORT ERROR.
022446  052777  000400  157620        BIS     #TSOM,@TDSR     ;RETRANSMIT START OF MESSAGE.
022454                                  WAIT    TBE             ;WAIT FOR TBE TO BE SET.

                                                                ;******** MACRO EXPANSION ********
022454  004737  003724                JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
022460  000004                                .WORD   TBE     ;WAIT FOR TBE TO BE SET
022462  002272                                .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                                                                ;**********************************

022464                                  ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
022464  104410                                                          TRAP    C$ESCAPE
022466  000124                                                          .WORD   L10056-.
022470  032777  004200  157570        BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
022476  001041                          BNE     20$                     ;IF SET, REPORT ERROR.
022500  012777  000123  157566        MOV     #123,@TDSR      ;TRANSMIT THE FIRST DATA CHARACTER.
```

```
     37 022506                                  WAIT    RDATRY          ;WAIT FOR RECEIVE DATA.

                                                                        ;******** MACRO EXPANSION ********
        022506  004737  003724                  JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
        022512  000200                          .WORD   RDATRY          ;WAIT FOR BIT TO BE SET
        022514  002266                          .WORD   RXCSR           ;IN RECEIVER  CSR.
                                                                        ;**********************************

     38 022516                                  ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
        022516  104410                                                                  TRAP    C$ESCAPE
        022520  000072                                                                  .WORD   L10056-.
     39 022522  032777  004000  157536          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
     40 022530  001005                          BNE     10$             ;IF YES - OK.
     41 022532                                  ERRDF   25,EMG12,ERRG2
        022532  104455                                                                  TRAP    C$ERDF
        022534  000031                                                                  .WORD   25
        022536  014062                                                                  .WORD   EMG12
        022540  006700                                                                  .WORD   ERRG2
     42 022542  000423                          BR      30$
     43 022544                          10$:
     44 022544  042777  000020  157514          BIC     #RXENA,@RXCSR   ;DISABLE THE RECEIVER
     45 022552                                  $DELAY  4               ;DELAY TO ALLOW DISABLE.

                                                                        ;******** MACRO EXPANSION ********
        022552  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        022556  000004                          .WORD   4               ;NUMBER OF DELAY LOOPS
                                                                        ;**********************************

     46 022560  032777  004200  157500          BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
     47 022566  001411                          BEQ     30$             ;IF CLEAR OK
     48 022570                                  ERRDF   26,EMG13,ERRG2
        022570  104455                                                                  TRAP    C$ERDF
        022572  000032                                                                  .WORD   26
        022574  014106                                                                  .WORD   EMG13
        022576  006700                                                                  .WORD   ERRG2
     49 022600  000404                          BR      30$
     50 022602                          20$:
     51 022602                                  ERRDF   27,EMG14,ERRG2
        022602  104455                                                                  TRAP    C$ERDF
        022604  000033                                                                  .WORD   27
        022606  014167                                                                  .WORD   EMG14
        022610  006700                                                                  .WORD   ERRG2
     52 022612                          30$:
     53
     54 022612                                  ENDTST
        022612                                                          L10056:
        022612  104401                                                                  TRAP    C$ETST
     55
     56
     57
```

```
                                .SBTTL          TEST 8 - RECEIVE DATA INTERRUPT

                                ;*****************************************************************
                                ;*              TEST 8 - DPV-11
                                ;* RECEIVE DATA INTERRUPT
                                ;*              MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
                                ;* ENABLE THE RECEIVER AND SET RECEIVER INTERRUPT. TRANSMIT DATA.
                                ;* CHECK THAT THE RECEIVE INTERUPT WAS GENERATED. AFTER THE INTERUPT
                                ;* WAS GENERATED DISABLE THE RECEIVER. CHECK THAT THE RECEIVER BECOMES
                                ;* INACTIVE.
                                ;*
                                ;*****************************************************************
022614                          BGNTST
022614                                                                          T8::

                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, EXIT THE TEST
                                                                                TRAP    C$ESCAPE
022620  104410                                                                  .WORD   L10057-.
022622  000266
022624  005037  002424                  CLR     TFLAG           ;CLEAR FLAGS USED IN THE INTERRUPT ROUTINES.
022630  005037  002376                  CLR     RFLAG           ;
022634  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
022640  012737  000002  002414          MOV     #2,START        ;SEND 2 START CHARACTERS.

022646                                  SETVEC  XMTVEC,#XINT,#PRI04
022646  012746  000200                                                        MOV     #PRI04,-(SP)
022652  012746  017232                                                        MOV     #XINT,-(SP)
022656  013746  002264                                                        MOV     XMTVEC,-(SP)
022662  012746  000003                                                        MOV     #3,-(SP)
022666  104437                                                                TRAP    C$SVEC
022670  062706  000010                                                        ADD     #10,SP
022674                                  SETVEC  RCVEC,#RINT,#PRI04
022674  012746  000200                                                        MOV     #PRI04,-(SP)
022700  012746  016602                                                        MOV     #RINT,-(SP)
022704  013746  002262                                                        MOV     RCVEC,-(SP)
022710  012746  000003                                                        MOV     #3,-(SP)
022714  104437                                                                TRAP    C$SVEC
022716  062706  000010                                                        ADD     #10,SP
022722                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
022722  012700  000000                                                        MOV     #PRI00,R0
022726  104441                                                                TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR


022730  012777  040252  157332          MOV     #40252,@PCSAR   ;SET BCP MODE AND SYNCH CHARACTER.
022736  012777  000120  157322          MOV     #RXENA!RXITEN,@RXCSR ;ENABLE THE RECEIVER AND SET
                                                                ;SET INTERRUPT ENABLE.
022744  012777  000130  157320          MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE XMITTER AND INT.
                                                                ;SELECT THE MAINTENANCE LOOPBACK.
022752  005003                          CLR     R3              ;CLEAR COUNTER
022754                          5$:
022754  032737  000001  002376          BIT     #1,RFLAG        ;WAS DATA RECEIVED
022762  001007                          BNE     10$             ;IF YES - OK.
```

```
     41 022764  005303                          DEC     R3              ;DECREMENT COUNTER.
     42 022766  001372                          BNE     5$
     43
     44 022770                                  ERRDF   28,EMG15,ERRG2
        022770  104455                                                                  TRAP    C$ERDF
        022772  000034                                                                  .WORD   28
        022774  014243                                                                  .WORD   EMG15
        022776  006700                                                                  .WORD   ERRG2
     45 023000  000430                          BR      30$
     46 023002                          10$:
     47 023002  042777  000020  157256          BIC     #RXENA,@RXCSR   ;DISABLE THE RECEIVER
     48 023010  005037  002376                  CLR     RFLAG           ;CLEAR THE FLAG.
     49 023014                                  $DELAY  5               ;DELAY TO ALLOW DISABLE.

                                                                        ;******** MACRO EXPANSION ********
        023014  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        023020  000005                          .WORD   5               ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

     50 023022  005737  002376                  TST     RFLAG           ;WAS AN INTERUPT RECEIVED?
     51 023026  001011                          BNE     20$             ;IF YES - REPORT ERROR.
     52 023030  032777  004200  157230          BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
     53 023036  001411                          BEQ     30$             ;IF CLEAR OK
     54 023040                                  ERRDF   29,EMG13,ERRG2
        023040  104455                                                                  TRAP    C$ERDF
        023042  000035                                                                  .WORD   29
        023044  014106                                                                  .WORD   EMG13
        023046  006700                                                                  .WORD   ERRG2
     55 023050  000404                          BR      30$
     56 023052                          20$:
     57 023052                                  ERRDF   30,EMG16,ERRG2
        023052  104455                                                                  TRAP    C$ERDF
        023054  000036                                                                  .WORD   30
        023056  014276                                                                  .WORD   EMG16
        023060  006700                                                                  .WORD   ERRG2
     58 023062                          30$:
     59 023062                                  CALL    $RESET          ;RESET THE DPV.
     60 023066                                  SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
        023066  012700  000340                                                          MOV     #PRI07,R0
        023072  104441                                                                  TRAP    C$SPRI
     61                                                                 ;(THIS WILL DISABLE INTERRUPTS)
     62 023074                                  CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
        023074  013700  002262                                                          MOV     RCVEC,R0
        023100  104436                                                                  TRAP    C$CVEC
     63 023102                                  CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
        023102  013700  002264                                                          MOV     XMTVEC,R0
        023106  104436                                                                  TRAP    C$CVEC
     64
     65 023110                          ENDTST                                                  L10057:
        023110                                                                                  TRAP    C$ETST
        023110  104401
     66
     67
     68
```

```
                                .SBTTL          TEST 9 - RECEIVER STATUS

                                ;*****************************************************************************
                                ;*              TEST 9 - DPV-11
                                ;* THERE ARE 3 SUBTESTS IN THIS TEST WHICH ARE INTENDED TO CHECK
                                ;* RECEIVER STATUS.
                                ;* SUBTEST 1 -  REOM (RECEIVE END OF MESSAGE)
                                ;*              THIS SUBTEST WILL TRANSMIT A DATA MESSAGE THAT IS
                                ;*              ENDED WITH A TEOM (TRANSMIT END OF MESSAGE).  A
                                ;*              CHECK WILL BE MADE THAT THE RECEIVER GETS THE DATA
                                ;*              AND THAT THE REOM IS RECEIVED WHEN RECEIVE
                                ;*              STATUS IS AVAILABLE.
                                ;*
                                ;* SUBTEST 2 -  RECEIVER OVERRUN
                                ;*              THIS SUBTEST WILL TRANSMIT DATA CORRECTLY.  THE
                                ;*              RECEIVER AFTER BECOMING ACTIVE WILL NOT SERVICE
                                ;*              THE RECEIVE BUFFER CORRECTLY.  THIS SHOULD RESULT IN
                                ;*              A RECEIVE OVERRUN.  THIS SUBTEST WILL ENSURE THAT
                                ;*              WHEN RECEIVE STATUS IS AVAILABLE, THE RECEIVER OVERRUN
                                ;*              IS SET.
                                ;*
                                ;* SUBTEST 3 -  RECEIVER ABORT
                                ;*              THIS SUBTEST WILL TRANSMIT A DATA MESSAGE THAT IS ENDED
                                ;*              WITH A TRANSMIT ABORT.  THE SUBTEST WILL ENSURE THAT
                                ;*              RECEIVE STATUS AVAILABLE IS RECEIVED AND THAT THE
                                ;*              ABORT IS RECEIVED.
                                ;*
                                ;*****************************************************************************
023112                          BGNTST
023112                                                                          T9::

                                  BGNSUB
023112                                                                          T9.1:
023112  104402                                                                  TRAP    C$BSUB
023114                                  CALL    $RESET          ;RESET THE DPV
023120                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
023120  104410                                                                  TRAP    C$ESCAPE
023122  000774                                                                  .WORD   L10060-.
023124  005037  002424                  CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
023130  012737  000001  002414          MOV     #1,START        ;# OF START OF MESSAGES.

023136                                  SETVEC  XMTVEC,#XINT,#PRI04
023136  012746  000200                                                        MOV     #PRI04,-(SP)
023142  012746  017232                                                        MOV     #XINT,-(SP)
023146  013746  002264                                                        MOV     XMTVEC,-(SP)
023152  012746  000003                                                        MOV     #3,-(SP)
023156  104437                                                                TRAP    C$SVEC
023160  062706  000010                                                        ADD     #10,SP
023164                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
023164  012700  000000                                                        MOV     #PRI00,R0
023170  104441                                                                TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR

023172  052777  000130  157072          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
```

TEST 9 - RECEIVER STATUS

```
                                                                        ;MAINTENANCE MODE LOOPBACK.
023200  052777  000020  157060          BIS     #RXENA,@RXCSR   ;ENABLE THE RECEIVER

023206  005003                          CLR     R3              ;INITIALIZE THE COUNTER
023210                          5$:
023210  032777  004000  157050          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
023216  001007                          BNE     10$             ;BR IF YES
023220  005303                          DEC     R3              ;DECREMENT THE COUNTER
023222  001372                          BNE     5$
023224                                  ERRDF   31,EMG12,ERRG2
023224  104455                                                                  TRAP    C$ERDF
023226  000037                                                                  .WORD   31
023230  014062                                                                  .WORD   EMG12
023232  006700                                                                  .WORD   ERRG2
023234  000444                          BR      45$
023236                          10$:
023236  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
023240                          12$:
023240  032777  002200  157020          BIT     #RSTARY!RDATRY,@RXCSR   ;IS DATA OR STATUS READY?
023246  001407                          BEQ     15$                     ;BR IF NOT
023250  017737  157014  002400          MOV     @RDSR,RSAVE     ;SAVE THE CHARACTER
023256  032737  001000  002400          BIT     #REOM,RSAVE     ;WAS THE RECEIVE END OF MESSAGE RECEIVED?
023264  001007                          BNE     20$
023266                          15$:
023266  005303                          DEC     R3              ;DECREMENT THE COUNTER
023270  001363                          BNE     12$
023272                                  ERRDF   32,EMG17,ERRG2
023272  104455                                                                  TRAP    C$ERDF
023274  000040                                                                  .WORD   32
023276  014345                                                                  .WORD   EMG17
023300  006700                                                                  .WORD   ERRG2
023302  000421                          BR      45$
023304                          20$:
023304  032777  002000  156754          BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
023312  001405                          BEQ     25$
023314                                  ERRDF   33,EMG18,ERRG2
023314  104455                                                                  TRAP    C$ERDF
023316  000041                                                                  .WORD   33
023320  014405                                                                  .WORD   EMG18
023322  006700                                                                  .WORD   ERRG2
023324  000410                          BR      45$
023326                          25$:
023326  032777  004000  156732          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER INACTIVE?
023334  001404                          BEQ     45$             ;BR IF YES
023336                                  ERRDF   34,EMG11,ERRG2
023336  104455                                                                  TRAP    C$ERDF
023340  000042                                                                  .WORD   34
023342  014031                                                                  .WORD   EMG11
023344  006700                                                                  .WORD   ERRG2

023346                          45$:

                                  ENDSUB
023346                                                                  L10061:
023346  104403                                                                  TRAP    C$ESUB

023350                            BGNSUB
```

```
023350                                                                    T9.2:
023350  104402                                                                            TRAP    C$BSUB
023352                                      CALL    $RESET           ;RESET THE DPV
023356                                      ESCAPE  TST              ;IF ERROR, EXIT THE TEST
023356  104410                                                                            TRAP    C$ESCAPE
023360  000536                                                                            .WORD   L10060-.

023362  005037  002424                      CLR     TFLAG            ;CLEAR TRANSMIT INTERRUPT FLAG.
023366  012737  000001  002414              MOV     #1,START         ;# OF START OF MESSAGES.

023374                                      SETVEC  XMTVEC,#XINT,#PRI04
023374  012746  000200                                                                    MOV     #PRI04,-(SP)
023400  012746  017232                                                                    MOV     #XINT,-(SP)
023404  013746  002264                                                                    MOV     XMTVEC,-(SP)
023410  012746  000003                                                                    MOV     #3,-(SP)
023414  104437                                                                            TRAP    C$SVEC
023416  062706  000010                                                                    ADD     #10,SP
023422                                      SETPRI  #PRI00           ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
023422  012700  000000                                                                    MOV     #PRI00,R0
023426  104441                                                                            TRAP    C$SPRI
                                                                     ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                     ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                     ;LEVEL 4-7.
                                                                     ;SET UP INTERRUPT VECTOR

023430  052777  000130  156634              BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
                                                                     ;MAINTENANCE MODE LOOPBACK.
023436  052777  000020  156622              BIS     #RXENA,@RXCSR    ;ENABLE THE RECEIVER

023444  005003                              CLR     R3               ;INITIALIZE THE COUNTER
023446                              5$:
023446  032777  004000  156612              BIT     #RXACT,@RXCSR    ;IS THE RECEIVER ACTIVE?
023454  001007                              BNE     10$              ;BR IF YES
023456  005303                              DEC     R3               ;DECREMENT THE COUNTER
023460  001372                              BNE     5$
023462                                      ERRDF   35,EMG12,ERRG2
023462  104455                                                                            TRAP    C$ERDF
023464  000043                                                                            .WORD   35
023466  014062                                                                            .WORD   EMG12
023470  006700                                                                            .WORD   ERRG2
023472  000464                              BR      55$
023474                              10$:
023474  005003                              CLR     R3               ;INITIALIZE THE COUNTER.
023476                              12$:
023476  032777  002000  156562              BIT     #RSTARY,@RXCSR   ;IS THE STATUS READY?
023504  001007                              BNE     20$
023506  005303                              DEC     R3               ;DECREMENT THE COUNTER
023510  001372                              BNE     12$

023512                                      ERRDF   36,EMG1,ERRG2    ;TIME OUT
023512  104455                                                                            TRAP    C$ERDF
023514  000044                                                                            .WORD   36
023516  013462                                                                            .WORD   EMG1
023520  006700                                                                            .WORD   ERRG2
023522  000450                              BR      55$

023524                              20$:
```

```

023524  032777  004000  156536          BIT     #ROVER,@RDSR      ;WAS THE RECEIVE OVERRUN RECEIVED?
023532  001005                          BNE     40$               ;IF YES OK.
023534                                  ERRDF   37,EMG19,ERRG2
023534  104455                                                                              TRAP    C$ERDF
023536  000045                                                                              .WORD   37
023540  014434                                                                              .WORD   EMG19
023542  006700                                                                              .WORD   ERRG2
023544  000437                          BR      55$
023546                          40$:

023546  032777  002000  156512          BIT     #RSTARY,@RXCSR    ;WAS THE STATUS CLEARED
023554  001405                          BEQ     42$               ;IF YES OK
023556                                  ERRDF   38,EMG18,ERRG2
023556  104455                                                                              TRAP    C$ERDF
023560  000046                                                                              .WORD   38
023562  014405                                                                              .WORD   EMG18
023564  006700                                                                              .WORD   ERRG2
023566  000426                          BR      55$
023570                          42$:
023570  032777  002000  156470          BIT     #RSTARY,@RXCSR    ;IS THE STATUS READY?
023576  001007                          BNE     47$
023600  005303                          DEC     R3                ;DECREMENT THE COUNTER
023602  001372                          BNE     42$

023604                                  ERRDF   39,EMG1,ERRG2     ;TIME OUT
023604  104455                                                                              TRAP    C$ERDF
023606  000047                                                                              .WORD   39
023610  013462                                                                              .WORD   EMG1
023612  006700                                                                              .WORD   ERRG2
023614  000413                          BR      55$


023616                          47$:
023616  042777  000020  156442          BIC     #RXENA,@RXCSR     ;DISABLE THE RECEIVER.

023624  032777  002000  156434          BIT     #RSTARY,@RXCSR    ;IS THE STATUS DROPPED?
023632  001404                          BEQ     55$
023634                          50$:
023634                                  ERRDF   40,EMG18,ERRG2
023634  104455                                                                              TRAP    C$ERDF
023636  000050                                                                              .WORD   40
023640  014405                                                                              .WORD   EMG18
023642  006700                                                                              .WORD   ERRG2
023644                          55$:

023644                            ENDSUB
023644                                                                             L10062:
023644  104403                                                                              TRAP    C$ESUB



023646                            BGNSUB
023646                                                                             T9.3:
023646  104402                                                                              TRAP    C$BSUB
023650                                  CALL    $RESET            ;RESET THE DPV
023654                                  ESCAPE  TST               ;IF ERROR, EXIT THE TEST
```

```
                                                                                        TRAP    C$ESCAPE
        023654  104410                                                                  .WORD   L10060-.
        023656  000240
    158 023660  005037  002424          CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
    159 023664  012737  000001  002414  MOV     #1,START        ;# OF START OF MESSAGES.
    160 023672  012737  000001  002316  MOV     #1,ABORT        ;SEND AN ABORT
    161
    162 023700                          SETVEC  XMTVEC,#XINT,#PRI04
        023700  012746  000200                                                          MOV     #PRI04,-(SP)
        023704  012746  017232                                                          MOV     #XINT,-(SP)
        023710  013746  002264                                                          MOV     XMTVEC,-(SP)
        023714  012746  000003                                                          MOV     #3,-(SP)
        023720  104437                                                                  TRAP    C$SVEC
        023722  062706  000010                                                          ADD     #10,SP
    163 023726                          SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
        023726  012700  000000                                                          MOV     #PRI00,R0
        023732  104441                                                                 TRAP    C$SPRI
    164                                                 ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
    165                                                 ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
    166                                                 ;LEVEL 4-7.
    167                                                 ;SET UP INTERRUPT VECTOR
    168
    169 023734  052777  000130  156330          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
    170                                                                       ;MAINTENANCE MODE LOOPBACK.
    171 023742  052777  000020  156316          BIS     #RXENA,@RXCSR   ;ENABLE THE RECEIVER
    172
    173 023750  005003                          CLR     R3              ;INITIALIZE THE COUNTER
    174 023752                          5$:
    175 023752  032777  004000  156306          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
    176 023760  001007                          BNE     10$             ;BR IF YES
    177 023762  005303                          DEC     R3              ;DECREMENT THE COUNTER
    178 023764  001372                          BNE     5$
    179 023766                          ERRDF   41,EMG12,ERRG2
        023766  104455                                                                 TRAP    C$ERDF
        023770  000051                                                                 .WORD   41
        023772  014062                                                                 .WORD   EMG12
        023774  006700                                                                 .WORD   ERRG2
    180 023776  000444                          BR      45$
    181 024000                          10$:
    182 024000  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
    183 024002                          12$:
    184 024002  032777  002000  156256          BIT     #RSTARY,@RXCSR  ;IS THE STATUS READY?
    185 024010  001016                          BNE     20$
    186 024012  032777  000200  156246          BIT     #RDATRY,@RXCSR
    187 024020  001403                          BEQ     15$
    188 024022                          $DELAY  5               ;DELAY .5 MSEC.

                                                        ;******** MACRO EXPANSION ********
        024022  004737  006604                 JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        024026  000005                          .WORD   5               ;NUMBER OF DELAY LOOPS
                                                        ;************************************

    189 024030                          15$:
    190 024030  005303                          DEC     R3              ;DECREMENT THE COUNTER
    191 024032  001363                          BNE     12$
    192 024034                          ERRDF   42,EMG1,ERRG2   ;TIME OUT
        024034  104455                                                                 TRAP    C$ERDF
        024036  000052                                                                 .WORD   42
```

```
                024040  013462                                                          .WORD   EMG1
                024042  006700                                                          .WORD   ERRG2
    193         024044  000421                  BR      45$
    194
    195         024046                  20$:
    196
    197         024046  032777  002000  156214          BIT     #RABORT,@RDSR   ;WAS THE RECEIVE ABORT RECEIVED?
    198         024054  001005                  BNE     40$             ;IF YES OK.
    199         024056                          ERRDF   43,EMG20,ERRG2
                024056  104455                                                          TRAP    C$ERDF
                024060  000053                                                          .WORD   43
                024062  014465                                                          .WORD   EMG20
                024064  006700                                                          .WORD   ERRG2
    200         024066  000410                  BR      45$
    201         024070                  40$:
    202         024070  032777  002000  156170          BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
    203         024076  001404                  BEQ     45$
    204
    205         024100                          ERRDF   44,EMG18,ERRG2
                024100  104455                                                          TRAP    C$ERDF
                024102  000054                                                          .WORD   44
                024104  014405                                                          .WORD   EMG18
                024106  006700                                                          .WORD   ERRG2
    206         024110                  45$:
    207         024110  005037  002316              CLR     ABORT           ;CLEAR THE ABORT FLAG.
    208         024114                    ENDSUB
                024114                                                          L10063:
                024114  104403                                                          TRAP    C$ESUB
    209
    210
    211
    212         024116                  ENDTST
                024116                                                          L10060:
                024116  104401                                                          TRAP    C$ETST
    213
    214
```

```
                                .SBTTL          TEST 10 - RECEIVE STATUS INTERRUPT

                                ;*************************************************************************
                                ;*                      TEST 10 - DPV-11
                                ;* THIS TEST WILL ENSURE THAT INTERRUPTS MAY BE GENERATED WHEN
                                ;* RECEIVE STATUS IS AVAILABLE. EACH OF THE FOLLOWING SUBTESTS
                                ;* WILL GENERATE THE STATUS AS FOLLOWS:
                                ;* SUBTEST 1 -  REOM
                                ;* SUBTEST 2 -  RECEIVER OVERRUN
                                ;* SUBTEST 3 -  RECEIVER ABORT
                                ;*
                                ;*************************************************************************
024120                          BGNTST
024120                                                                          T10::

                                  BGNSUB
024120                                                                          T10.1:
024120  104402                                                                  TRAP    C$BSUB
                                        CALL    $RESET          ;RESET THE DPV
024122
                                        ESCAPE  TST             ;IF ERROR, EXIT THE TEST
024126                                                                          TRAP    C$ESCAPE
024126  104410                                                                  .WORD   L10064-.
024130  001102
024132  005037  002376                  CLR     RFLAG           ;CLEAR RECEIVE INTERRUPT
024136  005037  002424                  CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
024142  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
024146  012737  000001  002414          MOV     #1,START        ;# OF START OF MESSAGES.

                                        SETVEC  XMTVEC,#XINT,#PRI04
024154                                                                          MOV     #PRI04,-(SP)
024154  012746  000200                                                          MOV     #XINT,-(SP)
024160  012746  017232                                                          MOV     XMTVEC,-(SP)
024164  013746  002264                                                          MOV     #3,-(SP)
024170  012746  000003                                                          TRAP    C$SVEC
024174  104437                                                                  ADD     #10,SP
024176  062706  000010
                                        SETVEC  RCVEC,#RINT,#PRI04
025202                                                                          MOV     #PRI04,-(SP)
025202  012746  000200                                                          MOV     #RINT,-(SP)
025206  012746  016602                                                          MOV     RCVEC,-(SP)
025212  013746  002262                                                          MOV     #3,-(SP)
025216  012746  000003                                                          TRAP    C$SVEC
025222  104437                                                                  ADD     #10,SP
025224  062706  000010
                                        SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
025230                                                                          MOV     #PRI00,R0
025230  012700  000000                                                          TRAP    C$SPRI
025234  104441
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR

                                        BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
                                                                      ;MAINTENANCE MODE LOOPBACK.
025236  052777  000130  156026
                                        BIS     #RXITEN!RXENA,@RXCSR  ;ENABLE THE RECEIVER
025244  052777  000120  156014

                                        CLR     R3              ;INITIALIZE THE COUNTER
025252  005003
025254                          5$:
                                        BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
025254  032777  004000  156004
```

```
     39 024262  001007                          BNE     10$             ;BR IF YES
     40 024264  005303                          DEC     R3              ;DECREMENT THE COUNTER
     41 024266  001372                          BNE     5$
     42 024270                                  ERRDF   45,EMG12,ERRG2
        024270  104455                                                          TRAP    C$ERDF
        024272  000055                                                          .WORD   45
        024274  014062                                                          .WORD   EMG12
        024276  006700                                                          .WORD   ERRG2
     43 024300  000434                          BR      45$
     44 024302                          10$:
     45 024302  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
     46 024304                          12$:
     47 024304  032737  000002  002376          BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
     48 024312  001007                          BNE     20$
     49 024314  005303                          DEC     R3              ;DECREMENT THE COUNTER
     50 024316  001372                          BNE     12$
     51 024320                                  ERRDF   46,EMG21,ERRG2
        024320  104455                                                          TRAP    C$ERDF
        024322  000056                                                          .WORD   46
        024324  014514                                                          .WORD   EMG21
        024326  006700                                                          .WORD   ERRG2
     52 024330  000420                          BR      45$
     53
     54 024332                          20$:
     55 024332  032737  001000  002400          BIT     #REOM,RSAVE     ;WAS THE RECEIVE END OF MESSAGE RECEIVED?
     56 024340  001004                          BNE     40$             ;IF YES OK.
     57 024342                                  ERRDF   47,EMG17,ERRG2
        024342  104455                                                          TRAP    C$ERDF
        024344  000057                                                          .WORD   47
        024346  014345                                                          .WORD   EMG17
        024350  006700                                                          .WORD   ERRG2
     58 024352                          40$:
     59 024352  032777  002000  155706          BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
     60 024360  001404                          BEQ     45$
     61 024362                                  ERRDF   48,EMG18,ERRG2
        024362  104455                                                          TRAP    C$ERDF
        024364  000060                                                          .WORD   48
        024366  014405                                                          .WORD   EMG18
        024370  006700                                                          .WORD   ERRG2
     62 024372                          45$:
     63 024372                                  SETPRI  #PRI07          ;SET PROCESSOR PRI TO 7
        024372  012700  000340                                                  MOV     #PRI07,R0
        024376  104441                                                          TRAP    C$SPRI
     64                                                             ;(DISABLE INTERRUPT)
     65 024400                                  CLRVEC  RCVEC           ;RESTORE THE INTERRUPT VECTOR.
        024400  013700  002262                                                  MOV     RCVEC,R0
        024404  104436                                                          TRAP    C$CVEC
     66 024406                                  CLRVEC  XMTVEC          ;RESORE THE VECTOR.
        024406  013700  002264                                                  MOV     XMTVEC,R0
        024412  104436                                                          TRAP    C$CVEC
     67
     68 024414                          ENDSUB
        024414                                                                  L10065:
        024414  104403                                                          TRAP    C$ESUB
     69
     70 024416                          BGNSUB
        024416                                                                  T10.2:
```

```
   024416  104402                                                                   TRAP    C$BSUB
   024420                                  CALL    $RESET          ;RESET THE DPV
   024424                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
   024424  104410                                                                   TRAP    C$ESCAPE
   024426  000604                                                                   .WORD   L10064-.

   024430  005037  002376                  CLR     RFLAG           ;CLEAR RECEIVE INTERRUPT
   024434  005037  002424                  CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
   024440  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
   024444  012737  000001  002414          MOV     #1,START        ;# OF START OF MESSAGES.
   024452  012737  000001  002370          MOV     #1,OVER         ;FLAG TO CREATE RECEIVE OVERRUN.

   024460                                  SETVEC  XMTVEC,#XINT,#PRI04
   024460  012746  000200                                                           MOV     #PRI04,-(SP)
   024464  012746  017232                                                           MOV     #XINT,-(SP)
   024470  013746  002264                                                           MOV     XMTVEC,-(SP)
   024474  012746  000003                                                           MOV     #3,-(SP)
   024500  104437                                                                   TRAP    C$SVEC
   024502  062706  000010                                                           ADD     #10,SP
   024506                                  SETVEC  RCVEC,#RINT,#PRI04
   024506  012746  000200                                                           MOV     #PRI04,-(SP)
   024512  012746  016602                                                           MOV     #RINT,-(SP)
   024516  013746  002262                                                           MOV     RCVEC,-(SP)
   024522  012746  000003                                                           MOV     #3,-(SP)
   024526  104437                                                                   TRAP    C$SVEC
   024530  062706  000010                                                           ADD     #10,SP
   024534                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
   024534  012700  000000                                                           MOV     #PRI00,R0
   024540  104441                                                                   TRAP    C$SPRI
                                                                   ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                   ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                   ;LEVEL 4-7.
                                                                   ;SET UP INTERRUPT VECTOR

   024542  052777  000130  155522          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
                                                                   ;MAINTENANCE MODE LOOPBACK.
   024550  052777  000120  155510          BIS     #RXITEN!RXENA,@RXCSR  ;ENABLE THE RECEIVER

   024556  005003                          CLR     R3              ;INITIALIZE THE COUNTER
   024560                          5$:
   024560  032777  004000  155500          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
   024566  001007                          BNE     10$             ;BR IF YES
   024570  005303                          DEC     R3              ;DECREMENT THE COUNTER
   024572  001372                          BNE     5$
   024574                                  ERRDF   49,EMG12,ERRG2
   024574  104455                                                                   TRAP    C$ERDF
   024576  000061                                                                   .WORD   49
   024600  014062                                                                   .WORD   EMG12
   024602  006700                                                                   .WORD   ERRG2
   024604  000434                          BR      45$
   024606                          10$:
   024606  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
   024610                          12$:
   024610  032737  000002  002376          BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
   024616  001007                          BNE     20$
   024620  005303                          DEC     R3              ;DECREMENT THE COUNTER
   024622  001372                          BNE     12$
```

```
107 024624                                  ERRDF   50,EMG21,ERRG2
    024624  104455                                                                          TRAP    C$ERDF
    024626  000062                                                                          .WORD   50
    024630  014514                                                                          .WORD   EMG21
    024632  006700                                                                          .WORD   ERRG2
108 024634  000420                          BR      45$
109
110 024636                          20$:
111
112 024636  032737  004000  002400          BIT     #ROVER,RSAVE        ;WAS THE RECEIVE OVERRUN RECEIVED?
113 024644  001004                          BNE     40$                 ;IF YES OK.
114 024646                                  ERRDF   51,EMG19,ERRG2
    024646  104455                                                                          TRAP    C$ERDF
    024650  000063                                                                          .WORD   51
    024652  014434                                                                          .WORD   EMG19
    024654  006700                                                                          .WORD   ERRG2
115 024656                          40$:
116 024656  032777  002000  155402          BIT     #RSTARY,@RXCSR      ;IS THE STATUS DROPPED?
117 024664  001404                          BEQ     45$
118 024666                                  ERRDF   52,EMG18,ERRG2
    024666  104455                                                                          TRAP    C$ERDF
    024670  000064                                                                          .WORD   52
    024672  014405                                                                          .WORD   EMG18
    024674  006700                                                                          .WORD   ERRG2
119 024676                          45$:
120 024676                                  SETPRI  #PRI07              ;SET PROCESSOR PRI TO 7
    024676  012700  000340                                                                  MOV     #PRI07,RO
    024702  104441                                                                          TRAP    C$SPRI
121                                                                 ;(DISABLE INTERRUPT)
122 024704                                  CLRVEC  RCVEC               ;RESTORE THE INTERRUPT VECTOR.
    024704  013700  002262                                                                  MOV     RCVEC,RO
    024710  104436                                                                          TRAP    C$CVEC
123 024712                                  CLRVEC  XMTVEC
    024712  013700  002264                                                                  MOV     XMTVEC,RO
    024716  104436                                                                          TRAP    C$CVEC
124 024720  005037  002370                  CLR     OVER                ;CLEAR OVERRUN FLAG.
125
126 024724                          ENDSUB
    024724                                                                          L10066:
    024724  104403                                                                          TRAP    C$ESUB
127
128
129
130 024726                          BGNSUB
    024726                                                                          T10.3:
    024726  104402                                                                          TRAP    C$BSUB
131 024730                                  CALL    $RESET              ;RESET THE DPV
132 024734                                  ESCAPE  TST                 ;IF ERROR, EXIT THE TEST
    024734  104410                                                                          TRAP    C$ESCAPE
    024736  000274                                                                          .WORD   L10064-.
133
134 024740  005037  002376                  CLR     RFLAG               ;CLEAR RECEIVE INTERRUPT
135 024744  005037  002424                  CLR     TFLAG               ;CLEAR TRANSMIT INTERRUPT FLAG.
136 024750  005037  002360                  CLR     MCFLAG              ;CLEAR MODEM CONTROL FLAG.
137 024754  012737  000001  002414          MOV     #1,START            ;# OF START OF MESSAGES.
138 024762  012737  000001  002316          MOV     #1,ABORT            ;FLAG TO SEND ABORT
139
```

```
    140 024770                                  SETVEC  XMTVEC,#XINT,#PRI04
        024770  012746  000200                                                  MOV     #PRI04,-(SP)
        024774  012746  017232                                                  MOV     #XINT,-(SP)
        025000  013746  002264                                                  MOV     XMTVEC,-(SP)
        025004  012746  000003                                                  MOV     #3,-(SP)
        025010  104437                                                          TRAP    C$SVEC
        025012  062706  000010                                                  ADD     #10,SP
    141 025016                                  SETVEC  RCVEC,#RINT,#PRI04
        025016  012746  000200                                                  MOV     #PRI04,-(SP)
        025022  012746  016602                                                  MOV     #RINT,-(SP)
        025026  013746  002262                                                  MOV     RCVEC,-(SP)
        025032  012746  000003                                                  MOV     #3,-(SP)
        025036  104437                                                          TRAP    C$SVEC
        025040  062706  000010                                                  ADD     #10,SP
    142 025044                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
        025044  012700  000000                                                  MOV     #PRI00,R0
        025050  104441                                                          TRAP    C$SPRI
    143                                                 ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
    144                                                 ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
    145                                                 ;LEVEL 4-7.
    146                                                 ;SET UP INTERRUPT VECTOR
    147
    148 025052  052777  000130  155212          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
    149                                                                       ;MAINTENANCE MODE LOOPBACK.
    150 025060  052777  000120  155200          BIS     #RXITEN!RXENA,@RXCSR  ;ENABLE THE RECEIVER
    151
    152 025066  005003                          CLR     R3              ;INITIALIZE THE COUNTER
    153 025070                          5$:
    154 025070  032777  004000  155170          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
    155 025076  001007                          BNE     10$             ;BR IF YES
    156 025100  005303                          DEC     R3              ;DECREMENT THE COUNTER
    157 025102  001372                          BNE     5$
    158 025104                                  ERRDF   53,EMG12,ERRG2
        025104  104455                                                          TRAP    C$ERDF
        025106  000065                                                          .WORD   53
        025110  014062                                                          .WORD   EMG12
        025112  006700                                                          .WORD   ERRG2
    159 025114  000435                          BR      45$
    160 025116                          10$:
    161 025116  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
    162 025120                          12$:
    163 025120  032737  000002  002376          BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
    164 025126  001007                          BNE     20$
    165 025130  005303                          DEC     R3              ;DECREMENT THE COUNTER
    166 025132  001372                          BNE     12$
    167 025134                                  ERRDF   54,EMG21,ERRG2
        025134  104455                                                          TRAP    C$ERDF
        025136  000066                                                          .WORD   54
        025140  014514                                                          .WORD   EMG21
        025142  006700                                                          .WORD   ERRG2
    168 025144  000421                          BR      45$
    169
    170 025146                          20$:
    171 025146  032737  002000  002400          BIT     #RABORT,RSAVE   ;WAS THE RECEIVE ABORT RECEIVED?
    172 025154  001005                          BNE     40$             ;IF YES OK.
    173 025156                                  ERRDF   55,EMG20,ERRG2
        025156  104455                                                          TRAP    C$ERDF
```

```
                025160  000067                                                          .WORD   55
                025162  014465                                                          .WORD   EMG20
                025164  006700                                                          .WORD   ERRG2
    174         025166  000410                  BR      45$
    175         025170                  40$:
    176         025170  032777  002000  155070  BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
    177         025176  001404                  BEQ     45$
    178
    179         025200                          ERRDF   56,EMG18,ERRG2
                025200  104455                                                          TRAP    C$ERDF
                025202  000070                                                          .WORD   56
                025204  014405                                                          .WORD   EMG18
                025206  006700                                                          .WORD   ERRG2
    180         025210                  45$:
    181         025210                          SETPRI  #PRI07          ;SET PROCESSOR PRI TO 7
                025210  012700  000340                                                  MOV     #PRI07,R0
                025214  104441                                                          TRAP    C$SPRI
    182                                                         ;(DISABLE INTERRUPT)
    183         025216                          CLRVEC  RCVEC           ;RESTORE THE INTERRUPT VECTOR.
                025216  013700  002262                                                  MOV     RCVEC,R0
                025222  104436                                                          TRAP    C$CVEC
    184         025224  005037  002316          CLR     ABORT           ;CLEAR THE ABORT FLAG.
    185
    186
    187         025230                  ENDSUB
                025230                                                          L10067:
                025230  104403                                                          TRAP    C$ESUB
    188
    189
    190         025232                  ENDTST
                025232                                                          L10064:
                025232  104401                                                          TRAP    C$ETST
    191
    192
    193
    194
    195
    196
    197
```

```
                                .SBTTL          TEST 11 - RECEIVE AND TRANSMIT INTERRUPT

                                ;**************************************************************
                                ;*              TEST 11 - DPV-11
                                ;* RECEIVE AND TRANSMIT INTERRUPT
                                ;* TRANSMIT AND RECEIVE DATA USING INTERRUPT ROUTINES. THIS TEST
                                ;* WILL TRANSMIT 4 DATA CHARACTERS. AFTER ENSURING THAT A TRANSMIT
                                ;* INTERRUPT WAS COMPLETED, THE TEST WILL CHECK TO MAKE SURE THAT AT
                                ;* LEAST 1 RECEIVE INTERRUPT WAS GENERATED.
                                ;*
                                ;**************************************************************
 12 025234                      BGNTST
    025234                                                                      T11::

 13
 14 025234                              CALL    $RESET          ;RESET THE DPV
 15 025240                              ESCAPE  TST             ;IF ERROR, EXIT THE TEST
    025240  104410                                                      TRAP    C$ESCAPE
    025242  000234                                                      .WORD   L10070-.
 16 025244  005037  002424              CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
 17 025250  005037  002376              CLR     RFLAG
 18 025254  005037  002360              CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 19 025260                              SETVEC  RCVEC,#RINT,#PRI04
    025260  012746  000200                                              MOV     #PRI04,-(SP)
    025264  012746  016602                                              MOV     #RINT,-(SP)
    025270  013746  002262                                              MOV     RCVEC,-(SP)
    025274  012746  000003                                              MOV     #3,-(SP)
    025300  104437                                                      TRAP    C$SVEC
    025302  062706  000010                                              ADD     #10,SP
 20 025306                              SETVEC  XMTVEC,#XINT,#PRI04
    025306  012746  000200                                              MOV     #PRI04,-(SP)
    025312  012746  017232                                              MOV     #XINT,-(SP)
    025316  013746  002264                                              MOV     XMTVEC,-(SP)
    025322  012746  000003                                              MOV     #3,-(SP)
    025326  104437                                                      TRAP    C$SVEC
    025330  062706  000010                                              ADD     #10,SP
 21 025334                              SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
    025334  012700  000000                                              MOV     #PRI00,R0
    025340  104441                                                      TRAP    C$SPRI
 22                                                             ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
 23                                                             ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
 24                                                             ;LEVEL 4-7.
 25                                                             ;SET UP INTERRUPT VECTOR
 26
 27
 28 025342  012777  043652  154720        MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
 29 025350  012737  000002  002414        MOV     #2,START        ;# OF STARTS TO SEND.
 30 025356  012777  000120  154702        MOV     #RXITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND SET
 31                                                             ;SET INTERRUPT ENABLE.
 32 025364  012777  000130  154700        MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
 33                                                             ;SELECT THE MAINTENANCE LOOPBACK.
 34 025372  005001                        CLR     R1              ;LOOP COUNTER
 35 025374                      10$:
 36 025374  022737  000004  002326        CMP     #4,DATA         ;ARE THE 4 DATA CHARACTERS RECEIVED?
 37 025402  001412                        BEQ     20$             ;IF YES - CHECK RECEIVE INTERRUPT.
 38 025404  005301                        DEC     R1              ;DECREMENT COUNTER
 39 025406  001372                        BNE     10$
 40
```

```
     41 025410  005737  002424                    TST     TFLAG           ;WERE ANY XMIT INTERRUPTS RECEIVED
     42 025414  001005                            BNE     20$             ;IF YES, KEEP CHECKING
     43 025416                                    ERRDF   57,EMG9,ERRG2
        025416  104455                                                                    TRAP    C$ERDF
        025420  000071                                                                    .WORD   57
        025422  013723                                                                    .WORD   EMG9
        025424  006700                                                                    .WORD   ERRG2
     44 025426  000410                            BR      30$
     45
     46 025430                          20$:
     47 025430  032737  000001  002376            BIT     #1,RFLAG        ;WAS ANY DATA RECEIVED?
     48 025436  001004                            BNE     30$             ;IF YES - OK.
     49 025440                                    ERRDF   58,EMG15,ERRG2
        025440  104455                                                                    TRAP    C$ERDF
        025442  000072                                                                    .WORD   58
        025444  014243                                                                    .WORD   EMG15
        025446  006700                                                                    .WORD   ERRG2
     50
     51 025450                          30$:
     52 025450                                    CALL    $RESET          ;RESET THE DPV
     53 025454                                    SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
        025454  012700  000340                                                             MOV     #PRI07,R0
        025460  104441                                                                     TRAP    C$SPRI
     54                                                                     ;(THIS WILL DISABLE INTERRUPTS)
     55 025462                                    CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
        025462  013700  002262                                                             MOV     RCVEC,R0
        025466  104436                                                                     TRAP    C$CVEC
     56 025470                                    CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
        025470  013700  002264                                                             MOV     XMTVEC,R0
        025474  104436                                                                     TRAP    C$CVEC
     57
     58
     59
     60 025476                          ENDTST
        025476                                                                 L10070:
        025476  104401                                                                     TRAP    C$ETST
     61
     62
```

TEST 12 - MODEM STATUS

```
                                .SBTTL          TEST 12 - MODEM STATUS

                                ;*******************************************************************************
                                ;*                      TEST 12 - DPV-11
                                ;* MODEM STATUS
                                ;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL
                                ;* CHECK THAT THE FOLLOWING MODEM SIGNALS ARE TURNED AROUND
                                ;* 1. RTS (REQUEST TO SEND)     TURNED AROUND TO CTS (CLEAR TO SEND)
                                ;*                                                & RR  (RECEIVER READY)
                                ;* 2. DTR (DATA TERMINAL READY) TURNED AROUND TO IC  (INCOMING CALL OR RING)
                                ;* 3. SF  (SELECT FREQUENCY)    TURNED AROUND TO SQ  (SIGNAL QUALITY)
                                ;* 4. LL  (LOCAL LOOPBACK)      TURNED AROUND TO DM  (DATA MODE)
                                ;*
                                ;*******************************************************************************
025500                          BGNTST
025500                                                                          T12::
025500                                  CALL    $TURN           ;CHECK THE TURNAROUND.
025504  103530                          BCS     40$             ;SKIP TEST IF NO TURNAROUND.
025506                          5$:
025506                                  CALL    $RESET          ;RESET THE DPV
025512                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
025512  104410                                                                  TRAP    C$ESCAPE
025514  000252                                                                  .WORD   L10071-.
025516  012702  000004                  MOV     #RTS,R2         ;SAVE RTS IN REGISTER (FOR ERROR REPORT).
025522  010277  154540                  MOV     R2,@RXCSR       ;SET RTS
025526                                  $DELAY  1               ;DELAY 100 MICROSECONDS

                                                                ;******** MACRO EXPANSION ********
025526  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025532  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                ;***********************************

025534  032777  020000  154524          BIT     #CTS,@RXCSR     ;IS CTS ON?
025542  001445                          BEQ     10$             ;IF NOT - REPORT.
025544  032777  010000  154514          BIT     #RR,@RXCSR      ;IS RR (CD) ON
025552  001441                          BEQ     10$             ;IF NOT - ERROR.
025554  012702  000002                  MOV     #DTR,R2         ;SAVE DTR IN REGISTER (FOR ERROR REPORT).
025560  010277  154502                  MOV     R2,@RXCSR       ;SET DTR.
025564                                  $DELAY  1               ;DELAY 100 MICROSECONDS

                                                                ;******** MACRO EXPANSION ********
025564  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025570  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                ;***********************************

025572  032777  040000  154466          BIT     #IC,@RXCSR      ;IS RING (IC) SET?
025600  001426                          BEQ     10$             ;IF NOT - ERROR.
025602  012702  000001                  MOV     #SF,R2          ;SAVE SF IN REGISTER (FOR ERROR REPORT).
025606  010277  154454                  MOV     R2,@RXCSR       ;SET REMOTE LOOP/ SEC FREQ
025612                                  $DELAY  1               ;DELAY 100 MICROSECONDS

                                                                ;******** MACRO EXPANSION ********
025612  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025616  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                ;***********************************

025620  032777  000040  154444          BIT     #SQ,@TXCSR      ;IS SIGNAL QUALITY SET?
```

```
     37 025626  001413                          BEQ     10$             ;IF NOT - ERROR.
     38 025630  012702  000010                   MOV     #LL,R2          ;SAVE LL IN REGISTER (FOR ERROR REPORT).
     39 025634  010277  154426                   MOV     R2,@RXCSR       ;SET LOCAL LOOP
     40 025640                                  $DELAY  1               ;DELAY 100 MICROSECONDS

                                                                        ;******** MACRO EXPANSION ********
        025640  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        025644  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

     41 025646  032777  001000  154412          BIT     #DM,@RXCSR      ;IS DATA MODE SET?
     42 025654  001004                          BNE     20$
     43
     44 025656                          10$:
     45 025656                                  ERRDF   59,EMG22,ERRG13
        025656  104455                                                          TRAP    C$ERDF
        025660  000073                                                         .WORD   59
        025662  014556                                                         .WORD   EMG22
        025664  010272                                                         .WORD   ERRG13
     46
     47 025666                          20$:
     48                                                                 ;CLEAR ALL THOSE BITS
     49 025666  042777  000017  154372          BIC     #RTS!DTR!SF!LL,@RXCSR
     50 025674                                  $DELAY  1               ;DELAY 100 MICRO SECONDS

                                                                        ;******** MACRO EXPANSION ********
        025674  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        025700  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

     51
     52 025702  012702  000004                  MOV     #RTS,R2         ;CHECK RTS.
     53 025706  030277  154354                  BIT     R2,@RXCSR       ;IS IT SET?
     54 025712  001021                          BNE     30$             ;IF YES, ERROR.
     55 025714  012702  000002                  MOV     #DTR,R2         ;CHECK DTR.
     56 025720  030277  154342                  BIT     R2,@RXCSR       ;IS IT SET?
     57 025724  001014                          BNE     30$             ;IF YES, ERROR.
     58 025726  012777  000001  154332          MOV     #SF,@RXCSR      ;CHECK SF.
     59 025734  030277  154326                  BIT     R2,@RXCSR       ;IS IT SET?
     60 025740  001006                          BNE     30$             ;IF YES, ERROR.
     61 025742  012777  000010  154316          MOV     #LL,@RXCSR      ;CHECK LL
     62 025750  030277  154312                  BIT     R2,@RXCSR       ;IS IT SET?
     63 025754  001404                          BEQ     40$             ;IF NOT, OK
     64 025756                          30$:
     65 025756                                  ERRDF   60,EMG22,ERRG15
        025756  104455                                                          TRAP    C$ERDF
        025760  000074                                                         .WORD   60
        025762  014556                                                         .WORD   EMG22
        025764  011044                                                         .WORD   ERRG15
     66 025766                          40$:
     67 025766                          ENDTST
        025766                                                          L10071:
        025766  104401                                                          TRAP    C$ETST
     68
     69
     70
     71
```

```
                        .SBTTL          TEST 13 - MODEM STATUS INTERRUPT

                        ;*****************************************************************************
                        ;*              TEST 13 - DPV-11
                        ;* MODEM STATUS INTERRUPT
                        ;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL CHECK
                        ;* THAT THE FOLLOWING SUBTESTS WORK CORRECTLY.
                        ;* SUBTEST 1 -  SET DTR (DATA TERMINAL READY), LOCAL LOOP (LL), RTS (REQUEST
                        ;*              TO SEND) WITH ONLY RECEIVE INTERRUPT ENABLED. ENSURE THAT AN
                        ;*              INTERRUPT IS NOT RECEIVED.
                        ;* SUBTEST 2 -  SET DTR, LL AND RTS WITH ONLY DATA SET INTERRUPT ENABLED.
                        ;*              ENSURE THAT AN INTERRUPT IS NOT RECEIVED.
                        ;* SUBTEST 3 -  SET DTR, LL AND RTS WITHOUT ANY INTERRUPTS ENABLED.  ENSURE
                        ;*              THAT AN INTERRUPT IS NOT RECEIVED.
                        ;* SUBTEST 4 -  SET RTS WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
                        ;*              THAT AN INTERRUPT IS RECEIVED.
                        ;* SUBTEST 5 -  SET DTR WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
                        ;*              THAT AN INTERRUPT IS RECEIVED.
                        ;* SUBTEST 6 -  SET LL WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
                        ;*              THAT AN INTERRUPT IS RECEIVED.
                        ;*
                        ;*****************************************************************************
023 025770              BGNTST
    025770                                                              T13::
024 025770
025 025774  103002              CALL    $TURN           ;CHECK THE TURNAROUND.
026 025776                      BCC     1$              ;PROCEED IF TURNAROUND.
    025776  104432              EXIT    TST                                     TRAP    C$EXIT
    026000  000676                                                              .WORD   L10072-.
027 026002              1$:
028
029 026002                      SETVEC  RCVEC,#RINI,#PRI04
    026002  012746  000200                                                      MOV     #PRI04,-(SP)
    026006  012746  016602                                                      MOV     #RINT,-(SP)
    026012  013746  002262                                                      MOV     RCVEC,-(SP)
    026016  012746  000003                                                      MOV     #3,-(SP)
    026022  104437                                                              TRAP    C$SVEC
    026024  062706  000010                                                      ADD     #10,SP
030 026030                      SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
    026030  012700  000000                                                      MOV     #PRI00,R0
    026034  104441                                                              TRAP    C$SPRI
031                                                     ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
032                                                     ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
033                                                     ;LEVEL 4-7.
034                                                     ;SET UP INTERRUPT VECTOR
035
036
037 026036              BGNSUB
    026036                                                              T13.1:
    026036  104402                                                              TRAP    C$BSUB
038 026040                      CALL    $RESET          ;RESET THE DPV
039 026044                      ESCAPE  TST             ;IF ERROR, EXIT THE TEST
    026044  104410                                                              TRAP    C$ESCAPE
    026046  000630                                                              .WORD   L10072-.
040 026050  005037  002376      CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
041 026054  005037  002360      CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
042
```

TEST 13 - MODEM STATUS INTERRUPT

```
     43                                                          ;ENABLE RCV INT AND SET RTS, DTR AND L. LOOP
     44 026060  012777  000116  154200          MOV     #RXITEN!LL!DTR!RTS,@RXCSR
     45
     46 026066                            10$:
     47 026066                                  $DELAY  10              ;WAIT 1 MS

                                                                        ;******** MACRO EXPANSION ********
        026066  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        026072  000010                          .WORD   10              ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

     48 026074  005737  002360                  TST     MCFLAG          ;WAS AN MODEM CONTROL INTERRUPT RECEIVED?
     49 026100  001404                          BEQ     30$             ;IF NOT OK.
     50 026102                                  ERRDF   61,EMG23,ERRG2
        026102  104455                                                                  TRAP    C$ERDF
        026104  000075                                                                  .WORD   61
        026106  014603                                                                  .WORD   EMG23
        026110  006700                                                                  .WORD   ERRG2
     51
     52 026112                            30$:
     53
     54 026112                              ENDSUB
        026112                                                                  L10073:
        026112  104403                                                                 TRAP    C$ESUB
     55
     56
     57 026114                            BGNSUB
        026114                                                                  T13.2:
        026114  104402                                                                 TRAP    C$BSUB
     58 026116                                  CALL    $RESET          ;RESET THE DPV
     59 026122                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
        026122  104410                                                                  TRAP    C$ESCAPE
        026124  000552                                                                  .WORD   L10072-.
     60 026126  005037  002376                  CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
     61 026132  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
     62
     63                                                                 ;ENABLE DS. INT, SET RTS, DTR AND LL
     64 026136  012777  000056  154122          MOV     #DSITEN!LL!RTS!DTR,@RXCSR
     65
     66 026144                            10$:
     67 026144                                  $DELAY  10              ;WAIT 1 MS

                                                                        ;******** MACRO EXPANSION ********
        026144  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        026150  000010                          .WORD   10              ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

     68 026152  005737  002360                  TST     MCFLAG          ;WAS AN MODEM CONTROL INTERRUPT RECEIVED?
     69 026156  001404                          BEQ     30$             ;IF NOT OK.
     70 026160                                  ERRDF   62,EMG23,ERRG2
        026160  104455                                                                  TRAP    C$ERDF
        026162  000076                                                                  .WORD   62
        026164  014603                                                                  .WORD   EMG23
        026166  006700                                                                  .WORD   ERRG2
     71
     72 026170                            30$:
     73
```

```
     74 026170                          ENDSUB
        026170                                                          L10074:
        026170  104403                                                          TRAP    C$ESUB
     75
     76
     77
     78 026172                          BGNSUB
        026172                                                          T13.3:
        026172  104402                                                          TRAP    C$BSUB
     79 026174                                CALL    $RESET          ;RESET THE DPV
     80 026200                                ESCAPE  TST             ;IF ERROR, EXIT THE TEST
        026200  104410                                                          TRAP    C$ESCAPE
        026202  000474                                                          .WORD   L10072-.
     81 026204  005037  002376                CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
     82 026210  005037  002360                CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
     83
     84                                                               ;SET LOCAL LOOP, DTR AND RTS.
     85 026214  012777  000016  154044        MOV     #LL!RTS!DTR,@RXCSR
     86 026222                          10$:
     87 026222                                $DELAY  10              ;WAIT 1 MS

                                                                      ;******** MACRO EXPANSION ********
        026222  004737  006604                   JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        026226  000010                           .WORD   10              ;NUMBER OF DELAY LOOPS
                                                                      ;************************************

     88 026230  005737  002360                TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
     89 026234  001404                        BEQ     30$             ;IF NOT OK.
     90 026236                                ERRDF   63,EMG23,ERRG2
        026236  104455                                                          TRAP    C$ERDF
        026240  000077                                                          .WORD   63
        026242  014603                                                          .WORD   EMG23
        026244  006700                                                          .WORD   ERRG2
     91
     92 026246                          30$:
     93
     94 026246                            ENDSUB
        026246                                                          L10075:
        026246  104403                                                          TRAP    C$ESUB
     95
     96
     97 026250                            BGNSUB
        026250                                                          T13.4:
        026250  104402                                                          TRAP    C$BSUB
     98 026252                                CALL    $RESET          ;RESET THE DPV
     99 026256                                ESCAPE  TST             ;IF ERROR, EXIT THE TEST
        026256  104410                                                          TRAP    C$ESCAPE
        026260  000416                                                          .WORD   L10072-.
    100 026262  005037  002376                CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
    101 026266  005037  002360                CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
    102
    103                                                               ;ENABLE INTERRUPTS AND SET RTS.
    104 026272  012777  000144  153766        MOV     #RXITEN!DSITEN!RTS,@RXCSR
    105
    106 026300                          10$:
    107 026300                                $DELAY  10              ;WAIT 1 MS
```

```
                                                        ;******** MACRO EXPANSION ********
     026300  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
     026304  000010                          .WORD   10              ;NUMBER OF DELAY LOOPS
                                                        ;**********************************

 108 026306  005737  002360                  TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
 109 026312  001015                          BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
 110 026314                                  ERRDF   64,EMG24,ERRG2
     026314  104455                                                                  TRAP    C$ERDF
     026316  000100                                                                  .WORD   64
     026320  014661                                                                  .WORD   EMG24
     026322  006700                                                                  .WORD   ERRG2
 111 026324                                  PRINTB  #FMG26
     026324  012746  012715                                                          MOV     #FMG26,-(SP)
     026330  012746  000001                                                          MOV     #1,-(SP)
     026334  010600                                                                  MOV     SP,R0
     026336  104414                                                                  TRAP    C$PNTB
     026340  062706  000004                                                          ADD     #4,SP
 112 026344  000410                          BR      30$
 113 026346                          20$:
 114 026346  022737  000001  002360          CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
 115 026354  001404                          BEQ     30$             ;IF YES - OK
 116 026356                                  ERRDF   65,EMG40        ;REPORT MULTIPLE INTERRUPTS
     026356  104455                                                                  TRAP    C$ERDF
     026360  000101                                                                  .WORD   65
     026362  015321                                                                  .WORD   EMG40
     026364  000000                                                                  .WORD   0
 117 026366                          30$:
 118
 119 026366                            ENDSUB
     026366                                                                  L10076:
     026366  104403                                                                  TRAP    C$ESUB
 120
 121
 122 026370                            BGNSUB
     026370                                                                  T13.5:
     026370  104402                                                                  TRAP    C$BSUB
 123 026372                                  CALL    $RESET          ;RESET THE DPV
 124 026376                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
     026376  104410                                                                  TRAP    C$ESCAPE
     026400  000276                                                                  .WORD   L10072-.
 125 026402  005037  002376                  CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
 126 026406  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 127
 128                                                    ;ENABLE INTERRUPTS AND SET DTR.
 129 026412  012777  000142  153646          MOV     #RXITEN!DSITEN!DTR,@RXCSR
 130
 131 026420                          10$:
 132 026420                                  $DELAY  10              ;WAIT 1 MS

                                                        ;******** MACRO EXPANSION ********
     026420  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
     026424  000010                          .WORD   10              ;NUMBER OF DELAY LOOPS
                                                        ;**********************************

 133 026426  005737  002360                  TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
 134 026432  001015                          BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
```

```
    135 026434                                  ERRDF   66,EMG24,ERRG2
        026434  104455                                                      TRAP    C$ERDF
        026436  000102                                                      .WORD   66
        026440  014661                                                      .WORD   EMG24
        026442  006700                                                      .WORD   ERRG2
    136 026444                                  PRINTB  #FMG26
        026444  012746  012715                                              MOV     #FMG26,-(SP)
        026450  012746  000001                                              MOV     #1,-(SP)
        026454  010600                                                      MOV     SP,R0
        026456  104414                                                      TRAP    C$PNTB
        026460  062706  000004                                              ADD     #4,SP
    137 026464  000410                          BR      30$
    138 026466                          20$:
    139 026466  022737  000001  002360          CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
    140 026474  001404                          BEQ     30$             ;IF YES - OK
    141 026476                                  ERRDF   67,EMG40        ;REPORT MULTIPLE INTERRUPTS
        026476  104455                                                      TRAP    C$ERDF
        026500  000103                                                      .WORD   67
        026502  015321                                                      .WORD   EMG40
        026504  000000                                                      .WORD   0
    142 026506                          30$:
    143
    144 026506                            ENDSUB
        026506                                                      L10077:
        026506  104403                                                      TRAP    C$ESUB
    145
    146
    147 026510                          BGNSUB
        026510                                                              T13.6:
        026510  104402                                                      TRAP    C$BSUB
    148 026512                                  CALL    $RESET          ;RESET THE DPV
    149 026516                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
        026516  104410                                                      TRAP    C$ESCAPE
        026520  000156                                                      .WORD   L10072-.
    150 026522  005037  002376                  CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
    151 026526  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
    152
    153                                                                 ;ENABLE INTERRUPTS AND SET LL.
    154 026532  012777  000150  153526          MOV     #RXITEN!DSITEN!LL,@RXCSR
    155
    156 026540                          10$:
    157 026540                                  $DELAY  10              ;WAIT 1 MS

                                                                        ;******** MACRO EXPANSION ********
        026540  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
        026544  000010                                  .WORD   10      ;NUMBER OF DELAY LOOPS
                                                                        ;************************************

    158 026546  005737  002360                  TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
    159 026552  001025                          BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
    160 026554                                  ERRDF   68,EMG24,ERRG2
        026554  104455                                                      TRAP    C$ERDF
        026556  000104                                                      .WORD   68
        026560  014661                                                      .WORD   EMG24
        026562  006700                                                      .WORD   ERRG2
    161 026564                                  PRINTB  #FMG26
        026564  012746  012715                                              MOV     #FMG26,-(SP)
```

```
                                                                                                        MOV     #1,-(SP)
                                                                                                        MOV     SP,R0
                                                                                                        TRAP    C$PNTB
                                                                                                        ADD     #4,SP
162 026604                                      PRINTB  #FMG29
                                                                                                        MOV     #FMG29,-(SP)
                                                                                                        MOV     #1,-(SP)
                                                                                                        MOV     SP,R0
                                                                                                        TRAP    C$PNTB
                                                                                                        ADD     #4,SP
163 026624  000410                              BR      30$
164 026626                                  20$:
165 026626  022737  000001  002360              CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
166 026634  001404                              BEQ     30$             ;IF YES - OK
167 026636                                      ERRDF   69,EMG40        ;REPORT MULTIPLE INTERRUPTS
                                                                                                        TRAP    C$ERDF
                                                                                                        .WORD   69
                                                                                                        .WORD   EMG40
                                                                                                        .WORD   0
168 026646                                  30$:
169
170 026646                                    ENDSUB
                                                                                                L10100:
                                                                                                        TRAP    C$ESUB
171
172
173
174 026650                                      CALL    $RESET          ;RESET THE DPV
175 026654                                      SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
                                                                                                        MOV     #PRI07,R0
                                                                                                        TRAP    C$SPRI
176                                                                     ;(THIS WILL DISABLE INTERRUPTS)
177 026662                                      CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
                                                                                                        MOV     RCVEC,R0
                                                                                                        TRAP    C$CVEC
178 026670                                      CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
                                                                                                        MOV     XMTVEC,R0
                                                                                                        TRAP    C$CVEC
179
180
181 026676                                  ENDTST
                                                                                                L10072:
                                                                                                        TRAP    C$ETST
182
183
184
```

TEST 14 - RECEIVE AND MODEM STATUS INTERRUPTS

```
                                .SBTTL          TEST 14 - RECEIVE AND MODEM STATUS INTERRUPTS
                                ;*****************************************************************
                                ;*              TEST 14 - DPV-11
                                ;* RECEIVE AND MODEM STATUS INTERRUPTS
                                ;* CHANGE THE MODEM STATUS WHILE HANDLING A RECEIVE INTERRUPT.
                                ;* ENSURE THAT THE MODEM STATUS INTERRUPT IS RECEIVED.
                                ;* SUBTEST 1 -  CHANGE RTS DURING THE RECEIVE INTERRUPT.  ENSURE THAT
                                ;*              THE DATA SET INTERRUPT WAS RECEIVED.
                                ;* SUBTEST 2 -  CHANGE DTR DURING THE RECEIVE INTERRUPT.  ENSURE THAT
                                ;*              THE DATA SET INTERRUPT WAS RECEIVED.
                                ;* SUBTEST 3 -  CHANGE LL DURING THE RECEIVE INTERRUPT.  ENSURE THAT
                                ;*              THE DATA SET INTERRUPT WAS RECEIVED.
                                ;*
                                ;*****************************************************************
 026700                         BGNTST
 026700                                                                 T14::
 026700                                 CALL    $TURN           ;CHECK THE TURNAROUND.
 026704  103002                        BCC     1$              ;PROCEED, IF TURNAROUND ON.
 026706                                 EXIT    TST             ;IF NO TURNAROUND, EXIT.
 026706  104432                                                         TRAP    C$EXIT
 026710  001072                                                         .WORD   L10101-.
 026712                         1$:
                                  BGNSUB
 026712                                                                 T14.1:
 026712  104402                                                         TRAP    C$BSUB
 026714                                 CALL    $RESET          ;RESET THE DPV
 026720                                 ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 026720  104410                                                         TRAP    C$ESCAPE
 026722  001060                                                         .WORD   L10101-.
 026724  005037  002424                 CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
 026730  005037  002376                 CLR     RFLAG
 026734  005037  002360                 CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 026740  012737  000004  002432         MOV     #RTS,TOGGLE     ;TOGGLE RTS

 026746                                 SETVEC  RCVEC,#RINT,#PRI04
 026746  012746  000200                                                 MOV     #PRI04,-(SP)
 026752  012746  016602                                                 MOV     #RINT,-(SP)
 026756  013746  002262                                                 MOV     RCVEC,-(SP)
 026762  012746  000003                                                 MOV     #3,-(SP)
 026766  104437                                                         TRAP    C$SVEC
 026770  062706  000010                                                 ADD     #10,SP
 026774                                 SETVEC  XMTVEC,#XINT,#PRI04
 026774  012746  000200                                                 MOV     #PRI04,-(SP)
 027000  012746  017232                                                 MOV     #XINT,-(SP)
 027004  013746  002264                                                 MOV     XMTVEC,-(SP)
 027010  012746  000003                                                 MOV     #3,-(SP)
 027014  104437                                                         TRAP    C$SVEC
 027016  062706  000010                                                 ADD     #10,SP
 027022                                 SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 027022  012700  000000                                                 MOV     #PRI00,R0
 027026  104441                                                         TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR
```

```
027030  012777  043652  153232         MOV     #43652,@PCSAR    ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
027036  012737  000002  002414         MOV     #2,START         ;# OF START CHARACTERS.
027044  012777  000160  153214         MOV     #RXITEN!DSITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND INT.
027052  012777  000130  153212         MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
                                                                 ;SELECT THE MAINTENANCE LOOPBACK.
027060  005001                         CLR     R1               ;LOOP COUNTER
027062                         10$:
027062  005737  002360                 TST     MCFLAG           ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
027066  001017                         BNE     20$              ;IF YES, EXIT.
027070  005301                         DEC     R1               ;DECREMENT COUNTER
027072  001373                         BNE     10$

027074                                 ERRDF   70,EMG24,ERRG2
027074  104455                                                                  TRAP    C$ERDF
027076  000106                                                                  .WORD   70
027100  014661                                                                  .WORD   EMG24
027102  006700                                                                  .WORD   ERRG2

027104                                 PRINTB  #FMG26           ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
027104  012746  012715                                                          MOV     #FMG26,-(SP)
027110  012746  000001                                                          MOV     #1,-(SP)
027114  010600                                                                  MOV     SP,R0
027116  104414                                                                  TRAP    C$PNTB
027120  062706  000004                                                          ADD     #4,SP
                                                                 ;REMOVING THE WIRE WRAP.
027124  000410                         BR      30$
027126                         20$:
027126  022737  000001  002360         CMP     #1,MCFLAG        ;WAS ONLY 1 RECEIVED?
027134  001404                         BEQ     30$              ;IF YES - OK
027136                                 ERRDF   71,EMG40         ;REPORT MULTIPLE INTERRUPTS
027136  104455                                                                  TRAP    C$ERDF
027140  000107                                                                  .WORD   71
027142  015321                                                                  .WORD   EMG40
027144  000000                                                                  .WORD   0
027146                         30$:
027146                                 CALL    $RESET           ;RESET THE DPV
027152                                 SETPRI  #PRI07           ;SET THE PROCESSOR PRI TO 7
027152  012700  000340                                                          MOV     #PRI07,R0
027156  104441                                                                  TRAP    C$SPRI
                                                                 ;(THIS WILL DISABLE INTERRUPTS)
027160                                 CLRVEC  RCVEC            ;RESTORE THE RECV. VECTOR
027160  013700  002262                                                          MOV     RCVEC,R0
027164  104436                                                                  TRAP    C$CVEC
027166                                 CLRVEC  XMTVEC           ;RESTORE THE XMIT. VECTOR
027166  013700  002264                                                          MOV     XMTVEC,R0
027172  104436                                                                  TRAP    C$CVEC
027174                                 ESCAPE  TST              ;IF ERROR, ESCAPE
027174  104410                                                                  TRAP    C$ESCAPE
027176  000604                                                                  .WORD   L10101-.

027200                              ENDSUB
027200                                                                  L10102:
027200  104403                                                                  TRAP    C$ESUB

027202                              BGNSUB
027202                                                                  T14.2:
```

```
                027202  104402                                                          TRAP    C$BSUB
     70         027204                          CALL    $RESET          ;RESET THE DPV
     71         027210                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
                027210  104410                                                          TRAP    C$ESCAPE
                027212  000570                                                          .WORD   L10101-.
     72         027214  005037  002424          CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
     73         027220  005037  002376          CLR     RFLAG
     74         027224  005037  002360          CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
     75         027230  012737  000002  002432  MOV     #DTR,TOGGLE     ;TOGGLE DTR.
     76
     77         027236                          SETVEC  RCVEC,#RINT,#PRI04
                027236  012746  000200                                                  MOV     #PRI04,-(SP)
                027242  012746  016602                                                  MOV     #RINT,-(SP)
                027246  013746  002262                                                  MOV     RCVEC,-(SP)
                027252  012746  000003                                                  MOV     #3,-(SP)
                027256  104437                                                          TRAP    C$SVEC
                027260  062706  000010                                                  ADD     #10,SP
     78         027264                          SETVEC  XMTVEC,#XINT,#PRI04
                027264  012746  000200                                                  MOV     #PRI04,-(SP)
                027270  012746  017232                                                  MOV     #XINT,-(SP)
                027274  013746  002264                                                  MOV     XMTVEC,-(SP)
                027300  012746  000003                                                  MOV     #3,-(SP)
                027304  104437                                                          TRAP    C$SVEC
                027306  062706  000010                                                  ADD     #10,SP
     79         027312                          SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
                027312  012700  000000                                                  MOV     #PRI00,R0
                027316  104441                                                          TRAP    C$SPRI
     80                                                         ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
     81                                                         ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
     82                                                         ;LEVEL 4-7.
     83                                                         ;SET UP INTERRUPT VECTOR
     84
     85
     86 027320  012777  043652  152742          MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
     87 027326  012737  000002  002414          MOV     #2,START        ;# OF START CHARACTERS.
     88 027334  012777  000160  152724          MOV     #RXITEN!DSITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND INT.
     89 027342  012777  000130  152722          MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
     90                                                                     ;SELECT THE MAINTENANCE LOOPBACK.
     91 027350  005001                          CLR     R1              ;LOOP COUNTER
     92 027352                          10$:
     93 027352  005737  002360                  TST     MCFLAG          ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
     94 027356  001017                          BNE     20$             ;IF YES, EXIT.
     95 027360  005301                          DEC     R1              ;DECREMENT COUNTER
     96 027362  001373                          BNE     10$
     97
     98 027364                          ERRDF   72,EMG24,ERRG2
                027364  104455                                                          TRAP    C$ERDF
                027366  000110                                                          .WORD   72
                027370  014661                                                          .WORD   EMG24
                027372  006700                                                          .WORD   ERRG2
     99
    100 027374                          PRINTB  #FMG26          ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
                027374  012746  012715                                                  MOV     #FMG26,-(SP)
                027400  012746  000001                                                  MOV     #1,-(SP)
                027404  010600                                                          MOV     SP,R0
                027406  104414                                                          TRAP    C$PNTB
                027410  062706  000004                                                  ADD     #4,SP
```

```
101                                                                    ;REMOVING THE WIRE WRAP.
102 027414  000410                          BR      30$
103 027416                          20$:
104 027416  022737  000001  002360          CMP     #1,MCFLAG              ;WAS ONLY 1 RECEIVED?
105 027424  001404                          BEQ     30$                    ;IF YES - OK
106 027426                                  ERRDF   73,EMG40               ;REPORT MULTIPLE INTERRUPTS
    027426  104455                                                                                   TRAP    C$ERDF
    027430  000111                                                                                   .WORD   73
    027432  015321                                                                                   .WORD   EMG40
    027434  000000                                                                                   .WORD   0
107 027436                          30$:
108 027436                                  CALL    $RESET                 ;RESET THE DPV
109 027442                                  SETPRI  #PRI07                 ;SET THE PROCESSOR PRI TO 7
    027442  012700  000340                                                                           MOV     #PRI07,R0
    027446  104441                                                                                   TRAP    C$SPRI
110                                                                    ;(THIS WILL DISABLE INTERRUPTS)
111 027450                                  CLRVEC  RCVEC                  ;RESTORE THE RECV. VECTOR
    027450  013700  002262                                                                           MOV     RCVEC,R0
    027454  104436                                                                                   TRAP    C$CVEC
112 027456                                  CLRVEC  XMTVEC                 ;RESTORE THE XMIT. VECTOR
    027456  013700  002264                                                                           MOV     XMTVEC,R0
    027462  104436                                                                                   TRAP    C$CVEC
113 027464                                  ESCAPE  TST                    ;IF ERROR, ESCAPE
    027464  104410                                                                                   TRAP    C$ESCAPE
    027466  000314                                                                                   .WORD   L10101-.
114
115 027470                            ENDSUB
    027470                                                                                   L10103:
    027470  104403                                                                                   TRAP    C$ESUB
116
117 027472                            BGNSUB
    027472                                                                                   T14.3:
    027472  104402                                                                                   TRAP    C$BSUB
118 027474                                  CALL    $RESET                 ;RESET THE DPV
119 027500                                  ESCAPE  TST                    ;IF ERROR, EXIT THE TEST
    027500  104410                                                                                   TRAP    C$ESCAPE
    027502  000300                                                                                   .WORD   L10101-.
120 027504  005037  002424                  CLR     TFLAG                  ;CLEAR THE FLAGS USED IN THE ISRS.
121 027510  005037  002376                  CLR     RFLAG
122 027514  005037  002360                  CLR     MCFLAG                 ;CLEAR MODEM CONTROL FLAG.
123 027520  012737  000010  002432          MOV     #LL,TOGGLE             ;TOGGLE LL
124
125 027526                                  SETVEC  RCVEC,#RINT,#PRI04
    027526  012746  000200                                                                           MOV     #PRI04,-(SP)
    027532  012746  016602                                                                           MOV     #RINT,-(SP)
    027536  013746  002262                                                                           MOV     RCVEC,-(SP)
    027542  012746  000003                                                                           MOV     #3,-(SP)
    027546  104437                                                                                   TRAP    C$SVEC
    027550  062706  000010                                                                           ADD     #10,SP
126 027554                                  SETVEC  XMTVEC,#XINT,#PRI04
    027554  012746  000200                                                                           MOV     #PRI04,-(SP)
    027560  012746  017232                                                                           MOV     #XINT,-(SP)
    027564  013746  002264                                                                           MOV     XMTVEC,-(SP)
    027570  012746  000003                                                                           MOV     #3,-(SP)
    027574  104437                                                                                   TRAP    C$SVEC
    027576  062706  000010                                                                           ADD     #10,SP
127 027602                                  SETPRI  #PRI00                 ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
```

```
    027602  012700  000000                                                                          MOV     #PRI00,R0
    027606  104441                                                                                  TRAP    C$SPRI
                                                                    ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                    ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                    ;LEVEL 4-7.
                                                                    ;SET UP INTERRUPT VECTOR


    027610  012777  043652  152452          MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
    027616  012737  000002  002414          MOV     #2,START        ;# OF START CHARACTERS.
    027624  012777  000160  152434          MOV     #RXITEN!DSITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND INT.
    027632  012777  000130  152432          MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
                                                                    ;SELECT THE MAINTENANCE LOOPBACK.
    027640  005001                          CLR     R1              ;LOOP COUNTER
    027642                          10$:
    027642  005737  002360                  TST     MCFLAG          ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
    027646  001027                          BNE     20$             ;IF YES, EXIT.
    027650  005301                          DEC     R1              ;DECREMENT COUNTER
    027652  001373                          BNE     10$

    027654                                  ERRDF   74,EMG24,ERRG2
    027654  104455                                                                                  TRAP    C$ERDF
    027656  000112                                                                                  .WORD   74
    027660  014661                                                                                  .WORD   EMG24
    027662  006700                                                                                  .WORD   ERRG2

    027664                                  PRINTB  #FMG26          ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
    027664  012746  012715                                                                          MOV     #FMG26,-(SP)
    027670  012746  000001                                                                          MOV     #1,-(SP)
    027674  010600                                                                                  MOV     SP,R0
    027676  104414                                                                                  TRAP    C$PNTB
    027700  062706  000004                                                                          ADD     #4,SP
                                                                    ;REMOVING THE WIRE WRAP.
    027704                                  PRINTB  #FMG29
    027704  012746  013221                                                                          MOV     #FMG29,-(SP)
    027710  012746  000001                                                                          MOV     #1,-(SP)
    027714  010600                                                                                  MOV     SP,R0
    027716  104414                                                                                  TRAP    C$PNTB
    027720  062706  000004                                                                          ADD     #4,SP
    027724  000410                          BR      30$
    027726                          20$:
    027726  022737  000001  002360          CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
    027734  001404                          BEQ     30$             ;IF YES - OK
    027736                                  ERRDF   75,EMG40        ;REPORT MULTIPLE INTERRUPTS
    027736  104455                                                                                  TRAP    C$ERDF
    027740  000113                                                                                  .WORD   75
    027742  015321                                                                                  .WORD   EMG40
    027744  000000                                                                                  .WORD   0
    027746                          30$:
    027746                                  CALL    $RESET          ;RESET THE DPV
    027752                                  SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
```