DPV 1.1

DPV-11 FUNC DIAG
CYDPVC0

AH-S035C-MC
FICHE 01 OF 02

FEB 1985
digital
Made In USA

DPV11

DPV-11 FUNC DIAG
CVDPVC0

AH-S035C-MC
FICHE 02 OF 02

FEB 1985
digital
Made In USA

```
2197                                    .NLIST  TOC
2198                                    .REM @
2199
2200                                                    IDENTIFICATION
2201                                                    .. . . . . ....
2202
2203                                    PRODUCT CODE:   AC-S033C-MC
2204
2205                                    PRODUCT NAME:   CVDPVCO  DPV11 FUNC DIAG
2206
2207                                    PRODUCT DATE:   OCTOBER 1980
2208
2209                                    MAINTAINER:     DIAGNOSTIC ENGINEERING
2210
2211                                    AUTHOR:         MIKE O'CONNOR
2212
2213
2214
2215
2216
2217                                            THE INFORMATION IN THIS DOCUMENT IS  SUBJECT  TO  CHANGE WITHOUT
2218                                            NOTICE  AND  SHOULD  NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL
2219                                            EQUIPMENT CORPORATION.  DIGITAL EQUIPMENT CORPORATION ASSUMES NO
2220                                            RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT.
2221
2222                                            NO RESPONSIBILITY IS ASSUMED  FOR  THE  USE  OR  RELIABILITY  OF
2223                                            SOFTWARE ON EQUIPMENT THAT IS NOT  SUPPLIED  BY  DIGITAL  OR ITS
2224                                            AFFILIATED COMPANIES.
2225
2226                                            COPYRIGHT (C) 1980,1984 BY DIGITAL EQUIPMENT CORPORATION
2227
2228                                    THE FOLLOWING ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION:
2229
2230                                            DIGI AL         PDP             UNIBUS          MASSBUS
2231                                            DEC             DECUS           DECTAPE
2232
```

```
2234
2235
2236                                    REVISION HISTORY:
2237
2238                                    REV     DATE            AUTHOR          REASON
2239                                            ----            -- - -           -----
2240
2241                                    A       JUNE 80         MIKE OCONNOR    ORIGINAL RELEASE
2242                                    B       OCT. 80         MIKE OCONNOR    1. CHANGE CHARACTER LENGTH
2243                                                                               IN TEST 37
2244                                                                            2. CHANGE TIMEOUT IN TEST 29
2245                                                                            3. ENHANCEMENTS
2246
2247                                    C       29 JUL-84       NICK MCCAMY     INCREASED TIMING PARAMETERS
2248                                                                            TO ALLOW PROGRAM TO RUN ON
2249                                                                            A J-11 PROCESSOR (ORION).
2250
2251
```

CONTENTS

```
2328
2329
2330
2331
2332                                    1.0 INTRODUCTION
2333
2334
2335                                    THIS PROGRAM WILL BE IMPLEMENTED USING THE DIAGNOSTIC
2336                                    SUPERVISOR AND A STRUCTURED PROGRAMMING APPROACH.  BECAUSE
2337                                    THE DESIGN WILL CONFORM TO THE SUPERVISOR (STANDALONE
2338                                    VERSION) THE PROGRAM WILL BE COMPATIBLE WITH ACT, APT, XXDP+,
2339                                    AND SL..E.
2340
2341                                    THROUGH DIALOGUE WITH THE OPERATOR, THE PROGRAM WILL ALLOW
2342                                    MODIFICATION OF DEVICE PARAMETERS, SUCH AS LSI-BUS ADDRESS,
2343                                    VECTOR ADDRESSES AND DEVICE PRIORITY.  IN ADDITION, THE
2344                                    OPERATOR CAN SPECIFY PARTICULAR TESTS TO BE RUN AND A
2345                                    VARIETY OF LOOPING, RUNNING, AND REPORTING MODES.
2346
2347                                    DEVICE ERRORS WILL BE REPORTED AS THEY OCCUR.  THE REPORT
2348                                    WILL INCLUDE A TEST NUMBER AND DESCRIPTION OF THE ERROR,
2349                                    GOOD AND BAD TEST DATA, AND APPLICABLE DEVICE REGISTER
2350                                    CONTENTS.
2351
2352
2353                                    2.0 HARDWARE REQUIREMENTS
2354
2355                                    THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE DPV11 FUNCTIONAL
2356                                    DIAGNOSTIC TESTS:
2357
2358                                    A LSI11 OR PDP11/03
2359                                    16K MEMORY
2360                                    CONSOLE TERMINAL
2361                                    DPV11
2362
2363
2364
2365
2366                                    3.0 PRELIMINARY PROGRAM REQUIREMENTS
2367
2368                                    IT IS ASSUMED THAT THE PROCESSOR IS IN PROPER WORKING CONDITION.
2369
2370                                    THE DEVICE ADDRESS AND THE INTERRUPT VECTOR MUST BE KNOWN BEFORE
2371                                    ANSWERING THE USER DIALOGUE.  THE USER SHOULD ALSO KNOW WHETHER
2372                                    THE CPU IS A LSI11 (M7264), A LSI11/2 (M7270), OR A LSI11/23
2373                                    (M8186).  FINALLY THE USER MUST DECIDE THE TYPE OF TURNAROUND
2374                                    IN ORDER TO DETERMINE THE CONNECTOR (IF ANY) IS NECESSARY.
2375
2376
2377                                    4.0 GENERAL PROGRAM CONSIDERATIONS
2378                                    4.1 DIAGNOSTIC SUPERVISOR
2379
2380                                    THIS PROGRAM IS COMPATIBLE WITH THE STANDALONE DIAGNOSTIC
2381                                    SUPERVISOR, AND MUST BE LOADED TO BE CO-RESIDENT WITH THE
2382                                    SUPERVISOR, OR BE PREVIOUSLY COMBINED WITH THE SUPERVISOR
2383                                    AND LOADED AS A SINGLE FILE.  IN EITHER CASE, THE COMBINED
```

PROGRAM DOCUMENT

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 PROGPAM 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 B
THE DIAGNOSTIC PROGRAM.

```
2440
2441
2442                                    6.0 OPERATING INSTRUCTIONS
2443                                    6.1 LOADING AND STARTING PROCEDURES
2444
2445                                    6.1.1 LOADING PROCEDURES
2446
2447                                    THIS PROGRAM MAY BE LOADED FROM PAPER TAPE USING THE
2448                                    ABSOLUTE LOADER.  IT MAY ALSO BE LOADED FROM ANY XXDP+ LOAD
2449                                    MEDIA. WHEN LOADED UNDER XXDP+, THE DIAGNOSTIC SUPERVISOR
2450                                    WILL BE LOADED AUTOMATICALLY.
2451
2452
2453
2454                                    6.1.2 STARTING PROCEDURES
2455
2456                                    THE PROGRAM STARTS AT LOCATION 200.  USE STANDARD DEC
2457                                    PROCEDURES TO START THE PROGRAM.
2458
2459
2460                                    6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION
2461
2462                                    THE DIAGNOSTIC CAN BE EXECUTED STANDALONE UNDER XXDP+,
2463                                    WITHOUT READING THE REMAINDER OF THIS DOCUMENT, AS FOLLOWS:
2464
2465                                    A) LOAD AND START DIAGNOSTIC USING RUN COMMAND
2466                                    B) RECEIVE DIAGNOSTIC SUPERVISOR IDENTIFICATION AND PROMPT (DRS-C>)
2467                                    C) ENTER STA<CR>
2468                                    D) ANSWER HARDWARE AND SOFTWARE QUESTIONS
2469                                    E) GET END OF PASS MESSAGES OR ERROR MESSAGES
2470                                    F) TO END EXECUTION, ENTER CONTROL/C
2471
2472
2473                                    6.2 INITIAL DIALOGUE
2474
2475                                    AFTER THE PROGRAM AND THE SUPERVISOR ARE LOADED AND THE PROGRAM
2476                                    IS STARTED, THE FOLLOWING IDENTIFICATION IS TYPED :
2477
2478                                    DRS LOADED
2479                                    DIAG. RUN-TIME SERVICES
2480
2481                                    DR>
2482
2483                                    THE OPERATOR THEN PROCEEDS BY TYPING ONE OR MORE OF THE
2484                                    COMMANDS DESCRIBED IN THE FOLLOWING SECTION 6.3. (FOR MORE
2485                                    DETAILED INFORMATION, REFER TO THE DIAGNOSTIC SUPERVISOR
2486                                    FUNCTIONAL SPECIFICATION).
2487
2488
2489                                    6.3 PROGRAM OPTIONS
2490
2491
2492                                    6.3.1 START COMMAND
2493
2494                                    ************************************************************
2495                                    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
                        END OF 6.3.1.5.


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

                        <FLAG-LIST>  IS  A  SEQUENCE OF ELEMENTS OF THE FORM <FLAG>,
                        <FLAG=1>, OR <FLAG=0>, 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) CONTAIN-
                                 ING 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
```

PROGRAM DOCUMENT

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 : (0) 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).
```

E2


```
2956
2957
2958                            7.0 DEVICE INFORMATION TABLES
2959
2960                            SEE THE GLOBAL EQUATES SECTION FOR DEFINITIONS OF REGISTERS IN THE DPV
2961                            AND BIT DEFINITIONS WITHIN THOSE REGISTERS.
2962
2963
2964
2965
2966                            8.0 TEST DESCRIPTIONS
2967
2968
2969                            ;*************************************************************************
2970                            ;*                TEST 1 - DPV-11
2971                            ;* VERIFY THAT ADDRESSING THE 4 LSI-BUS CSRS DOES NOT CAUSE A NON-
2972                            ;* EXISTENT MEMORY TRAP.
2973                            ;*
2974                            ;* THE DPV IS AN COMMUNICATION DEVICE RESIDING ON A LSI-BUS.
2975                            ;* COMMUNICATION BETWEEN THE MAIN CPU AND THE DPV IS ACCOMPLISHED
2976                            ;* THROUGH A SET OF FOUR 16-BIT LSI-BUS CONTROL AND STATUS REGISTERS
2977                            ;* (CSRS).  THE FOUR REGISTERS ARE ASSIGNED ADDRESSES IN THE I/O PAGE
2978                            ;* FLOATING ADDRESS SPACE: 76XXX0 - 76XXX6
2979                            ;*
2980                            ;* AN ERROR IN THIS TEST COULD MEAN THAT THE DEVICE IS INCORRECTLY
2981                            ;* CONFIGURED, THAT THE ADDRESS IS WRONG OR THAT THE CRYSTAL CLOCK
2982                            ;* ON THE DPV IS NOT WORKING.  THE SHIFT REGISTER CLOCK IS NEEDED
2983                            ;* FOR THE LS164 (E15) IN ORDER TO PROVIDE THE BUS REPLY (BRPLY/L ON
2984                            ;* PIN AF?).
2985                            ;*************************************************************************
2986
2987
2988
2989
2990
```

```
;*********************************************************************
;*                 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.
;*
;*********************************************************************
```

```
3014                            ;*****************************************************************************
3015                            ;*              TEST 3 - DPV-11
3016                            ;* WRITE/READ DATA PATTERNS
3017                            ;* THIS TEST IS INTENDED TO TEST THE READ/WRITE BITS IN THE CSRS. THERE
3018                            ;* IS NO INTENTION TO CHECK THE USYNR/T; IT IS DESIRED TO ONLY CHECK THE
3019                            ;* READING AND WRITING OF THE CSRS.  IN ALL THE SUBTESTS THE BITS ARE
3020                            ;* CHECKED TOGETHER AND INDIVIDUALLY.
3021                            ;* SUBTEST 1 - RXCSR (LOW BYTE CSR0)
3022                            ;*             CHECK BITS 0-6
3023                            ;* SUBTEST 2 - PCR (HIGH BYTE CSR4)
3024                            ;*             CHECK BITS 0-7
3025                            ;* SUBTEST 3 - TDSR (LOW BYTE OF CSR6) - TRANSMIT DATA BUFFER
3026                            ;*             BITS 0-7
3027                            ;* SUBTEST 4 - TDSR (HIGH BYTE OF CSR6) - TRANSMIT STATUS REGISTER.
3028                            ;*             BITS 0-3
3029                            ;* SUBTEST 5 - TDSR  - CHECK BYTE OP SIGNAL FOR USYNRT
3030                            ;*
3031                            ;*****************************************************************************
3032
3033
3034
3035                            ;*****************************************************************************
3036                            ;*              TEST 4 - DMR-11
3037                            ;* TRANSMIT ENABLE/ TRANSMIT ACTIVE
3038                            .* AFTER A DEVICE RESET, SET TRANSMIT START OF MESSAGE (TSOM).  ENSURE
3039                            ;* THAT TRANSMIT ACTIVE (TXACT) IS SET.
3040                            ;*
3041                            ;* TXACT IS USED TO INDICATE THE CURRENT STATE OF THE TRANSMITTER
3042                            ;* DATA PATH.  THIS BIT WILL BE ASSERTED WHEN BOTH THE TRANSMITTER IS
3043                            ;* ENABLED AND TSOM ARE INTERNALLY SYNCHRONIZED.  TXACT WILL BE CLEARED
3044                            ;* UPON RESET OR WHEN THE TRANSMITTER ENTERS THE IDLE STATE.
3045                            ;*
3046                            ;*****************************************************************************
3047
3048
3049
3050                            ;*****************************************************************************
3051                            ;*              TEST 5 - DPV-11
3052                            ;* TRANSMIT BUFFER EMPTY
3053                            ;* VERIFY THAT TBE (TRANSMIT BUFFER EMPTY) IS ASSERTED WHENEVER
3054                            ;* THE DEVICE IS RESET OR WHENEVER THE TDSR IS AVAILABLE FOR DATA.
3055                            ;* TBE IS CLEARED AFTER WRITING TO THE TDSR.
3056                            ;*
3057                            ;*****************************************************************************
```

```
3059
3060                            ;*************************************************************************
3061                            ;*                TEST 6 - DPV-11
3062                            ;* TRANSMIT INTERRUPT
3063                            ;* VERIFY THAT A TRANSMIT INTERRUPT IS RECEIVED WHEN TRANSMIT
3064                            ;* BUFFER EMPTY (TBE) IS ASSERTED.
3065                            ;*
3066                            ;*************************************************************************
3067
3068
3069
3070
3071                            ;*************************************************************************
3072                            ;*                TEST 7 - DPV-11
3073                            ;* RECEIVER ENABLE, RECEIVER ACTIVE AND RECEIVER DATA READY
3074                            ;*                MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
3075                            ;* ENABLE THE RECEIVER. AFTER TRANSMITTING A CHARACTER WAIT FOR
3076                            ;* RECEIVER DATA AVAILABLE AND CHECK THAT THE RECEIVER IS ACTIVE.
3077                            ;* AFTER CLEARING RECEIVER ENABLE, ENSURE THAT THE RECEIVER IS INACTIVE.
3078                            ;*
3079                            ;* RECEIVER ENABLE - CONTROLS THE OPERATION OF THE RECEIVER DATA PATH (RDP)
3080                            ;* RECEIVER ACTIVE - THIS OUTPUT IS ASSERTED WHEN THE RDP PRESENTS THE 1ST
3081                            ;*                   DATA CHARACTER OF A MESSAGE TO THE USYNRT.  IT REMAINS
3082                            ;*                   ASSERTED UNTIL THE RDP ENTERS THE IDLE STATE..
3083                            ;* RECEIVE DATA    - THIS OUTPUT IS SET WHEN THE RDP HAS ASSEMBLED A DATA
3084                            ;*                   CHARACTER THAT IS READY TO BE PRESENTED.
3085                            ;*************************************************************************
3086
3087
3088
3089
3090                            ;*************************************************************************
3091                            ;*                TEST 8 - DPV-11
3092                            ;* RECEIVE DATA INTERRUPT
3093                            ;*                MODE: BCP, 8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK
3094                            ;* ENABLE THE RECEIVER AND SET RECEIVER INTERRUPT. TRANSMIT DATA.
3095                            ;* CHECK THAT THE RECEIVE INTERUPT WAS GENERATED. AFTER THE INTERUPT
3096                            ;* WAS GENERATED DISABLE THE RECEIVER. CHECK THAT THE RECEIVER BECOMES
3097                            ;* INACTIVE.
3098                            ;*
3099                            ;*************************************************************************
```

```

;*********************************************************************
;*              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
;*
;*********************************************************************
```

```
3144
3145                            ;*************************************************************************
3146                            ;*              TEST 11 - DPV-11
3147                            ;* RECEIVE AND TRANSMIT INTERRUPT
3148                            ;* TRANSMIT AND RECEIVE DATA USING INTERRUPT ROUTINES. THIS TEST
3149                            ;* WILL TRANSMIT 4 DATA CHARACTERS. AFTER ENSURING THAT A TRANSMIT
3150                            ;* INTERRUPT WAS COMPLETED, THE TEST WILL CHECK TO MAKE SURE THAT AT
3151                            ;* LEAST 1 RECEIVE INTERRUPT WAS GENERATED.
3152                            ;*
3153                            ;*************************************************************************
3154
3155
3156
3157
3158                            ;*************************************************************************
3159                            ;*              TEST 12 - DPV-11
3160                            ;* MODEM STATUS
3161                            ;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL
3162                            ;* CHECK THAT THE FOLLOWING MODEM SIGNALS ARE TURNED AROUND
3163                            ;* 1. RTS (REQUEST TO SEND)     TURNED AROUND TO CTS (CLEAR TO SEND)
3164                            ;*                                              & RR  (RECEIVER READY)
3165                            ;* 2. DTR (DATA TERMINAL READY) TURNED AROUND TO IC  (INCOMING CALL OR RING)
3166                            ;* 3. SF  (SELECT FREQUENCY)    TURNED AROUND TO SQ  (SIGNAL QUALITY)
3167                            ;* 4. LL  (LOCAL LOOPBACK)      TURNED AROUND TO DM  (DATA MODE)
3168                            ;*
3169                            ;*************************************************************************
3170
3171
3172
3173
3174                            ;*************************************************************************
3175                            ;*              TEST 13 - DPV-11
3176                            ;* MODEM STATUS INTERRUPT
3177                            ;* IF A PROPER TURNAROUND (H3259 OR H3260) IS ON, THIS TEST WILL CHECK
3178                            ;* THAT THE FOLLOWING SUBTESTS WORK CORRECTLY.
3179                            ;* SUBTEST 1 -  SET DTR (DATA TERMINAL READY), LOCAL LOOP (LL), RTS (REQUEST
3180                            ;*              TO SEND) WITH ONLY RECEIVE INTERRUPT ENABLED. ENSURE THAT AN
3181                            ;*              INTERRUPT IS NOT RECEIVED.
3182                            ;* SUBTEST 2 -  SET DTR, LL AND RTS WITH ONLY DATA SET INTERRUPT ENABLED.
3183                            ;*              ENSURE THAT AN INTERRUPT IS NOT RECEIVED.
3184                            ;* SUBTEST 3 -  SET DTR, LL AND RTS WITHOUT ANY INTERRUPTS ENABLED.  ENSURE
3185                            ;*              THAT AN INTERRUPT IS NOT RECEIVED.
3186                            ;* SUBTEST 4 -  SET RTS WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
3187                            ;*              THAT AN INTERRUPT IS RECEIVED.
3188                            ;* SUBTEST 5 -  SET DTR WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
3189                            ;*              THAT AN INTERRUPT IS RECEIVED.
3190                            ;* SUBTEST 6 -  SET LL WITH RECEIVE AND DATA SET INTERRUPT ENABLED.  ENSURE
3191                            ;*              THAT AN INTERRUPT IS RECEIVED.
3192                            ;*
3193                            ;*************************************************************************
```

```
3195
3196                            ;*************************************************************************
3197                            ;*              TEST 14 - DPV-11
3198                            ;* RECEIVE AND MODEM STATUS INTERRUPTS
3199                            ;* CHANGE THE MODEM STATUS WHILE HANDLING A RECEIVE INTERRUPT.
3200                            ;* ENSURE THAT THE MODEM STATUS INTERRUPT IS RECEIVED.
3201                            ;* SUBTEST 1 -  CHANGE RTS DURING THE RECEIVE INTERRUPT.  ENSURE THAT
3202                            ;*              THE DATA SET INTERRUPT WAS RECEIVED.
3203                            ;* SUBTEST 2 -  CHANGE DTR DURING THE RECEIVE INTERRUPT.  ENSURE THAT
3204                            ;*              THE DATA SET INTERRUPT WAS RECEIVED.
3205                            ;* SUBTEST 3 -  CHANGE LL DURING THE RECEIVE INTERRUPT.  ENSURE THAT
3206                            ;*              THE DATA SET INTERRUPT WAS RECEIVED.
3207                            ;*
3208                            ;*************************************************************************
3209
3210
3211
3212
3213                            ;*************************************************************************
3214                            ;*              TEST 15 - DPV-11
3215                            ;* SUBTEST 1 - SECONDARY ADDRESS
3216                            ;*      SEGMENT 1 -     SELECT SECONDARY ADDRESS AND SEND THE CORRECT
3217                            ;*                      ADDRESS.  CHECK THE DATA IS PROPERLY RECEIVED.
3218                            ;*      SEGMENT 2 -     SELECT SECONDARY ADDRESS AND SEND A MESSAGE WITHOUT
3219                            ;*                      SENDING USING THE SECONDARY ADDRESS.  CHECK THAT A
3220                            ;*                      TIME OUT IS RECEIVED.
3221                            ;*
3222                            ;* SUBTEST 2 - ALL PARTIES ADDRESSING
3223                            ;*      SEGMENT 1 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
3224                            ;*                      MESSAGE USING THE ALL PARTIES ADDRESS.  ENSURE THAT
3225                            ;*                      THE MESSAGE IS CORRECTLY RECEIVED.
3226                            ;*      SEGMENT 2 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
3227                            ;*                      MESSAGE WITHOUT ALL PARTIES OR SECONDARY ADDRESS.
3228                            ;*                      CHECK THAT A TIME OUT IS RECEIVED.
3229                            ;*      SEGMENT 3 -     SELECT ALL PARTIES AND SECONDARY ADDRESS.  SEND A
3230                            ;*                      MESSAGE WITH A SECONDARY ADDRESS.  CHECK THAT A
3231                            ;*                      TIME OUT IS RECEIVED.
3232                            ;*
3233                            ;*************************************************************************
```

```
3235
3236                            ;*************************************************************************
3237                            ;*              TEST 16 - DPV-11
3238                            ;* ABORT TEST
3239                            ;* SUBTEST 1 -  ABORT WITH IDLE CLEAR. ABORT CHARACTERS TRANSMITTED WHEN
3240                            ;*              THE ABORT BIT IS ASSERTED.
3241                            ;*              SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1,
3242                            ;*                                5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3243                            ;*
3244                            ;* SUBTEST 2 -  ABORT WITH IDLE SET. FLAGS TRANSMITTED WHEN THE ABORT BIT
3245                            ;*              IS ASSERTED.
3246                            ;*              SELECTED OPTIONS: BOP MODE, NO ERROR CHECKING, IDLE SET,
3247                            ;*                                5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3248                            ;*
3249                            ;*************************************************************************
3250
3251
3252                            ;*************************************************************************
3253                            ;*              TEST 17 - DPV-11
3254                            ;* EXTENDED CONTROL AND ADDRESSING TEST
3255                            ;* CHECK THAT THE RECEIVER CAN RECOGNIZE EXTENDED ADDRESSING AND CONTROL
3256                            ;* CHARACTERS.
3257                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1,
3258                            ;*                        3 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK,
3259                            ;*                        EXTENDED CONTROL AND ADDRESSING SELECTED
3260                            ;*
3261                            ;*************************************************************************
3262
3263
3264                            ;*************************************************************************
3265                            ;*              TEST 18 - DPV-11
3266                            ;* TRANSMIT GO AHEAD
3267                            ;* TERMINATE A MESSAGE USING TRANSMIT GO AHEAD.  CHECK THAT THE RECEIVE
3268                            ;* ABORT BIT IS SET WHEN THE END OF MESSAGE IS RECEIVED.
3269                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1, LOOP SET,
3270                            ;*                        5 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3271                            ;*
3272                            ;*************************************************************************
3273
3274
3275                            ;*************************************************************************
3276                            ;*              TEST 19 - DPV-11
3277                            ;* ASSEMBLED BIT COUNT
3278                            ;* TRANSMIT VARIOUS BIT LENGTHS WHILE RECEIVING AN 8 BIT CHARACTER.
3279                            ;* ENSURE THAT THE ASSEMBLED BIT COUNT (ABC) IS CORRECT UPON THE END
3280                            ;* OF MESSAGE.
3281                            ;*      SELECTED OPTIONS: BOP MODE, NO ERROR CHECKING, VARIOUS BIT
3282                            ;*                        LENGTH CHARACTERS, MAINTENANCE MODE LOOPBACK.
3283                            ;*
3284                            ;*************************************************************************
```

```

;*********************************************************************
;*                 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.
;*
;*********************************************************************
```

```
3333
3334                            ;*************************************************************************
3335                            ;*              TEST 24 - DPV-11
3336                            ;* CRC-CCITT PRESET TO ONES.
3337                            ;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
3338                            ;* SET WHEN AN ABORT IS RECEIVED.  IN BOP MODE THIS BIT IS SET WHEN THE
3339                            ;* CRC IS IN ERROR.  THE ERROR CHECK BIT SHOULD BE ZERO WHEN REOM=1,
3340                            ;* IF THE CRC WERE CORRECTLY RECEIVED. BY FORCING AN ABORT WE INTENTIONALLY
3341                            ;* LOOK AT THE ERROR BIT WHEN IT SHOULD BE IN AN ERROR STATE.
3342                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 1, LOOP SET,
3343                            ;*                        4 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3344                            ;*
3345                            ;*************************************************************************
3346
3347
3348
3349                            ;*************************************************************************
3350                            ;*              TEST 25 - DPV-11
3351                            ;* CRC-CCITT PRESET TO ZERO.
3352                            ;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
3353                            ;* SET WHEN AN ABORT IS RECEIVED.  IN BOP MODE THIS BIT IS SET WHEN THE
3354                            ;* CRC IS IN ERROR.  THE ERROR CHECK BIT SHOULD BE ZERO WHEN REOM=1,
3355                            ;* IF THE CRC WERE CORRECTLY RECEIVED. BY FORCING AN ABORT WE INTENTIONALLY
3356                            ;* LOOK AT THE ERROR BIT WHEN IT SHOULD BE IN AN ERROR STATE.
3357                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO 0, LOOP SET,
3358                            ;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3359                            ;*
3360                            ;*************************************************************************
3361
3362
3363
3364                            ;*************************************************************************
3365                            ;*              TEST 26 - DPV-11
3366                            ;* CRC-16 PRESET TO 0
3367                            ;*
3368                            ;* SUBTEST 1 - CRC-16 ERROR
3369                            ;* CHECK TO ENSURE THAT THE ERROR CHECK BIT (BIT 15 OF RDSR) IS
3370                            ;* CLEAR IF THE RECEIVER IS SHUTDOWN BEFORE THE CRC IS RECEIVED.
3371                            ;* IN BCP MODE THIS BIT IS CLEAR WHEN THE CRC IS IN ERROR.
3372                            ;* THE ERROR CHECK BIT SHOULD BE SET WHEN THE LAST CHARACTER IS RECEIVED,
3373                            ;* IF THE CRC WERE GOOD.
3374                            ;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO 0, LOOP SET,
3375                            ;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3376                            ;*
3377                            ;* SUBTEST 2 -  CRC-16 CHECK
3378                            ;* CHECK THAT THE CORRECT CRC-16 IS RECEIVED FOR THE DATA MESSAGE.
3379                            ;* THE CRC FOR THIS DATA MESSAGE WAS PREDETERMINED.
3380                            ;*
3381                            ;*************************************************************************
```

```
3383
3384                            ;*****************************************************************
3385                            ;*                TEST 27 - DPV-11
3386                            ;* VRC ODD PARITY ERROR
3387                            ;* BY SELECTING DIFFERENT CHARACTER LENGTHS IN THE RECEIVER AND
3388                            ;* TRANSMITTER, CAUSE A PARITY ERROR TO OCCUR.
3389                            ;*      SELECTED OPTIONS: BCP MODE, VRC-ODD PARITY, XMIT=7 &
3390                            ;*                        RCV=6 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3391                            ;*
3392                            ;*****************************************************************
3393
3394                            ;*****************************************************************
3395                            ;*                TEST 28 - DPV-11
3396                            ;* VRC EVEN PARITY ERROR
3397                            ;* BY SELECTING DIFFERENT CHARACTER LENGTHS IN THE RECEIVER AND
3398                            ;* TRANSMITTER, CAUSE A PARITY ERROR TO OCCUR.
3399                            ;*      SELECTED OPTIONS: BCP MODE, VRC-EVEN PARITY, XMIT=5 &
3400                            ;*                        RCV=4 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3401                            ;*
3402                            ;*****************************************************************
3403
3404                            ;*****************************************************************
3405                            ;*                TEST 29 - DPV-11
3406                            ;* DATA TEST
3407                            ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE WITHOUT THE USE OF INTERRUPT
3408                            ;* SERVICE ROUTINES. CHECK THAT THE DATA IS  CORRECT.
3409                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
3410                            ;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
3411                            ;*
3412                            ;*****************************************************************
3413
3414                            ;*****************************************************************
3415                            ;*                TEST 30 - DPV-11
3416                            ;* BOP DATA TEST
3417                            ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
3418                            ;* DATA IS CORRECTLY RECEIVED.
3419                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ZERO,
3420                            ;*                        6 BIT CHARACTERS, USER SELECTED LOOPBACK.
3421                            ;*
3422                            ;*****************************************************************
3423
3424                            ;*****************************************************************
3425                            ;*                TEST 31 - DPV-11
3426                            ;* BOP DATA TEST
3427                            ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
3428                            ;* DATA IS CORRECTLY RECEIVED.
3429                            ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
3430                            ;*                        5 BIT CHARACTERS, USER SELECTED LOOPBACK.
3431                            ;*
3432                            ;*****************************************************************
```

```

;**********************************************************************
;*                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
```

F3

PROGRAM DOCUMENT

```
3584                                    RDSR :  000000
3585                                    TXCSR:  122432
3586                                    TDSR :  001402
3587
3588                                    DPV  EOP        1
3589                                         1 CUMULATIVE ERRORS
3590
3591
3592
3593
3594
3595
3596
3597                                    @
3598
3599
```

```
3609          002000                          .=2000
3610
3611
3612
3613
3614                                          .MCALL  SVC
3615  002000                                  SVC                                     ; INITIALIZE SUPERVISOR MACROS
3616
3617
3618  002000                          BGNMOD
3619
3620
3621          000001                  $LSTIN=  1      ;   LIST INSTRUCTIONS
3622          000001                  $LSTTAG= 1
3623          000001                  SVCINS=  1      ;   LIST INSTRUCTIONS, SHIFTED RIGHT
3624          000001                  SVCTST=  1      ;   LIST TEST TAGS, SHIFTED RIGHT
3625          000001                  SVCSUB=  1      ;   LIST SUBTEST TAGS, SHIFTED RIGHT
3626          000001                  SVCGBL=  1      ;   LIST GLOBAL TAGS, SHIFTED RIGHT
3627          000001                  SVCTAG=  1      ;   LIST OTHER TAGS, SHIFTED RIGHT
3628
3629                                  ;     CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
3630                                  ;     TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
3631                                  ;     SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
3632                                  ;     CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
3633
3634  002000                            POINTER BGNDU
3635
3643
3644
3645
```

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.
                                ;--


                                        HEADER CVDPV,C,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      103                                                                 .ASCII  /C/
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
```

```
   (3) 002051      003                                        .BYTE   C$EDIT
   (5) 002052                                         L$EF::
   (4) 002052   000000                                        .WORD   0
   (5) 002054   000000                                        .WORD   0
   (5) 002056                                         L$SPC::
   (4) 002056   000000                                        .WORD   0
   (5) 002060                                         L$DEVP::
   (4) 002060   003674                                        .WORD   L$DVTYP
   (5) 002062                                         L$REPP::
   (4) 002062   000000                                        .WORD   0
   (5) 002064                                         L$EXP4::
   (4) 002064   000000                                        .WORD   0
   (5) 002066                                         L$EXP5::
   (4) 002066   000000                                        .WORD   0
   (5) 002070                                         L$AUT::
   (4) 002070   000000                                        .WORD   0
   (5) 002072                                         L$DUT::
   (4) 002072   017750                                        .WORD   L$DU
   (5) 002074                                         L$LUN::
   (4) 002074   000000                                        .WORD   0
   (5) 002076                                         L$DESP::
   (4) 002076   003702                                        .WORD   L$DESC
   (5) 002100                                         L$LOAD::
   (4) 002100   104035                                        EMT     E$LOAD
   (5) 002102                                         L$ETP::
   (4) 002102   000000                                        .WORD   0
   (5) 002104                                         L$ICP::
   (4) 002104   015372                                        .WORD   L$INIT
   (5) 002106                                         L$CCP::
   (4) 002106   016564                                        .WORD   L$CLEAN
   (5) 002110                                         L$ACP::
   (4) 002110   016500                                        .WORD   L$AUTO
   (5) 002112                                         L$PRT::
   (4) 002112   015364                                        .WORD   L$PROT
   (5) 002114                                         L$TEST::
   (4) 002114   000000                                        .WORD   0
   (5) 002116                                         L$DLY::
   (4) 002116   000000                                        .WORD   0
   (5) 002120                                         L$HIME::
   (4) 002120   000000                                        .WORD   0
  3658
  3664
  3665
  3666
  3667
  3668                          .EVEN
  3669
  3670
  3671
  3672
  3673
  3674
```

```
                                .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
 (4)  002122  000053                                                    .WORD   43
 (3)  002124                                                  L$DISPATCH::
 (6)  002124  020030                                                    .WORD   T1
 (6)  002126  020434                                                    .WORD   T2
 (6)  002130  020660                                                    .WORD   T3
 (6)  002132  021410                                                    .WORD   T4
 (6)  002134  021752                                                    .WORD   T5
 (6)  002136  022204                                                    .WORD   T6
 (6)  002140  022362                                                    .WORD   T7
 (6)  002142  022614                                                    .WORD   T8
 (6)  002144  023112                                                    .WORD   T9
 (6)  002146  024120                                                    .WORD   T10
 (6)  002150  025234                                                    .WORD   T11
 (6)  002152  025500                                                    .WORD   T12
 (6)  002154  025770                                                    .WORD   T13
 (6)  002156  026700                                                    .WORD   T14
 (6)  002160  030004                                                    .WORD   T15
 (6)  002162  030714                                                    .WORD   T16
 (6)  002164  031240                                                    .WORD   T17
 (6)  002166  031412                                                    .WORD   T18
 (6)  002170  031622                                                    .WORD   T19
 (6)  002172  032072                                                    .WORD   T20
 (6)  002174  032240                                                    .WORD   T21
 (6)  002176  032424                                                    .WORD   T22
 (6)  002200  032610                                                    .WORD   T23
 (6)  002202  032774                                                    .WORD   T24
 (6)  002204  033164                                                    .WORD   T25
 (6)  002206  033352                                                    .WORD   T26
 (6)  002210  033770                                                    .WORD   T27
 (6)  002212  034160                                                    .WORD   T28
 (6)  002214  034350                                                    .WORD   T29
 (6)  002216  034746                                                    .WORD   T30
 (6)  002220  035122                                                    .WORD   T31
 (6)  002222  035304                                                    .WORD   T32
 (6)  002224  035474                                                    .WORD   T33
 (6)  002226  035646                                                    .WORD   T34
 (6)  002230  036022                                                    .WORD   T35
 (6)  002232  036204                                                    .WORD   T36
 (6)  002234  036366                                                    .WORD   T37
 (6)  002236  036570                                                    .WORD   T38
 (6)  002240  036772                                                    .WORD   T39
 (6)  002242  037174                                                    .WORD   T40
 (6)  002244  037352                                                    .WORD   T41
 (6)  002246  037624                                                    .WORD   T42
 (6)  002250  040034                                                    .WORD   T43
```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE

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

002252                                  BGNHW   DFPTBL
(3) 002252  000003                                                              .WORD   L10000-L$HW/2
(3) 002254                                                                  L$HW::
(3) 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
(3) 002262                                                                  L10000:
```

```
                                .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
```

```
   (1)          000100                  PRI02== 100
   (1)          000040                  PRI01== 40
   (1)          000000                  PRI00== 0
   (1)                                  ;
   (1)                                  ;OPERATOR FLAG BITS
   (1)                                  ;
   (1)          000004                  EVL==       4
   (1)          000010                  LOT==      10
   (1)          000020                  ADR==      20
   (1)          000040                  IDU==      40
   (1)          000100                  ISR==     100
   (1)          000200                  UAM==     200
   (1)          000400                  BOE==     400
   (1)          001000                  PNT==    1000
   (1)          002000                  PRI==    2000
   (1)          004000                  IXE==    4000
   (1)          010000                  IBE==   10000
   (1)          020000                  IER==   20000
   (1)          040000                  LOE==   40000
   (1)          100000                  MOE==  100000
 3726                                   ;;**************************************************************************
 3727
 3728                                   ;;**************************************************************************
 3729                                   ;SWITCH REGISTER OPTIONS
 3730
 3731          100000                   SW15=   100000
 3732          040000                   SW14=   40000
 3733          020000                   SW13=   20000
 3734          010000                   SW12=   10000
 3735          004000                   SW11=   4000
 3736          002000                   SW10=   2000
 3737          001000                   SW09=   1000
 3738          000400                   SW08=   400
 3739          000200                   SW07=   200
 3740          000100                   SW06=   100
 3741          000040                   SW05=   40
 3742          000020                   SW04=   20
 3743          000010                   SW03=   10
 3744          000004                   SW02=   4
 3745          000002                   SW01=   2
 3746          000001                   SW00=   1
 3747
 3748                                   ;;**************************************************************************
 3749                                   ;;CSR AND STATUS WORD DEFINITIONS
 3750
 3751                                   ;;RXCSR - CSR0   (EXTERNAL REGISTER)  READ/WRITE BITS 0 - 6
 3752
 3753          000001                   SF=     BIT0            ;SELECT FREQUENCY.
 3754          000001                   RL=     BIT0            ;REMOTE LOOPBACK - IF WIRE WRAPPED
 3755                                                           ;SELECTED
 3756          000002                   DTR=    BIT1            ;DATA TERMINAL READY  R/W
 3757          000004                   RTS=    BIT2            ;REQUEST TO SEND  R/W
 3758          000010                   LL=     BIT3            ;LOCAL LOOPBACK
 3759          000020                   RXENA=  BIT4            ;RECEIVER ENALBLE  R/W
 3760          000040                   DSITEN= BIT5            ;DATA SET INTERRUPT ENABLE  R/W
 3761          000100                   RXITEN= BIT6            ;RECEIVER INTERRUPT ENABLE  R/W
```

```
3762                                                    ;** BITS 7 - 15   READ ONLY **
3763        000200              RDATRY= BIT7            ;RECEIVE DATA READY  READ ONLY
3764        000400              SFR=    BIT8            ;SYNCH OR FLAG DETECT  READ ONLY
3765        001000              DM=     BIT9            ;DATA MODE  READ ONLY
3766        002000              RSTARY= BIT10           ;RECEIVER STATUS READY  READ ONLY
3767        004000              RXACT=  BIT11           ;RECEIVER ACTIVE  READ ONLY
3768        010000              RR=     BIT12           ;RECEIVER READY  READ ONLY
3769        020000              CTS=    BIT13           ;CLEAR TO SEND  READ ONLY
3770        040000              IC=     BIT14           ;INCOMING CALL  READ ONLY
3771        100000              DSCNG=  BIT15           ;DATA SET CHANGE  READ ONLY
3772
3773
3774                            ;;PCSAR - CSR2   (INTERNAL USNYR/T REGISTERS 4 AND 5)  WRITE ONLY
3775
3776                                                    ;BITS 0-7 SYNCH CHARACTER OR SECONDARY STATION
3777                                                    ;ADDRESS.  LOWER BYTE OF THE PCSAR IS THE
3778                                                    ;SYNCH CHARACTER USED WITH IN BCP MODE   OR
3779                                                    ;THE SECONDARY ADDRESS USED IN BOP MODE.
3780
3781                                                    ;BITS 8-10 ERROR DETECTION SELECTION
3782        000000              CCITT1= 0               ;CRC CCITT INITIALIZED TO ONES
3783        000400              CCITT0= BIT8            ;CRC CCITT INITIALIZED TO ZEROS
3784        001400              CRC16=  BIT8!BIT9       ;CRC 16
3785        002000              VRCO=   BIT10           ;VRC ODD PARITY
3786        002400              VRCE=   BIT8!BIT10      ;VRC EVEN PARITY
3787        003400              NOERR=  BIT8!BIT9!BIT10 ;ALL ERROR DETECTION INHIBITED.
3788        001000              NONE1=  BIT9            ;NOT USED
3789        003000              NONE2=  BIT9!BIT10      ;NOT USED
3790
3791        004000              IDLE=   BIT11           ;IDLE MODE SELECT
3792        010000              SECADR= BIT12           ;SECONDARY ADDRESS SELECT
3793        020000              SSYNCH= BIT13           ;STRIP SYNCH - BCP
3794        020000              LOOP=   BIT13           ;LOOP MODE - BOP
3795        040000              PROTO=  BIT14           ;PROTOCOL SELECT.
3796        100000              APA=    BIT15           ;ALL PARTIES ADDRESSED.
3797
3798
3799                            ;;RDSR   - CSR2   (INTERNAL USNYR/Y REGISTERS 0 AND 1)  READ ONLY
3800
3801                                                    ;BITS 0-7 RECEIVE DATA BUFFER
3802        000400              RSOM=   BIT8            ;RECEIVED START OF MESSAGE.
3803        001000              REOM=   BIT9            ;RECEIVED END OF MESSAGE.
3804        002000              RABORT= BIT10           ;RECEIVER ABORT OR GO AHEAD
3805        004000              ROVER=  BIT11           ;RECEIVER OVERRUN.
3806                                                    ;BITS 12-14 ASSEMBLED BIT COUNT (ABC)
3807        000000              ALL=    0               ;ALL BITS VALID
3808        010000              ONE=    BIT12           ;ONE BIT VALID
3809        020000              TWO=    BIT13           ;TWO BITS VALID
3810        030000              THREE=  BIT12!BIT13     ;THREE BITS VALID
3811        040000              FOUR=   BIT14           ;FOUR BITS VALID
3812        050000              FIVE=   BIT12!BIT14     ;FIVE BITS VALID
3813        060000              SIX=    BIT13!BIT14     ;SIX BITS VALID
3814        070000              SEVEN=  BIT12!BIT13!BIT14 ;SEVEN BITS VALID
3815
3816        100000              ERR=    BIT15           ;ERROR CHECK
3817
```

```
3818
3819                                ;;TXCSR - CSR4   (EXTERNAL LO BYTE  -  INTERNAL 7 HI BYTE) READ/WRITE
3820
3821            000001              RESET=  BIT0            ;DEVICE RESET  - WRITE ONLY
3822            000002              TXACT=  BIT1            ;TRANSMITTER ACTIVE - READ ONLY
3823            000004              TBE=    BIT2            ;TRANSMITTER BUFFER EMPTY - READ ONLY
3824            000010              MM=     BIT3            ;MAINTENANCE MODE - R/W
3825            000020              TXENA=  BIT4            ;TRANSMITTER ENABLE - R/W
3826            000040              SQ=     BIT5            ;SIGNAL QUALITY -READ ONLY
3827            000040              TM=     BIT5            ;TEST MODE - READ ONLY  WIRE WRAPPED FOR
3828                                                        ;TEST MODE
3829            000100              TXIE=   BIT6            ;TRANSMIT INTERRUPT ENABLE - R/W
3830
3831                                ;;PCR   - HI BYTE CSR4 (INTERNAL USNYR/T REGISTER 7)
3832
3833            000010              EXCON=  BIT3            ;EXTENDED CONTROL FIELD
3834            000020              EXADD=  BIT4            ;EXTENDED ADDRESS FIELD.
3835
3836                                ;;TDCSR - CSR6   (INTERNAL USNYR/T REGISTERS 7 AND 7) READ/WRITE
3837
3838                                                        ;BITS 0-7 TRANSMITTER DATA
3839            000400              TSOM=   BIT8            ;TRANSMIT START OF MESSAGE - R/W
3840            001000              TEOM=   BIT9            ;TRANSMIT END OF MESSAGE - R/W
3841            002000              TXABO=  BIT10           ;TRANSMIT ABORT - R/W
3842            004000              TGA=    BIT11           ;TRANSMIT GO AHEAD - R/W
3843                                                        ;BITS 12 - 14 RESERVED
3844            100000              TERR=   BIT15           ;TRANSMIT DATA LATE ERROR. - READ ONLY
3845
3846
3847
3848                                ;;**************************************************************************
3849                                ;;**************************************************************************
3850                                ; MISC. EQUATES
3851
3852            000226              SYN=    226             ;DDCMP SYNCH CHARACTER
3853            000207              RETURN= 207             ;RETURN FROM SUB.     [=  JSR PC]
3854            100000              BOP=    BIT15           ;BIT SET IN MODE WHEN IN BOP MODE
3855            000015              CR=     15              ;ASCII CARRIAGE RETURN
3856            000012              LF=     12              ;ASCII LINE FEED
3857            000007              MFPT=   7               ;OPCODE FOR LSI 11/23 TO MOVE PROCESSOR TYPE
3858                                                        ;TO R0   R0=3 MEANS LSI 11/23  - ILLEGAL INSTRUCTION
3859                                                        ;ON AN LSI 11 OR LSI 11/2
3860            000332              CRCLO=  332             ;LOW BYTE OF CRC IN TEST 26.
3861            0002E6              CRCHI=  266             ;HIGH BYTE OF CRC IN TEST 26.
3662
```

```
                                .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
```

```
3920  002332  000000                  EXERR:   .WORD   0          ;FLAG THAT AN ERROR IS EXPECTED IN DATA
3921  002334  000000                  FLAG:    .WORD   0          ;SCRATCH WORD USED FOR MISC. FLAG IN SUB.
3922  002336  000000                  HEADER:  .WORD   0          ;FLAG USED TO MARK DDCMP HEADER.
3923  002340  000000                  HIGH:    .WORD   0          ;FLAG USED TO INDICATE HIGH SPEED ISR WHEN SET
3924  002342  000000                  IPCR:    .WORD   0          ;IMAGE OF PCR
3925  002344  000000                  IPCSAR:  .WORD   0          ;IMAGE OF PCSAR
3926  002346  000000                  IRXCSR:  .WORD   0          ;IMAGE OF RXCSR
3927  002350  000000                  IRDSR:   .WORD   0          ;IMAGE OF RDSR.
3928  002352  000000                  LENGTH:  .WORD   0          ;CHARACTER LENGTH.
3929  002354  000000                  LOGDEV:  .WORD   0          ;LOGICAL DEVICE NUMBER
3930  002356  000000                  MAINT:   .WORD   0          ;MAINTENANCE MODE LOOPBACK FLAG
3931  002360  000000                  MCFLAG:  .WORD   0          ;WORD USED IN TO TRACK MODEM CONTROL INT.
3932  002362  000000                  MODE:    .WORD   0          ;PROTOCOL TYPE
3933  002364  000000                  NESTPC:  .WORD   0          ;FLAG TO NOTIFY WHEN A SUBR IS NESTED
3934  002366  000000                  NXMFLG:  .WORD   0          ;WORD USED WHEN ADDRESS IS NXM.
3935  002370  000000                  OVER:    .WORD   0          ;FLAG TO ALLOW RECEIVE OVERRUN.
3936  002372  000000                  PSTACK:  .WORD   0          ;CONTAINS BASE LEVEL PROGRAM SP
3937  002374  000000                  REG:     .WORD   0          ;STORAGE OF A CSR ADDRESS
3938  002376  000000                  RFLAG:   .WORD   0          ;WORD USED IN RECEIVE ROUTINE.
3939  002400  000000                  RSAVE:   .WORD   0          ;TEMPORARY LOCATION TO SAVE RDSR ON INTERRUPT
3940  002402  000000                  RXINI:   .WORD   0          ;RECEIVER INITIALIZATION
3941  002404  000000                  RXINIT:  .WORD   0          ;RECEIVER INITIALIZATION WITH INT ENABLED.
3942  002406  000000                  RXMINI:  .WORD   0          ;RECEIVER INIT WITH MAINTENANCE LOOPBACK.
3943  002410  000000                  SAVE:    .WORD   0          ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
3944  002412  000000                  SAVTIM:  .WORD   0          ;STORAGE TO SAVE TIMER VALUE
3945  002414  000000                  START:   .WORD   0          ;CONTER FOR # OF START CHARACTERS TO XMIT.
3946  002416  000000                  SUBRPC:  .WORD   0          ;PC OF SUBR CALL FOR ERROR REPORTS
3947  002420  000000                  TEMP:    .WORD   0          ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
3948  002422  000000                  TEND:    .WORD   0          ;TRANSMIT END
3949  002424  000000                  TFLAG:   .WORD   0          ;WORD USED IN TRANSMIT INTERRUPT ROUTINE
3950  002426  000000                  TIMEO:   .WORD   0          ;FLAG TO MARK TIME OUT IN $DATA SUBROUTINE.
3951  002430  000000                  TIMER:   .WORD   0          ;TIMER VALUE
3952  002432  000000                  TOGGLE:  .WORD   0          ;FLAG TO ALLOW TOGGLE OF RTS IN TEST.
3953  002434  000000                  TSTART:  .WORD   0          ;TRANSMIT START
3954  002436  000000                  TXINI:   .WORD   0          ;TRANSMITTER INITIALIZATION
3955  002440  000000                  TXINIT:  .WORD   0          ;TRANSMITTER INITIALIZATION WITH INT ENABLED.
3956  002442  000000                  TXMINI:  .WORD   0          ;TRANSMITTER INIT WITH MAINTENANCE LOOPBACK
3957
3958
3959
3960
3961
3962
3963
3964                                          .EVEN
3965
3966                                  ;;*****************************************************************************
3967                                  ;;*****************************************************************************
3968                                  ;;MODEM CONTROL
3969
3970  002444  000012                  MODEM:   .BLKW   10.         ;BUFFER AREA FOR MODEM STATUS
3971
3972                                  ;;*****************************************************************************
3973                                  ;;*****************************************************************************
3974                                  ;;BUFFER AREA
3975
```

```
 3976  002470  000000                  XTYPE:  .WORD   0               ;POINTER TO DATA TYPE TO LOAD INTO XMIT BUFFER
 3977  002472  000000                  XCOUNT: .WORD   0               ;# OF CHARACTERS TO TRANSMIT.
 3978  002474  000000                  ECOUNT: .WORD   0               ;# OF CHARACTERS FOR END OF MSG. IN BCP MODE.
 3979  002476  000000                  XMITD:  .WORD   0               ;# OF CHARACTERS TRANSMITTED.
 3980  002500  000000                  RCOUNT: .WORD   0               ;# OF CHARACTERS RECEIVED.
 3981
 3982
 3983                                  ;;*************************************************************************
 3984                                          ;       ** CCITT PSUEDO-RANDOM TEST PATTERN **
 3985                                          ; THE FOLLOWING 32 WORDS TRANSLATE INTO A 512 BIT PATTERN
 3986                                          ; THAT WAS GENERATED ACCORDING TO CCITT RECOMMENDATION V.52.  THIS
 3987                                          ; PATTERN WAS GENERATED BY A 9 BIT SHIFT REGISTER (INITIALIZED
 3988                                          ; AS 1S) WHOSE 5TH AND 9TH BITS ARE XORED.  THIS XOR RESULT IS SHIFTED
 3989                                          ; INTO THE 1ST BIT OF THE REGISTER AS THE REGISTER IS SHIFTED RIGHT.
 3990                                          ; THE 9TH BIT (OR BIT SHIFTED OUT) IS SHIFTED INTO THE BIT PATTERN.
 3991                                          ; NOTE: CCITT RECOMMENDED 511 BITS, I'VE EXTENDED THIS BY 1 BIT TO END
 3992                                          ; ON A WORD BOUNDARY.
 3993  002502                          $CCITT:
 3994  002502  177603  157427  031011          .WORD   177603,157427,031011
 3995  002510  047321  163715  105221          .WORD   047321,163715,105221
 3996  002516  143325  142304  040041          .WORD   143325,142304,040041
 3997  002524  014116  052606  172334          .WORD   014116,052606,172334
 3998  002532  105025  123754  111337          .WORD   105025,123754,111337
 3999  002540  111523  030030  145064          .WORD   111523,030030,145064
 4000  002546  137642  143531  063617          .WORD   137642,143531,063617
 4001  002554  135015  066730  026575          .WORD   135015,066730,026575
 4002  002562  052012  053627  070071          .WORD   052012,053627,070071
 4003  002570  151172  165044  031605          .WORD   151172,165044,031605
 4004  002576  166632  016741                  .WORD   166632,016741
 4005
 4006                                  ;;*************************************************************************
 4007                                  ;; ALPHANUMERIC DATA
 4008
 4009  002602  041101  042103  043105  ALPHA:  .ASCIZ  /ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789/
       002610  044107  045111  046113
       002616  047115  050117  051121
       002624  052123  053125  054127
       002632  055131  030460  031462
       002640  032464  033466  034470
       002646     000
 4010          000045          ACOUNT= .-ALPHA                 ;CHARACTER COUNT
 4011          002650                  .EVEN
 4012
 4013                                  ;;*************************************************************************
 4014                                  ;; DDCMP BUFFER
 4015
 4016  002650     201          DDCMP:  .BYTE   201             ;SOH (START OF HEADER)
 4017  002651     064     000          .BYTE   64,0            ;COUNT AND FLAGS (BITS 0 AND 1 FLAGS)
 4018  002653     000                  .BYTE   0               ;RESPONSE NUMBER
 4019  002654     000                  .BYTE   0               ;TRANSMIT NUMBER
 4020  002655     001                  .BYTE   1               ;STATION ADDRESS
 4021          000006          DDCMP1= .-DDCMP
 4022                                                          ;2 BYTES OF CRC16
 4023  002656  042104  046503  020120  DDMSG:  .ASCII  /DDCMP MESSAGE/
       002664  042515  051523  043501
       002672     105
```

GLOBAL DATA SECTION

```
                                                        ;2 BYTES OF CRC16
          000015                    DDCMP2= .-DDMSG

          002674                            .EVEN
                                    ;;**********************************************************************
                                    ;; TRANSMIT BUFFER

002674    000400                    XMTBUF: .BLKB   256.

                                    ;;**********************************************************************
                                    ;; RECEIVE BUFFER

003274    000400                    RCVBUF: .BLKB   256.          ;256. BYTE BUFFER
          000400                    RSIZE=  .-RCVBUF
                                            .EVEN
```

```
                                        GLOBAL TEXT SECTION

                                        .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  050104  030526  000061                                                .ASCIZ  /DPV11/
                                                                                .EVEN

                                        ;;*************************************************************************
                                        ;* TITLE OF PROGRAM
                                        ;;*************************************************************************
003702                                          DESCRIPT   <DIAGNOSTIC TESTS>
003702                                                                  L$DESC::
003702  044504  043501  047516                                                .ASCIZ  /DIAGNOSTIC TEST
003710  052123  041511  052040
003716  051505  051524     000
003724                                                                          .EVEN


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

```
                                GLOBAL SUBROUTINES

                                .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
```

```
4136
4137                                    .NLIST
4138                                    .LIST ME
4139                                    .LIST
4140
4141                                                    ;******** MACRO EXPANSION ********
4142                                    .IF     B, ADDRESS
4143                                    .IF     IDN $BIT, TBE
4144                                    JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
4145                                            .WORD   TBE     ;WAIT FOR TBE TO BE SET
4146                                            .WORD   TXCSR   ;IN TRANSMITTER  CSR.
4147                                    .IFF
4148                                    JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
4149                                            .WORD   $BIT    ;WAIT FOR BIT TO BE SET
4150                                            .WORD   RXCSR   ;IN RECEIVER  CSR.
4151                                    .ENDC
4152                                    .IFF
4153                                    JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
4154                                            .WORD   $BIT    ;WAIT FOR BIT TO BE SET
4155                                            .WORD   ADDRESS ;IN THE GIVEN ADDRESS.
4156                                    .ENDC
4157                                                    ;**********************************
4158
4159                                    .NLIST ME
4160                                    .ENDM
4161
4162
4163
4164
4165                            ;;*************************************************************************
4166                            ; DELAY MACRO
4167                            ;
4168                            ;;*************************************************************************
4169
4170                                    .MACRO  $DELAY  $TIME
4171                                    .IF     B, $TIME
4172                                    .ERROR ROUTINE;  ## MISSING ROUTINE-EXAPNSION ABORT ##
4173                                    .MEXIT
4174                                    .ENDC
4175
4176                                    .NLIST
4177                                    .LIST ME
4178                                    .LIST
4179
4180                                                    ;******** MACRO EXPANSION ********
4181                                    JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
4182                                            .WORD   $TIME   ;NUMBER OF DELAY LOOPS
4183                                                    ;**********************************
4184
4185                                    .NLIST ME
4186                                    .ENDM
4187
4188
```

```
                        ;;*****************************************************************
                        ;;*****************************************************************
                        ;
                        ;                       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.
 (3)    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.
 (4)    004026  104455                                                  TRAP    C$ERDF
 (5)    004030  000000                                                  .WORD   0
 (5)    004032  013462                                                  .WORD   EMG1
 (5)    004034  010214                                                  .WORD   ERRG12
004036  032737  000004  002320  BIT     #TBE,BITS       ;WERE WE WAITING FOR TBE?
004044  001410                  BEQ     20$             ;IF NOT, EXIT.
004046                          PRINTB  #FMS1           ;SUGGEST THAT THE XMIT CLOCK IS INOP.
 (7)    004046  012746  004102                                           MOV     #FMS1,-(SP)
 (6)    004052  012746  000001                                           MOV     #1,-(SP)
```

```
   (3)  004056  010600                                                          MOV     SP,R0
   (4)  004060  104414                                                          TRAP    C$PNTB
   (4)  004062  062706  000004                                                  ADD     #4,SP
 4240   004066                        20$:
 4241   004066                                POP     <R0,R1,R2>      ;POP REGISTERS OFF STACK.
 4242   004074  005037  002416                CLR     SUBRPC
 4243
 4244   004100  000207                        RETURN
 4245
 4246   004102  040445  041450  042510  FMS1:   .ASCIZ  /$A(CHECK THE XMIT CLOCK)$N/
        004110  045503  052040  042510
        004116  054040  044515  020124
        004124  046103  041517  024513
        004132  047045     000
 4247           004136                        .EVEN
 4248
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       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$:
004204  011637  002416                  MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
004210  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
004216                                  ERRDF   1,EMG3,ERRG11   ;PRINT ERROR MESSAGE
 (4)    004216  104455                                                  TRAP    C$ERDF
 (5)    004220  000001                                                  .WORD   1
 (5)    004222  013540                                                  .WORD   EMG3
 (5)    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
```

```
 4295  004264  122777  000162  176004          CMPB    #162,@CSR1      ;ARE RING, CTS, CD AND DM ALSO SET?
 4296  004272  001010                          BNE     30$             ;IF NOT, PROBABLY HAVE -12V
 4297  004274                                  PRINTB  #FMG9           ;PROMPT USER TO CHECK -12V.
  (7)  004274  012746  011522                                                    MOV     #FMG9,-(SP)
  (6)  004300  012746  000001                                                    MOV     #1,-(SP)
  (3)  004304  010600                                                            MOV     SP,R0
  (4)  004306  104414                                                            TRAP    C$PNTB
  (4)  004310  062706  000004                                                    ADD     #4,SP
 4298  004314                          30$:
 4299
 4300  004314  000207                          RETURN
 4301
```

```
4303                            ;;*****************************************************************
4304                            ;;*****************************************************************
4305                            ;
4306                            ;                       SUBROUTINE $BUFRS
4307                            ;
4308                            ;               FUNCTION -  TO SET UP THE TRANSMIT BUFFER WITH A DATA
4309                            ;                           PATTERN AND TO CLEAR THE RECEIVE BUFFER
4310                            ;
4311                            ;       CALLING FORMAT:         JSR     PC,$BUFRS
4312                            ;
4313                            ;
4314                            ;       ENTRY CONDITIONS - IPCSAR  = IMAGE OF THE PCSAR (CSR 2 OF THE DPV)
4315                            ;                         IPCR    = IMAGE OF THE PCR (CSR 5 OF THE DPV)
4316                            ;                         XTYPE   = ADDRESS OF THE XMIT TYPE
4317                            ;                         XCOUNT  = # OF CHARACTERS TO TRANSMIT
4318                            ;                         LENGTH  = CHARACTER LENGTH
4319                            ;                         MODE    = PROTOCOL TYPE (BCP OR BOP)
4320                            ;
4321                            ;
4322                            ;       EXIT CONDITIONS  - ECOUNT  = # OF CHARACTERS TO TRANSMIT (MODIFIED
4323                            ;                                    XCOUNT)
4324                            ;                         XMTBUF  = CONTAINS XMIT DATA TYPE PATTERN
4325                            ;                         RCVBUF  = RECEIVE BUFFER CLEARED
4326                            ;
4327                            ;       CALLED BY        - TESTS 15-40
4328                            ;
4329                            ;    REGISTERS R1-R4 DESTROYED
4330                            ;
4331                            ;;*****************************************************************
4332                            ;;*****************************************************************
4333  004316                    $BUFRS:
4334  004316  013701  002352            MOV     LENGTH,R1       ;GET THE CHARACTER LENGTH
4335  004322  013702  002470            MOV     XTYPE,R2        ;ADDRESS OF DATA TYPE
4336  004326  012703  002674            MOV     #XMTBUF,R3      ;ADDRESS OF TRANSMIT BUFFER.
4337  004332  013704  002472            MOV     XCOUNT,R4       ;CHARACTER COUNT.
4338  004336  005737  002362            TST     MODE            ;WHAT MODE?
4339  004342  001444                    BEQ     10$             ;IF BCP, SKIP ADDRESS CHECK.
4340
4341  004344  032737  100000  002344    BIT     #APA,IPCSAR     ;IS APA DESIRED?
4342  004352  001403                    BEQ     5$              ;IF NOT CHECK SECONDARY ADDRESS.
4343  004354  112723  000377            MOVB    #377,(R3)+      ;PUT APA IN THE XMIT BUFFER
4344  004360  000422                    BR      7$
4345  004362                    5$:
4346  004362  032737  010000  002344    BIT     #SECADR,IPCSAR  ;IS THE SECONDARY ADDRESS DESIRED?
4347  004370  001403                    BEQ     6$              ;IF NOT  - JUST LOAD DATA
4348  004372  113723  002344            MOVB    IPCSAR,(R3)+    ;PUT SECONDARY ADDRESS IN THE XMIT BUFFER.
4349  004376  000413                    BR      7$
4350  004400                    6$:
4351  004400  112223                    MOVB    (R2)+,(R3)+     ;LOAD ADDRESS CHARACTER
4352  004402  032737  000020  002342    BIT     #EXADD,IPCR     ;IS EXTENDED ADDRESS REQUESTED?
4353  004410  001406                    BEQ     7$              ;BR IF NOT
4354  004412  142763  000001  177777    BICB    #BIT0,-1(R3)    ;MAKE SURE THE LSB OF THE ADDRESS IS 0
4355  004420  112223                    MOVB    (R2)+,(R3)+     ;GET THE EXTENDED ADDRESS BYTE.
4356  004422  005237  002472            INC     XCOUNT          ;COMPENSATE TRANSMIT COUNT.
4357  004426                    7$:
4358  004426  112223                    MOVB    (R2)+,(R3)+     ;LOAD CONTROL CHARACTER
```

```
4359  004430  032737  000010  002342          BIT     @EXCON,IPCR     ;IS EXTENDED CONTROL DESIRED?
4360  004436  001403                          BEQ     8$              ;BR IF NOT
4361  004440  112223                          MOVB    (R2)+,(R3)+     ;LOAD EXTENDED CONTROL
4362  004442  005237  002472                  INC     XCOUNT          ;COMPENSATE TRANSMIT COUNT
4363  004446                          8$:
4364  004446  062737  000002  002472          ADD     @2,XCOUNT       ;COMPENSATE TRANSMIT COUNT
4365  004454                          10$:
4366  004454  013737  002472  002474          MOV     XCOUNT,ECOUNT   ;TRANSMIT COUNT IS THE END COUNT IN BCP MODE.
4367  004462                          11$:
4368  004462  112213                          MOVB    (R2)+,(R3)      ;SAVE THE DATA IN THE TRANSMIT BUFFER
4369  004464  146123  004514                  BICB    MASK(R1),(R3)+  ;CLEAR UNUSED BITS (DEPENDS ON CHAR LENGTH)
4370  004470  005304                          DEC     R4              ;DECREMENT COUNTER.
4371  004472  001373                          BNE     11$             ;LOOP UNTIL THE TRANSMIT BUFFER IS LOADED.
4372
4373  004474  012701  003274                  MOV     @RCVBUF,R1      ;GET THE ADDRESS OF THE RECEIVE BUFFER
4374  004500  012702  000400                  MOV     @RSIZE,R2       ;GET THE LENGTH OF THE BUFFER.
4375  004504                          20$:
4376  004504  105021                          CLRB    (R1)+           ;CLEAR THE ENTIRE BUFFER
4377  004506  005302                          DEC     R2              ;DECREMENT THE COUNTER
4378  004510  001375                          BNE     20$             ;LOOP UNTIL THE ENTIRE RECEIVE BUFFER IS CLEAR
4379
4380  004512  000207                          RETURN
4381
4382  004514     000     376     374  MASK:   .BYTE   0,376,374,370,360,340,300,200,0
      004517     370     360     340
      004522     300     200     000
4383          004526                          .EVEN
4384
```

```
                                ;;*************************************************************
                                ;;*************************************************************
                                ;
                                ;                       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.
                                ;                                    NONO = 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  003274                  MOV     #RCVBUF,R1      ;RECEIVE BUFFER
004562  012702  002674                  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
```

```
4442                                                    ;SET VECTORS WITH THE HIGH SPEED ISRS
4443  004604                                    SETVEC  XMTVEC,@XDATA2,@PRIO4 ;HIGH SPEED BOP XMIT ISR.
 (7)  004604  012746  000200                                                  MOV     @PRIO4,-(SP)
 (6)  004610  012746  017512                                                  MOV     @XDATA2,-(SP)
 (5)  004614  013746  002264                                                  MOV     XMTVEC,-(SP)
 (4)  004620  012746  000003                                                  MOV     #3,-(SP)
 (3)  004624  104437                                                          TRAP    C$SVEC
 (2)  004626  062706  000010                                                  ADD     #10,SP
4444  004632                                    SETVEC  RCVEC,@RDATA2,@PRIO4  ;HIGH SPEED RECV VECTOR
 (7)  004632  012746  000200                                                  MOV     @PRIO4,-(SP)
 (6)  004636  012746  017164                                                  MOV     @RDATA2,-(SP)
 (5)  004642  013746  002262                                                  MOV     RCVEC,-(SP)
 (4)  004646  012746  000003                                                  MOV     #3,-(SP)
 (3)  004652  104437                                                          TRAP    C$SVEC
 (2)  004654  062706  000010                                                  ADD     #10,SP
4445  004660  042737  000040  002404          BIC     #DSITEN,RXINIT  ;IGNORE DATA SET INTERRUPTS IN HIGH SPEED.
4446  004666  013737  002472  002322          MOV     XCOUNT,COUNTER  ;SET UP COUNTER FOR INT SERVICE ROUTINE RDATA2
4447  004674  000426                          BR      7$
4448  004676                              5$:
4449  004676                                    SETVEC  XMTVEC,@XDATA,@PRIO4  ;XMIT VECTOR
 (7)  004676  012746  000200                                                  MOV     @PRIO4,-(SP)
 (6)  004702  012746  017340                                                  MOV     @XDATA,-(SP)
 (5)  004706  013746  002264                                                  MOV     XMTVEC,-(SP)
 (4)  004712  012746  000003                                                  MOV     #3,-(SP)
 (3)  004716  104437                                                          TRAP    C$SVEC
 (2)  004720  062706  000010                                                  ADD     #10,SP
4450  004724                                    SETVEC  RCVEC,@RDATA,@PRIO4   ;RECV VECTOR
 (7)  004724  012746  000200                                                  MOV     @PRIO4,-(SP)
 (6)  004730  012746  016732                                                  MOV     @RDATA,-(SP)
 (5)  004734  013746  002262                                                  MOV     RCVEC,-(SP)
 (4)  004740  012746  000003                                                  MOV     #3,-(SP)
 (3)  004744  104437                                                          TRAP    C$SVEC
 (2)  004746  062706  000010                                                  ADD     #10,SP
4451  004752                              7$:
4452  004752                                    SETPRI  #PRIO0          ;ENABLE INTERRUPTS
 (3)  004752  012700  000000                                                  MOV     #PRIO0,R0
 (3)  004756  104441                                                          TRAP    C$SPRI
4453  004760  005737  002356                    TST     MAINT           ;SET MAINTENANCE MODE?
4454  004764  001407                          BEQ     $DATA1          ;BR IF NOT
4455  004766  053777  002406  175272          BIS     RXMINI,@RXCSR   ;INIT RECEIVER WITH MAINTENANCE MODE
4456  004774  053777  002442  175270          BIS     TXMINI,@TXCSR   ;INIT TRANSMITTER WITH MAINT. MODE.
4457  005002  000411                          BR      $GO
4458
4459  005004                              $DATA1:
4460  005004  053777  002404  175254          BIS     RXINIT,@RXCSR   ;ISSUE RECEIVER INIT (DETERMINED IN INIT CODE)
4461  005012  053777  002440  175252          BIS     TXINIT,@TXCSR   ;ISSUE XMIT INIT (DETERMINED IN INIT CODE)
4462  005020  052737  000040  002404          BIS     #DSITEN,RXINIT  ;RESET THE DATA SET INTERRUPT (MAY BE CLEARED
4463                                                                  ;IF THIS IS A HIGH SPEED TEST).
4464  005026                              $GO:
4465  005026  011637  002416                    MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
4466  005032  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
4467  005040  013704  002430                    MOV     TIMER,R4        ;SET UP TIMER
4468  005044                              8$:
4469  005044  012705  005000                    MOV     #5000,R5        ;INNER LOOP COUNTER
4470  005050                              10$:
4471  005050  005777  175220                    TST     @TDSR           ;IS THERE A TRANSMITTER ERROR?
```

```
4472  005054  100426                        BMI     20$             ;BR IF YES
4473  005056  005737  002376                TST     RFLAG           ;IS THE RECEIVER DONE?
4474  005062  001033                        BNE     22$             ;EXIT LOOP IF YES
4475  005064  005305                        DEC     R5              ;DECREMENT INNER LOOP COUNTER
4476  005066  001370                        BNE     10$             ;LOOP UNTIL DONE
4477  005070  022737  000002  002306        CMP     #2,TURN         ;IS THIS RS422?
4478  005076  001401                        BEQ     11$             ;IF YES - DON'T ALLOW A SUPERVISOR BREAK.
4479  005100                                BREAK                   ;BREAK FOR SUPERVISOR INTERRUPT
 (3)  005100  104422                                                                     TRAP    C$BRK
4480  005102                        11$:
4481  005102  005304                        DEC     R4              ;DECREMENT OUTSIDE LOOP COUNTER
4482  005104  001357                        BNE     8$              ;LOOP UNTIL DONE
4483  005106  005237  002426                INC     TIMEO           ;SET TIME OUT FLAG.
4484
4485  005112  005737  002332                TST     EXERR           ;WAS AN ERROR EXPECTED?
4486  005116  001036                        BNE     25$             ;IF YES - EXIT WITHOUT ERROR MESSAGE.
4487  005120                                ERRDF   2,EMG2,ERRG2    ;TIME OUT
 (4)  005120  104455                                                                     TRAP    C$ERDF
 (5)  005122  000002                                                                    .WORD   2
 (5)  005124  013473                                                                    .WORD   EMG2
 (5)  005126  006700                                                                    .WORD   ERRG2
4488  005130  000422                        BR      24$
4489  005132                        20$:
4490  005132  042777  000020  175132        BIC     #TXENA,@TXCSR   ;DISABLE THE TRANSMITTER.
4491  005140                                ERRDF   3,EMG30,ERRG2   ;TRANSMIT UNDERRUN
 (4)  005140  104455                                                                     TRAP    C$ERDF
 (5)  005142  000003                                                                    .WORD   3
 (5)  005144  014766                                                                    .WORD   EMG30
 (5)  005146  006700                                                                    .WORD   ERRG2
4492  005150  000412                        BR      24$
4493  005152                        22$:
4494  005152  005737  002376                TST     RFLAG           ;WAS THIS THE END OF MESSAGE?
4495  005156  100016                        BPL     25$             ;OK - IF YES
4496  005160  005737  002332                TST     EXERR           ;WAS AN ERROR EXPECTED?
4497  005164  001013                        BNE     25$             ;IF YES - EXIT WITHOUT ERROR MESSAGE.
4498  005166                                ERRDF   4,EMG31,ERRG2   ;RECEIVER ERROR
 (4)  005166  104455                                                                     TRAP    C$ERDF
 (5)  005170  000004                                                                    .WORD   4
 (5)  005172  015004                                                                    .WORD   EMG31
 (5)  005174  006700                                                                    .WORD   ERRG2
4499  005176                        24$:
4500  005176  012737  000001  002330        MOV     #1,ERROR        ;FLAG ERROR
4501  005204  005037  002416                CLR     SUBRPC          ;CLEAR THE SUBR PC FLAG
4502  005210  000261                        SEC                     ;SET CARRY - ERROR
4503  005212  000403                        BR      30$
4504
```

```
                                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,  NONO = 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$:
      005310  011637  002416                MOV     (SP),SUBRPC             ;FLAG WHERE THIS SUBR. WAS CALLED.
      005314  162737  000004  002416        SUB     #4,SUBRPC               ;ADJUST THE PC
      005322                                ERRDF   5,EMG37,ERRG1           ;CRC ERROR
 (4)  005322  104455                                                                TRAP    C$ERDF
 (5)  005324  000005                                                                .WORD   5
 (5)  005326  015226                                                                .WORD   EMG37
 (5)  005330  006652                                                                .WORD   ERRG1
      005332  000444                        BR      30$
      005334                        4$:
```

```
4567  005334  023737  002472  002500          CMP     XCOUNT,RCOUNT   ;ARE THE CHARACTER COUNTS THE SAME.
4568  005342  001412                          BEQ     5$              ;IF YES - CONTINUE
4569  005344  011637  002416                  MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
4570  005350  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
4571  005356                                  ERRDF   6,EMG25,ERRG14  ;CHARACTER COUNTS DIFFERENT
 (4)  005356  104455                                                          TRAP    C$ERDF
 (5)  005360  000006                                                          .WORD   6
 (5)  005362  014725                                                          .WORD   EMG25
 (5)  005364  010760                                                          .WORD   ERRG14
4572  005366  000426                          BR      30$
4573  005370                          5$:
4574  005370  012701  002674                  MOV     #XMTBUF,R1      ;GET THE ADDRESS OF THE XMIT BUFFER.
4575  005374  012702  003274                  MOV     #RCVBUF,R2      ;GET THE ADDRESS OF THE RECV BUFFER.
4576  005400  013703  002472                  MOV     XCOUNT,R3       ;GET THE CHARACTER COUNT
4577  005404                          $CHK1:
4578  005404  122122                          CMPB    (R1)+,(R2)+     ;ARE THE CHARACTERS THE SAME
4579  005406  001003                          BNE     20$             ;IF NOT, REPORT THE ERROR
4580  005410  005303                          DEC     R3              ;DECREMENT THE COUNT.
4581  005412  001414                          BEQ     30$             ;LOOP UNTIL DONE
4582  005414  000773                          BR      $CHK1
4583  005416                          20$:
4584  005416  011637  002416                  MOV     (SP),SUBRPC     ;FLAG WHERE THIS SUBR. WAS CALLED.
4585  005422  162737  000004  002416          SUB     #4,SUBRPC       ;ADJUST THE PC
4586  005430  005301                          DEC     R1              ;POINT TO DATA IN ERROR
4587  005432  005302                          DEC     R2              ;POINT TO DATA IN ERROR.
4588  005434                                  ERRDF   7,EMG26,ERRG3   ;CHARACTERS DON'T MATCH
 (4)  005434  104455                                                          TRAP    C$ERDF
 (5)  005436  000007                                                          .WORD   7
 (5)  005440  014753                                                          .WORD   EMG26
 (5)  005442  007014                                                          .WORD   ERRG3
4589  005444                          30$:
4590  005444  005037  002416                  CLR     SUBRPC          ;CLEAR THE SUBR PC FLAG
4591                                          .DSABL  LSB             ;DISABLE LOCAL SYMBOL BLOCK.
4592  005450  000207                          RETURN
4593
```

```
                                ;;*****************************************************************************
                                ;;*****************************************************************************
                                ;
                                ;                       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
 (4)    005502  104455                                                          TRAP    C$ERDF
 (5)    005504  000010                                                          .WORD   8
 (5)    005506  015321                                                          .WORD   EMG40
 (5)    005510  006652                                                          .WORD   ERRG1
005512                                  PRINTB  #FMODEM,MCFLAG  ;PRINT THE NUMBER OF INTERRUPTS.
 (8)    005512  013746  002360                                                  MOV     MCFLAG,-(SP)
 (7)    005516  012746  006030                                                  MOV     #FMODEM, (SP)
 (6)    005522  012746  000002                                                  MOV     #2,-(SP)
 (3)    005526  010600                                                          MOV     SP,R0
 (4)    005530  104414                                                          TRAP    C$PNTB
 (4)    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.
 (7)    005554  012746  006325                                                  MOV     #FMODE6,-(SP)
 (6)    005560  012746  000001                                                  MOV     #1,-(SP)
 (3)    005564  010600                                                          MOV     SP,R0
 (4)    005566  104414                                                          TRAP    C$PNTB
 (4)    005570  062706  000004                                                  ADD     #4,SP
005574                          1$:
```

```
 4636
 4637  005574  012701  002444                MOV     #MODEM,R1       ;ADDRESS OF MODEM STATUS
 4638  005600                                PRINTB  #FMODE0
  (7)  005600  012746  006115                                                MOV     #FMODE0,-(SP)
  (6)  005604  012746  000001                                                MOV     #1,-(SP)
  (3)  005610  010600                                                        MOV     SP,R0
  (4)  005612  104414                                                        TRAP    C$PNTB
  (4)  005614  062706  000004                                                ADD     #4,SP
 4639  005620                                PRINTB  #FMODE1         ;PRINT INITIAL MODEM STATUS
  (7)  005620  012746  006144                                                MOV     #FMODE1,-(SP)
  (6)  005624  012746  000001                                                MOV     #1,-(SP)
  (3)  005630  010600                                                        MOV     SP,R0
  (4)  005632  104414                                                        TRAP    C$PNTB
  (4)  005634  062706  000004                                                ADD     #4,SP
 4640  005640                                PRINTB  #FMODE2
  (7)  005640  012746  006233                                                MOV     #FMODE2,-(SP)
  (6)  005644  012746  000001                                                MOV     #1,-(SP)
  (3)  005650  010600                                                        MOV     SP,R0
  (4)  005652  104414                                                        TRAP    C$PNTB
  (4)  005654  062706  000004                                                ADD     #4,SP
 4641  005660  005002                        CLR     R2              ;CLEAR COUNTER
 4642  005662                          5$:
 4643  005662  012703  006420                MOV     #MMASK,R3
 4644  005666  012704  000012                MOV     #10.,R4         ;# OF BITS TO CHECK IN THE MODEM STATUS
 4645
 4646  005672                          10$:
 4647  005672  032311                        BIT     (R3)+,(R1)      ;CHECK THE BIT
 4648  005674  001011                        BNE     12$             ;IS IT SET?
 4649  005676                                PRINTB  #FMODE3         ;IF NOT, PRINT A 0
  (7)  005676  012746  006257                                                MOV     #FMODE3,-(SP)
  (6)  005702  012746  000001                                                MOV     #1,-(SP)
  (3)  005706  010600                                                        MOV     SP,R0
  (4)  005710  104414                                                        TRAP    C$PNTB
  (4)  005712  062706  000004                                                ADD     #4,SP
 4650  005716  000410                        BR      15$
 4651  005720                          12$:
 4652  005720                                PRINTB  #FMODE4         ;PRINT A 1
  (7)  005720  012746  006266                                                MOV     #FMODE4,-(SP)
  (6)  005724  012746  000001                                                MOV     #1,-(SP)
  (3)  005730  010600                                                        MOV     SP,R0
  (4)  005732  104414                                                        TRAP    C$PNTB
  (4)  005734  062706  000004                                                ADD     #4,SP
 4653  005740                          15$:
 4654  005740  005304                        DEC     R4              ;DECREMENT BIT COUNTER
 4655  005742  001353                        BNE     10$             ;LOOP UNTIL DONE.
 4656
 4657
 4658  005744  005737  002360                TST     MCFLAG          ;IS THIS THE LAST STATUS
 4659  005750  001416                        BEQ     30$             ;IF YES, EXIT
 4660  005752  005721                        TST     (R1)+           ;INCREMENT MODEM STATUS POINTER.
 4661  005754  005337  002360                DEC     MCFLAG          ;DECREMENT MC FLAG
 4662  005760  005202                        INC     R2              ;INCREMENT COUNTER.
 4663
 4664  005762                                PRINTB  #FMODE5,R2      ;PRINT NEXT MODEM
  (8)  005762  010246                                                        MOV     R2,-(SP)
  (7)  005764  012746  006275                                                MOV     #FMODE5,-(SP)
```

```
   (6)  005770  012746  000002                                                    MOV     #2,-(SP)
   (3)  005774  010600                                                            MOV     SP,R0
   (4)  005776  104414                                                            TRAP    C$PNTB
   (4)  006000  062706  000006                                                    ADD     #6,SP
  4665  006004  000726                BR      5$
  4666  006006                    30$:
  4667  006006                        PRINTB  #FMG6           ;PRINT CARRIAGE RETURN.
   (7)  006006  012746  011410                                                    MOV     #FMG6,-(SP)
   (6)  006012  012746  000001                                                    MOV     #1,-(SP)
   (3)  006016  010600                                                            MOV     SP,R0
   (4)  006020  104414                                                            TRAP    C$PNTB
   (4)  006022  062706  000004                                                    ADD     #4,SP
  4668  006026                    35$:
  4669  006026  000207                RETURN
  4670
  4671  006030  040445  052516  041115  FMODEM: .ASCIZ  /%ANUMBER OF MODEM CONTROL INTERRUPTS RECEIVED: %D2%N/
        006036  051105  047440  020106
        006044  047515  042504  020115
        006052  047503  052116  047522
        006060  020114  047111  042524
        006066  051122  050125  051524
        006074  051040  041505  044505
        006102  042526  035104  022440
        006110  031104  047045     000
  4672  006115     045  022516  046501  FMODE0: .ASCIZ  /%N%AMODEM STATUS%N%S14/
        006122  042117  046505  051440
        006130  040524  052524  022523
        006136  022516  030523  000064
  4673  006144  040445  020040  020040  FMODE1: .ASCIZ  /%A     RL  DTR  RTS   LL   TM  DSR   CD  CTS  RING CNG/
        006152  051040  020114  042040
        006160  051124  020040  052122
        006166  020123  020040  046114
        006174  020040  052040  020115
        006202  042040  051123  020040
        006210  041440  020104  041440
        006216  051524  020040  044522
        006224  043516  041440  043516
        006232     000
  4674  006233     045  022516  046501  FMODE2: .ASCIZ  /%N%AMODEM ON RESET:/
        006240  042117  046505  047440
        006246  020116  042522  042523
        006254  035124     000
  4675  006257     045  032123  040445  FMODE3: .ASCIZ  /%S4%A0/
        006264  000060
  4676  006266  051445  022464  030501  FMODE4: .ASCIZ  /%S4%A1/
        006274     000
  4677  006275     045  022516  046501  FMODE5: .ASCIZ  /%N%AMODEM CHANGE %D1%A:/
        006302  042117  046505  041440
        006310  040510  043516  020105
        006316  042045  022461  035101
        006324     000
  4678  006325     045  025101  020052  FMODE6: .ASCIZ  /%A** MODEM CONTROL INTERRUPT DISABLED AFTER 9 CHANGES **%N/
        006332  047515  042504  020115
        006340  047503  052116  047522
        006346  020114  047111  042524
        006354  051122  050125  020124
```

```
        006362  044504  040523  046102
        006370  042105  040440  052106
        006376  051105  034440  041440
        006404  040510  043516  051505
        006412  025040  022452  000116
  4679                                          .EVEN
  4680                                                  ;MASKS OF EACH BIT
  4681  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
  4682
  4683
  4684
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       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$TEST,LOGDEV ;INFORM THE USER THAT TEST CAN'T BE RUN
 (9)  006462  013746  002354                                                          MOV     LOGDEV,-(SP)
 (8)  006466  013746  002114                                                          MOV     L$TEST,-(SP)
 (7)  006472  012746  011070                                                          MOV     #FMG0,-(SP)
 (6)  006476  012746  000003                                                          MOV     #3,-(SP)
 (3)  006502  010600                                                                  MOV     SP,R0
 (4)  006504  104415                                                                  TRAP    C$PNTX
 (4)  006506  062706  000010                                                          ADD     #10,SP
                                                      ;WITHOUT THE TURNAROUND.
006512                  1$:
006512  000261                  SEC                     ;FLAG NOT TO DO THE TEST.
006514  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$TEST   ;INFORM THE USER THAT THE TEST CAN'T BE RUN
 (8)  006550  013746  002114                                                          MOV     L$TEST,-(SP)
 (7)  006554  012746  013011                                                          MOV     #FMG27,-(SP)
 (6)  006560  012746  000002                                                          MOV     #2,-(SP)
 (3)  006564  010600                                                                  MOV     SP,R0
 (4)  006566  104415                                                                  TRAP    C$PNTX
 (4)  006570  062706  000006                                                          ADD     #6,SP
                                                  ;WITH THIS CPU AND RS422.
006574                  1$:
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
```

```
4777                            ;;*****************************************************************
4778                            ;;*****************************************************************
4779                            ;
4780                            ;                       SUBROUTINE $DLAY
4781                            ;
4782                            ;               FUNCTION - TO SAVE PROGRAM SPACE BY USING ONLY 1
4783                            ;                          EXPANSION OF THE SUPERVISOR MACRO "DELAY"
4784                            ;
4785                            ;
4786                            ;       CALLING FORMAT:         JSR     PC,$DLAY
4787                            ;                               .WORD   #
4788                            ;
4789                            ;       ENTRY CONDITIONS -      @(SP) = # OF DELAY LOOPS TO USE.
4790                            ;
4791                            ;
4792                            ;
4793                            ;       EXIT CONDITIONS  -
4794                            ;
4795                            ;       CALLED BY        - TESTS  2, 5-9, 12, 13
4796                            ;
4797                            ;    REGISTER R0 RESTORED
4798                            ;
4799                            ;;*****************************************************************
4800                            ;;*****************************************************************
4801  006604                    $DLAY:
4802  006604  017600  000000            MOV     @(SP),R0        ;GET THE # OF DELAY LOOPS
4803  006610  062716  000002            ADD     #2,(SP)         ;UPDATE THE PC
4804  006614                    10$:
4805  006614                            DELAY   1               ;1 DELAY LOOP
 (2)  006614  012727  000001                                                MOV     #1,(PC)+
 (2)  006620  000000                                                        .WORD   0
 (2)  006622  013727  002116                                                MOV     L$DLY,(PC)+
 (2)  006626  000000                                                        .WORD   0
 (2)  006630  005367  177772                                                DEC     -6(PC)
 (2)  006634  001375                                                        BNE     .-4
 (2)  006636  005367  177756                                                DEC     -22(PC)
 (2)  006642  001367                                                        BNE     .-20
4806  006644  005300                    DEC     R0              ;DECREMENT VARIABLE LOOP COUNTER
4807  006646  001362                    BNE     10$             ;LOOP UNTIL DONE
4808  006650  000207                    RETURN
```

```
                                ;GLOBAL ERROR REPORT REPORT SECTION

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

                                BGNMSG  ERRG1
                                                                                ERRG1::
                                        PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
                                                                                        MOV     SUBRPC,-(SP)
                                                                                        MOV     #FMG3,-(SP)
                                                                                        MOV     #2,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #6,SP
                                ENDMSG
                                                                                L10001:
                                                                                        TRAP    C$MSG

                                BGNMSG  ERRG2
                                                                                ERRG2::
                                        TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
                                        BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
                                        PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
                                                                                        MOV     SUBRPC,-(SP)
                                                                                        MOV     #FMG3,-(SP)
                                                                                        MOV     #2,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #6,SP
                                10$:
                                        PRINTB  #FMG1,@CSR0,@CSR2 ;PRINT CSR0 AND CSR2 CONTENTS.
                                                                                        MOV     @CSR2,-(SP)
                                                                                        MOV     @CSR0,-(SP)
                                                                                        MOV     #FMG1,-(SP)
                                                                                        MOV     #3,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #10,SP
                                        PRINTB  #FMG2,@CSR4,@CSR6 ;PRINT CSR4 AND CSR2 CONTENTS.
                                                                                        MOV     @CSR6,-(SP)
                                                                                        MOV     @CSR4,-(SP)
                                                                                        MOV     #FMG2,-(SP)
                                                                                        MOV     #3,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #10,SP
                                ENDMSG
                                                                                L10002:
                                                                                        TRAP    C$MSG

                                BGNMSG  ERRG3
                                                                                ERRG3::
                                        PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
```

```
   (8)  007014  013746  002416                                                    MOV     SUBRPC,-(SP)
   (7)  007020  012746  011260                                                    MOV     #FMG3,-(SP)
   (6)  007024  012746  000002                                                    MOV     #2,-(SP)
   (3)  007030  010600                                                            MOV     SP,R0
   (4)  007032  104414                                                            TRAP    C$PNTB
   (4)  007034  062706  000006                                                    ADD     #6,SP
 4834   007040                       PRINTB  #FMG8,<B,@R1>,<B,@R2>
   (9)  007040  005046                                                            CLR     -(SP)
   (9)  007042  151216                                                            BISB    @R2,(SP)
   (8)  007044  005046                                                            CLR     -(SP)
   (8)  007046  151116                                                            BISB    @R1,(SP)
   (7)  007050  012746  011457                                                    MOV     #FMG8,-(SP)
   (6)  007054  012746  000003                                                    MOV     #3,-(SP)
   (3)  007060  010600                                                            MOV     SP,R0
   (4)  007062  104414                                                            TRAP    C$PNTB
   (4)  007064  062706  000010                                                    ADD     #10,SP
 4835   007070                 ENDMSG
   (3)  007070                                                          L10003:
   (3)  007070  104423                                                            TRAP    C$MSG
 4836
 4837
 4838   007072                 BGNMSG  ERRG4
   (3)  007072                                                          ERRG4::
 4839   007072                       PRINTB  #FMG4                   ;PRINT HEADER
   (7)  007072  012746  011332                                                    MOV     #FMG4,-(SP)
   (6)  007076  012746  000001                                                    MOV     #1,-(SP)
   (3)  007102  010600                                                            MOV     SP,R0
   (4)  007104  104414                                                            TRAP    C$PNTB
   (4)  007106  062706  000004                                                    ADD     #4,SP
 4840   007112                       PRINTB  #FMG7,CSR0,<B,@CSR0>    ;PRINT THE LOW BYTE OF CSR0
   (9)  007112  005046                                                            CLR     -(SP)
   (9)  007114  157716  173146                                                    BISB    @CSR0,(SP)
   (8)  007120  013746  002266                                                    MOV     CSR0,-(SP)
   (7)  007124  012746  011413                                                    MOV     #FMG7,-(SP)
   (6)  007130  012746  000003                                                    MOV     #3,-(SP)
   (3)  007134  010600                                                            MOV     SP,R0
   (4)  007136  104414                                                            TRAP    C$PNTB
   (4)  007140  062706  000010                                                    ADD     #10,SP
 4841   007144                       PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
   (8)  007144  005046                                                            CLR     -(SP)
   (8)  007146  150116                                                            BISB    R1,(SP)
   (7)  007150  012746  011377                                                    MOV     #FMG5,-(SP)
   (6)  007154  012746  000002                                                    MOV     #2,-(SP)
   (3)  007160  010600                                                            MOV     SP,R0
   (4)  007162  104414                                                            TRAP    C$PNTB
   (4)  007164  062706  000006                                                    ADD     #6,SP
 4842   007170                 ENDMSG
   (3)  007170                                                          L10004:
   (3)  007170  104423                                                            TRAP    C$MSG
 4843
 4844
 4845   007172                 BGNMSG  ERRG7
   (3)  007172                                                          ERRG7::
 4846   007172                       PRINTB  #FMG4                   ;PRINT HEADER
   (7)  007172  012746  011332                                                    MOV     #FMG4,-(SP)
   (6)  007176  012746  000001                                                    MOV     #1,-(SP)
```

E6


```
  (3) 007202 010600                                                                  MOV     SP,R0
  (4) 007204 104414                                                                  TRAP    C$PNTB
  (4) 007206 062706 000004                                                           ADD     #4,SP
 4847 007212                    PRINTB  #FMG10,CSR4,<B,@CSR4>   ;PRINT THE LOW BYTE OF CSR4
  (9) 007212 005046                                                                  CLR     -(SP)
  (9) 007214 157716 173052                                                           BISB    @CSR4,(SP)
  (8) 007220 013746 002272                                                           MOV     CSR4,-(SP)
  (7) 007224 012746 011574                                                           MOV     #FMG10,-(SP)
  (6) 007230 012746 000003                                                           MOV     #3,-(SP)
  (3) 007234 010600                                                                  MOV     SP,R0
  (4) 007236 104414                                                                  TRAP    C$PNTB
  (4) 007240 062706 000010                                                           ADD     #10,SP
 4848 007244                    PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
  (8) 007244 005046                                                                  CLR     -(SP)
  (8) 007246 150116                                                                  BISB    R1,(SP)
  (7) 007250 012746 011377                                                           MOV     #FMG5,-(SP)
  (6) 007254 012746 000002                                                           MOV     #2,-(SP)
  (3) 007260 010600                                                                  MOV     SP,R0
  (4) 007262 104414                                                                  TRAP    C$PNTB
  (4) 007264 062706 000006                                                           ADD     #6,SP
 4849 007270            ENDMSG
  (3) 007270                                                              L10005:
  (3) 007270 104423                                                                  TRAP    C$MSG
 4850
 4851 007272            BGNMSG  ERRG8
  (3) 007272                                                              ERRG8::
 4852 007272                    PRINTB  #FMG4                   ;PRINT HEADER
  (7) 007272 012746 011332                                                           MOV     #FMG4,-(SP)
  (6) 007276 012746 000001                                                           MOV     #1,-(SP)
  (3) 007302 010600                                                                  MOV     SP,R0
  (4) 007304 104414                                                                  TRAP    C$PNTB
  (4) 007306 062706 000004                                                           ADD     #4,SP
 4853 007312                    PRINTB  #FMG11,CSR5,<B,@PCR>    ;PRINT THE HIGH BYTE OF CSR4
  (9) 007312 005046                                                                  CLR     -(SP)
  (9) 007314 157716 172762                                                           BISB    @PCR,(SP)
  (8) 007320 013746 002302                                                           MOV     CSR5,-(SP)
  (7) 007324 012746 011640                                                           MOV     #FMG11,-(SP)
  (6) 007330 012746 000003                                                           MOV     #3,-(SP)
  (3) 007334 010600                                                                  MOV     SP,R0
  (4) 007336 104414                                                                  TRAP    C$PNTB
  (4) 007340 062706 000010                                                           ADD     #10,SP
 4854 007344                    PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
  (8) 007344 005046                                                                  CLR     -(SP)
  (8) 007346 150116                                                                  BISB    R1,(SP)
  (7) 007350 012746 011377                                                           MOV     #FMG5,-(SP)
  (6) 007354 012746 000002                                                           MOV     #2,-(SP)
  (3) 007360 010600                                                                  MOV     SP,R0
  (4) 007362 104414                                                                  TRAP    C$PNTB
  (4) 007364 062706 000006                                                           ADD     #6,SP
 4855 007370            ENDMSG
  (3) 007370                                                              L10006:
  (3) 007370 104423                                                                  TRAP    C$MSG
 4856
 4857 007372            BGNMSG  ERRG9
  (3) 007372                                                              ERRG9::
 4858 007372                    PRINTB  #FMG4                   ;PRINT HEADER
```

```
   (7)  007372  012746  011332                                                    MOV     #FMG4,-(SP)
   (6)  007376  012746  000001                                                    MOV     #1,-(SP)
   (3)  007402  010600                                                            MOV     SP,R0
   (4)  007404  104414                                                            TRAP    C$PNTB
   (4)  007406  062706  000004                                                    ADD     #4,SP
 4859   007412                       PRINTB  #FMG12,CSR6,<B,@CSR6>   ;PRINT THE LOW BYTE OF CSR6
   (9)  007412  005046                                                            CLR     -(SP)
   (9)  007414  157716  172654                                                    BISB    @CSR6,(SP)
   (8)  007420  013746  002274                                                    MOV     CSR6,-(SP)
   (7)  007424  012746  011704                                                    MOV     #FMG12,-(SP)
   (6)  007430  012746  000003                                                    MOV     #3,-(SP)
   (3)  007434  010600                                                            MOV     SP,R0
   (4)  007436  104414                                                            TRAP    C$PNTB
   (4)  007440  062706  000010                                                    ADD     #10,SP
 4860   007444                       PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
   (8)  007444  005046                                                            CLR     -(SP)
   (8)  007446  150116                                                            BISB    R1,(SP)
   (7)  007450  012746  011377                                                    MOV     #FMG5,-(SP)
   (6)  007454  012746  000002                                                    MOV     #2,-(SP)
   (3)  007460  010600                                                            MOV     SP,R0
   (4)  007462  104414                                                            TRAP    C$PNTB
   (4)  007464  062706  000006                                                    ADD     #6,SP
 4861   007470             ENDMSG
   (3)  007470                                                          L10007:
   (3)  007470  104423                                                            TRAP    C$MSG
 4862
 4863   007472             BGNMSG  ERRG10
   (3)  007472                                                          ERRG10::
 4864   007472                       PRINTB  #FMG4                   ;PRINT HEADER
   (7)  007472  012746  011332                                                    MOV     #FMG4,-(SP)
   (6)  007476  012746  000001                                                    MOV     #1,-(SP)
   (3)  007502  010600                                                            MOV     SP,R0
   (4)  007504  104414                                                            TRAP    C$PNTB
   (4)  007506  062706  000004                                                    ADD     #4,SP
 4865   007512                       PRINTB  #FMG13,CSR7,<B,@CSR7>   ;PRINT THE HIGH BYTE OF CSR6
   (9)  007512  005046                                                            CLR     -(SP)
   (9)  007514  157716  172564                                                    BISB    @CSR7,(SP)
   (8)  007520  013746  002304                                                    MOV     CSR7,-(SP)
   (7)  007524  012746  011750                                                    MOV     #FMG13,-(SP)
   (6)  007530  012746  000003                                                    MOV     #3,-(SP)
   (3)  007534  010600                                                            MOV     SP,R0
   (4)  007536  104414                                                            TRAP    C$PNTB
   (4)  007540  062706  000010                                                    ADD     #10,SP
 4866   007544                       PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
   (8)  007544  005046                                                            CLR     -(SP)
   (8)  007546  150116                                                            BISB    R1,(SP)
   (7)  007550  012746  011377                                                    MOV     #FMG5,-(SP)
   (6)  007554  012746  000002                                                    MOV     #2,-(SP)
   (3)  007560  010600                                                            MOV     SP,R0
   (4)  007562  104414                                                            TRAP    C$PNTB
   (4)  007564  062706  000006                                                    ADD     #6,SP
 4867   007570             ENDMSG
   (3)  007570                                                          L10C10:
   (3)  007570  104423                                                            TRAP    C$MSG
 4868
 4869
```

```
 4870  007572                          BGNMSG  ERRG11
  (3)  007572                                                                  ERRG11::
 4871  007572  005737  002416                  TST     SUBRPC                 ;WAS THE RESET ERRUR FOUND IN THE SUB
 4872  007576  001412                          BEQ     5$                     ;IF NOT SKIP
 4873  007600                                  PRINTB  #FMG23,SUBRPC          ;PRINT WHERE CALLED
  (8)  007600  013746  002416                                                                  MOV     SUBRPC,-(SP)
  (7)  007604  012746  012536                                                                  MOV     #FMG23,-(SP)
  (6)  007610  012746  000002                                                                  MOV     #2,-(SP)
  (3)  007614  010600                                                                          MOV     SP,R0
  (4)  007616  104414                                                                          TRAP    C$PNTB
  (4)  007620  062706  000006                                                                  ADD     #6,SP
 4874  007624                          5$:
 4875  007624                                  PRINTB  #FMG4                  ;PRINT HEADER
  (7)  007624  012746  011332                                                                  MOV     #FMG4,-(SP)
  (6)  007630  012746  000001                                                                  MOV     #1,-(SP)
  (3)  007634  010600                                                                          MOV     SP,R0
  (4)  007636  104414                                                                          TRAP    C$PNTB
  (4)  007640  062706  000004                                                                  ADD     #4,SP
 4876  007644                                  PRINTB  #FMG7,CSR0,<8,@CSR0>   ;PRINT THE LOW BYTE OF CSR0
  (9)  007644  005046                                                                          CLR     -(SP)
  (9)  007646  157716  172414                                                                  BISB    @CSR0,(SP)
  (8)  007652  013746  002266                                                                  MOV     CSR0,-(SP)
  (7)  007656  012746  011413                                                                  MOV     #FMG7,-(SP)
  (6)  007662  012746  000003                                                                  MOV     #3,-(SP)
  (3)  007666  010600                                                                          MOV     SP,R0
  (4)  007670  104414                                                                          TRAP    C$PNTB
  (4)  007672  062706  000010                                                                  ADD     #10,SP
 4877  007676                                  PRINTB  #FMG5,#0               ;PRINT EXPECTED CONTENTS
  (8)  007676  012746  000000                                                                  MOV     #0,-(SP)
  (7)  007702  012746  011377                                                                  MOV     #FMG5,-(SP)
  (6)  007706  012746  000002                                                                  MOV     #2,-(SP)
  (3)  007712  010600                                                                          MOV     SP,R0
  (4)  007714  104414                                                                          TRAP    C$PNTB
  (4)  007716  062706  000006                                                                  ADD     #6,SP
 4878  007722                                  PRINTB  #FMG10,CSR4,<8,@CSR4>  ;PRINT THE LOW BYTE OF CSR4
  (9)  007722  005046                                                                          CLR     -(SP)
  (9)  007724  157716  172342                                                                  BISB    @CSR4,(SP)
  (8)  007730  013746  002272                                                                  MOV     CSR4,-(SP)
  (7)  007734  012746  011574                                                                  MOV     #FMG10,-(SP)
  (6)  007740  012746  000003                                                                  MOV     #3,-(SP)
  (3)  007744  010600                                                                          MOV     SP,R0
  (4)  007746  104414                                                                          TRAP    C$PNTB
  (4)  007750  062706  000010                                                                  ADD     #10,SP
 4879  007754                                  PRINTB  #FMG5,#TBE             ;PRINT EXPECTED CONTENTS
  (8)  007754  012746  000004                                                                  MOV     #TBE,-(SP)
  (7)  007760  012746  011377                                                                  MOV     #FMG5,-(SP)
  (6)  007764  012746  000002                                                                  MOV     #2,-(SP)
  (3)  007770  010600                                                                          MOV     SP,R0
  (4)  007772  104414                                                                          TRAP    C$PNTB
  (4)  007774  062706  000006                                                                  ADD     #6,SP
 4880  010000                                  PRINTB  #FMG11,PCR,<8,@PCR>    ;PRINT THE HIGH BYTE OF CSR4
  (9)  010000  005046                                                                          CLR     -(SP)
  (9)  010002  157716  172274                                                                  BISB    @PCR,(SP)
  (8)  010006  013746  002302                                                                  MOV     PCR,-(SP)
  (7)  010012  012746  011640                                                                  MOV     #FMG11,-(SP)
  (6)  010016  012746  000003                                                                  MOV     #3,-(SP)
```

```
  (3)  010022  010600                                                                      MOV     SP,R0
  (4)  010024  104414                                                                      TRAP    C$PNTB
  (4)  010026  062706  000010                                                              ADD     #10,SP
 4881  010032                           PRINTB  #FMG5,#0                 ;PRINT EXPECTED CONTENTS
  (8)  010032  012746  000000                                                              MOV     #0,-(SP)
  (7)  010036  012746  011377                                                              MOV     #FMG5,-(SP)
  (6)  010042  012746  000002                                                              MOV     #2,-(SP)
  (3)  010046  010600                                                                      MOV     SP,R0
  (4)  010050  104414                                                                      TRAP    C$PNTB
  (4)  010052  062706  000006                                                              ADD     #6,SP
 4882  010056                           PRINTB  #FMG12,CSR6,<B,@CSR6>    ;PRINT THE LOW BYTE OF CSR6
  (9)  010056  005046                                                                      CLR     -(SP)
  (9)  010060  157716  172210                                                              BISB    @CSR6,(SP)
  (8)  010064  013746  002274                                                              MOV     CSR6,-(SP)
  (7)  010070  012746  011704                                                              MOV     #FMG12,-(SP)
  (6)  010074  012746  000003                                                              MOV     #3,-(SP)
  (3)  010100  010600                                                                      MOV     SP,R0
  (4)  010102  104414                                                                      TRAP    C$PNTB
  (4)  010104  062706  000010                                                              ADD     #10,SP
 4883  010110                           PRINTB  #FMG5,#0                 ;PRINT EXPECTED CONTENTS
  (8)  010110  012746  000000                                                              MOV     #0,-(SP)
  (7)  010114  012746  011377                                                              MOV     #FMG5,-(SP)
  (6)  010120  012746  000002                                                              MOV     #2,-(SP)
  (3)  010124  010600                                                                      MOV     SP,R0
  (4)  010126  104414                                                                      TRAP    C$PNTB
  (4)  010130  062706  000006                                                              ADD     #6,SP
 4884  010134                           PRINTB  #FMG13,CSR7,<B,@CSR7>    ;PRINT THE HIGH BYTE OF CSR6
  (9)  010134  005046                                                                      CLR     -(SP)
  (9)  010136  157716  172142                                                              BISB    @CSR7,(SP)
  (8)  010142  013746  002304                                                              MOV     CSR7,-(SP)
  (7)  010146  012746  011750                                                              MOV     #FMG13,-(SP)
  (6)  010152  012746  000003                                                              MOV     #3,-(SP)
  (3)  010156  010600                                                                      MOV     SP,R0
  (4)  010160  104414                                                                      TRAP    C$PNTB
  (4)  010162  062706  000010                                                              ADD     #10,SP
 4885  010166                           PRINTB  #FMG5,#0                 ;PRINT EXPECTED CONTENTS
  (8)  010166  012746  000000                                                              MOV     #0,-(SP)
  (7)  010172  012746  011377                                                              MOV     #FMG5,-(SP)
  (6)  010176  012746  000002                                                              MOV     #2,-(SP)
  (3)  010202  010600                                                                      MOV     SP,R0
  (4)  010204  104414                                                                      TRAP    C$PNTB
  (4)  010206  062706  000006                                                              ADD     #6,SP
 4886  010212                   ENDMSG
  (3)  010212                                                                   L10011:
  (3)  010212  104423                                                                      TRAP    C$MSG
 4887
 4888  010214                   BGNMSG  ERRG12
  (3)  010214                                                                   ERRG12::
 4889  010214                           PRINTB  #FMG3,SUBRPC             ;PC THAT SUBROUTINE WAS CALLED.
  (8)  010214  013746  002416                                                              MOV     SUBRPC,-(SP)
  (7)  010220  012746  011260                                                              MOV     #FMG3,-(SP)
  (6)  010224  012746  000002                                                              MOV     #2,-(SP)
  (3)  010230  010600                                                                      MOV     SP,R0
  (4)  010232  104414                                                                      TRAP    C$PNTB
  (4)  010234  062706  000006                                                              ADD     #6,SP
 4890  010240                           PRINTB  #FMG14,REG,R1,R2         ;PRINT TIME OUT ERROR
```

```
   (10) 010240  010246                                                                  MOV     R2,-(SP)
   (9)  010242  010146                                                                  MOV     R1,-(SP)
   (8)  010244  013746  002374                                                          MOV     REG,-(SP)
   (7)  010250  012746  012014                                                          MOV     #FMG14,-(SP)
   (6)  010254  012746  000004                                                          MOV     #4,-(SP)
   (3)  010260  010600                                                                  MOV     SP,R0
   (4)  010262  104414                                                                  TRAP    C$PNTB
   (4)  010264  062706  000012                                                          ADD     #12,SP
  4891  010270                        ENDMSG
   (3)  010270                                                                  L10012:
   (3)  010270  104423                                                                  TRAP    C$MSG
  4892
  4893  010272                        BGNMSG  ERRG13
   (3)  010272                                                                  ERRG13::
  4894  010272  032777  000004  171766        BIT     #RTS,@RXCSR             ;IS RTS SET
  4895  010300  001413                        BEQ     5$
  4896  010302  012701  030004                MOV     #RTS!CTS!RR,R1          ;SET UP THE EXPECTED RESULTS
  4897  010306                                PRINTB  #FMG17
   (7)  010306  012746  012144                                                          MOV     #FMG17,-(SP)
   (6)  010312  012746  000001                                                          MOV     #1,-(SP)
   (3)  010316  010600                                                                  MOV     SP,R0
   (4)  010320  104414                                                                  TRAP    C$PNTB
   (4)  010322  062706  000004                                                          ADD     #4,SP
  4898  010326  000544                        BR      20$
  4899  010330                        5$:
  4900  010330  032777  000002  171730        BIT     #DTR,@RXCSR             ;IS DTR SET?
  4901  010336  001413                        BEQ     10$                     ;BR IF NOT
  4902  010340  012701  040002                MOV     #DTR!IC,R1              ;SET UP THE EXPECTED RESULTS
  4903  010344                                PRINTB  #FMG18
   (7)  010344  012746  012221                                                          MOV     #FMG18,-(SP)
   (6)  010350  012746  000001                                                          MOV     #1,-(SP)
   (3)  010354  010600                                                                  MOV     SP,R0
   (4)  010356  104414                                                                  TRAP    C$PNTB
   (4)  010360  062706  000004                                                          ADD     #4,SP
  4904  010364  000525                        BR      20$
  4905  010366                        10$:
  4906  010366  032777  000010  171672        BIT     #LL,@RXCSR              ;IS LOCAL LOOP SET
  4907  010374  001433                        BEQ     15$
  4908  010376  012701  001010                MOV     #LL!DM,R1               ;SET UP THE EXPECTED RESULTS
  4909  010402                                PRINTB  #FMG19
   (7)  010402  012746  012270                                                          MOV     #FMG19,-(SP)
   (6)  010406  012746  000001                                                          MOV     #1,-(SP)
   (3)  010412  010600                                                                  MOV     SP,R0
   (4)  010414  104414                                                                  TRAP    C$PNTB
   (4)  010416  062706  000004                                                          ADD     #4,SP
  4910  010422                                PRINTB  #FMG21
   (7)  010422  012746  012422                                                          MOV     #FMG21,-(SP)
   (6)  010426  012746  000001                                                          MOV     #1,-(SP)
   (3)  010432  010600                                                                  MOV     SP,R0
   (4)  010434  104414                                                                  TRAP    C$PNTB
   (4)  010436  062706  000004                                                          ADD     #4,SP
  4911  010442                                PRINTB  #FMG29
   (7)  010442  012746  013221                                                          MOV     #FMG29,-(SP)
   (6)  010446  012746  000001                                                          MOV     #1,-(SP)
   (3)  010452  010600                                                                  MOV     SP,R0
   (4)  010454  104414                                                                  TRAP    C$PNTB
```

```
 (4)  010456  062706  000004                                                                  ADD     #4,SP
      010462  000466                            BR      20$

      010464                            15$:
      010464  032777  000001  171574            BIT     #SF,@RXCSR              ;IS SEL FREQ SET?
      010472  001520                            BEQ     25$                     ;IF NONE OF THOSE BITS SET - ERROR
      010474  012701  000040                    MOV     #SQ,R1                  ;SET UP THE EXPECTED RESULTS
      010500                                    PRINTB  #FMG20
 (7)  010500  012746  012335                                                                  MOV     #FMG20,-(SP)
 (6)  010504  012746  000001                                                                  MOV     #1,-(SP)
 (3)  010510  010600                                                                          MOV     SP,R0
 (4)  010512  104414                                                                          TRAP    C$PNTB
 (4)  010514  062706  000004                                                                  ADD     #4,SP
      010520                                    PRINTB  #FMG21
 (7)  010520  012746  012422                                                                  MOV     #FMG21,-(SP)
 (6)  010524  012746  000001                                                                  MOV     #1,-(SP)
 (3)  010530  010600                                                                          MOV     SP,R0
 (4)  010532  104414                                                                          TRAP    C$PNTB
 (4)  010534  062706  000004                                                                  ADD     #4,SP
      010540                                    PRINTB  #FMG4                   ;PRINT HEADER
 (7)  010540  012746  011332                                                                  MOV     #FMG4,-(SP)
 (6)  010544  012746  000001                                                                  MOV     #1,-(SP)
 (3)  010550  010600                                                                          MOV     SP,R0
 (4)  010552  104414                                                                          TRAP    C$PNTB
 (4)  010554  062706  000004                                                                  ADD     #4,SP
      010560                                    PRINTB  #FMG10,CSR4,<B,@CSR4>   ;PRINT THE LOW BYTE OF CSR4
 (9)  010560  005046                                                                          CLR     -(SP)
 (9)  010562  157716  171504                                                                  BISB    @CSR4,(SP)
 (8)  010566  013746  002272                                                                  MOV     CSR4,-(SP)
 (7)  010572  012746  011574                                                                  MOV     #FMG10,-(SP)
 (6)  010576  012746  000003                                                                  MOV     #3,-(SP)
 (3)  010602  010600                                                                          MOV     SP,R0
 (4)  010604  104414                                                                          TRAP    C$PNTB
 (4)  010606  062706  000010                                                                  ADD     #10,SP
      010612                                    PRINTB  #FMG5,<B,R1>            ;PRINT EXPECTED CONTENTS
 (8)  010612  005046                                                                          CLR     -(SP)
 (8)  010614  150116                                                                          BISB    R1,(SP)
 (7)  010616  012746  011377                                                                  MOV     #FMG5,-(SP)
 (6)  010622  012746  000002                                                                  MOV     #2,-(SP)
 (3)  010626  010600                                                                          MOV     SP,R0
 (4)  010630  104414                                                                          TRAP    C$PNTB
 (4)  010632  062706  000006                                                                  ADD     #6,SP
      010636  000447                            BR      30$

      010640                            20$:
      010640                                    PRINTB  #FMG4                   ;PRINT HEADER
 (7)  010640  012746  011332                                                                  MOV     #FMG4,-(SP)
 (6)  010644  012746  000001                                                                  MOV     #1,-(SP)
 (3)  010650  010600                                                                          MOV     SP,R0
 (4)  010652  104414                                                                          TRAP    C$PNTB
 (4)  010654  062706  000004                                                                  ADD     #4,SP
      010660                                    PRINTB  #FMG15,CSR0,@CSR0       ;PRINT THE LOW BYTE OF CSR0
 (9)  010660  017746  171402                                                                  MOV     @CSR0,-(SP)
 (8)  010664  013746  002266                                                                  MOV     CSR0,-(SP)
 (7)  010670  012746  012071                                                                  MOV     #FMG15,-(SP)
 (6)  010674  012746  000003                                                                  MOV     #3,-(SP)
```

```
  (3)  010700  010600                                                          MOV     SP,R0
  (4)  010702  104414                                                          TRAP    C$PNTB
  (4)  010704  062706  000010                                                  ADD     #10.SP
 4928  010710                       PRINTB  #FMG16,R1          ;PRINT EXPECTED CONTENTS
  (8)  010710  010146                                                          MOV     R1,-(SP)
  (7)  010712  012746  012133                                                  MOV     #FMG16,-(SP)
  (6)  010716  012746  000002                                                  MOV     #2,-(SP)
  (3)  010722  010600                                                          MOV     SP,R0
  (4)  010724  104414                                                          TRAP    C$PNTB
  (4)  010726  062706  000006                                                  ADD     #6,SP
 4929  010732  000411                       BR      30$
 4930  010734                       25$:
 4931  010734                       PRINTB  #FMG22,R2          ;PRINT BIT THAT ISN'T WRITTEN.
  (8)  010734  010246                                                          MOV     R2,-(SP)
  (7)  010736  012746  012471                                                  MOV     #FMG22,-(SP)
  (6)  010742  012746  000002                                                  MOV     #2,-(SP)
  (3)  010746  010600                                                          MOV     SP,R0
  (4)  010750  104414                                                          TRAP    C$PNTB
  (4)  010752  062706  000006                                                  ADD     #6,SP
 4932  010756                       30$:
 4933  010756                       ENDMSG
  (3)  010756                                                          L10013:
  (3)  010756  104423                                                          TRAP    C$MSG
 4934
 4935  010760                       BGNMSG  ERRG14
  (3)  010760                                                          ERRG14::
 4936  010760  005737  002416              TST     SUBRPC             ;IS THE ERROR IN A SUBROUTINE?
 4937  010764  001412                      BEQ     10$                ;IF NOT, DON'T PRINT SUBR. PC
 4938  010766                             PRINTB  #FMG3,SUBRPC       ;PC THAT SUBROUTINE WAS CALLED.
  (8)  010766  013746  002416                                                  MOV     SUBRPC,-(SP)
  (7)  010772  012746  011260                                                  MOV     #FMG3,-(SP)
  (6)  010776  012746  000002                                                  MOV     #2,-(SP)
  (3)  011002  010600                                                          MOV     SP,R0
  (4)  011004  104414                                                          TRAP    C$PNTB
  (4)  011006  062706  000006                                                  ADD     #6,SP
 4939  011012                       10$:
 4940  011012                       PRINTB  #FMG24,XMITD,RCOUNT      ;PRINT CHARACTERS XMITTED AND RCVD.
  (9)  011012  013746  002500                                                  MOV     RCOUNT,-(SP)
  (8)  011016  013746  002476                                                  MOV     XMITD,-(SP)
  (7)  011022  012746  012605                                                  MOV     #FMG24,-(SP)
  (6)  011026  012746  000003                                                  MOV     #3,-(SP)
  (3)  011032  010600                                                          MOV     SP,R0
  (4)  011034  104414                                                          TRAP    C$PNTB
  (4)  011036  062706  000010                                                  ADD     #10.SP
 4941  011042                       ENDMSG
  (3)  011042                                                          L10014:
  (3)  011042  104423                                                          TRAP    C$MSG
 4942
 4943  011044                       BGNMSG  ERRG15
  (3)  011044                                                          ERRG15::
 4944  011044                       PRINTB  #FMG25,R2          ;PRINT BIT THAT ISN'T CLEARED.
  (8)  011044  010246                                                          MOV     R2,-(SP)
  (7)  011046  012746  012652                                                  MOV     #FMG25,-(SP)
  (6)  011052  012746  000002                                                  MOV     #2,-(SP)
  (3)  011056  010600                                                          MOV     SP,R0
  (4)  011060  104414                                                          TRAP    C$PNTB
```

```
  (4)  011062  062706  000006                                                          ADD     #6,SP
 4945  011066                            ENDMSG
  (3)  011066                                                                 L10015:
  (3)  011066  104423                                                                  TRAP    C$MSG
 4946
 4947  011070  040445  047125  041101  FMG0:    .ASCIZ  /%AUNABLE TO RUN TEST %D2%A ON UNIT %D2%A WITHOUT TURNAROUND%N/
       011076  042514  052040  020117
       011104  052522  020116  042524
       011112  052123  022440  031104
       011120  040445  047440  020116
       011126  047125  052111  022440
       011134  031104  040445  053440
       011142  052111  047510  052125
       011150  052040  051125  040516
       011156  047522  047125  022504
       011164  000116
 4948  011166  040445  054122  051503  FMG1:    .ASCIZ  /%ARXCSR: %06%N%ARDSR : %06%N/
       011174  035122  022440  033117
       011202  047045  040445  042122
       011210  051123  035040  022440
       011216  033117  047045     000
 4949  011223     045  050101  051503  FMG2:    .ASCIZ  /%APCSCR: %06%N%ATDSR : %06%N/
       011230  051103  020072  047445
       011236  022466  022516  052101
       011244  051504  020122  020072
       011252  047445  022466  000116
 4950  011260  040445  051105  047522  FMG3:    .ASCIZ  /%AERROR IN SUBROUTINE CALLED AT PC: %06%N/
       011266  020122  047111  051440
       011274  041125  047522  052125
       011302  047111  020105  040503
       011310  046114  042105  040440
       011316  020124  041520  020072
       011324  047445  022466  000116
 4951  011332  051445  022471  034523  FMG4:    .ASCIZ  /%S9%S9%S9%S3%AFOUND:%S2%AEXPECTED:%N/
       011340  051445  022471  031523
       011346  040445  047506  047125
       011354  035104  051445  022462
       011362  042501  050130  041505
       011370  042524  035104  047045
       011376     000
 4952  011377     045  033523  047445  FMG5:    .ASCIZ  /%S7%03%N/
       011404  022463  000116
 4953  011410  047045     000          FMG6:    .ASCIZ  /%N/
 4954  011413     045  051101  041530  FMG7:    .ASCIZ  /%ARXCSR    = %06%A (EXTERNAL):  %03/
       011420  051123  020040  020040
       011426  020075  047445  022466
       011434  020101  042450  052130
       011442  051105  040516  024514
       011450  020072  022440  031517
       011456     000
 4955  011457     045  054101  044515  FMG8:    .ASCIZ  /%AXMIT DATA: %03%A RCV DATA: %03%N/
       011464  020124  040504  040524
       011472  020072  047445  022463
       011500  020101  041522  020126
       011506  040504  040524  020072
       011514  047445  022463  000116
```

```
 4956  011522  047045  040445  025052  FMG9:   .ASCIZ  /%N%A** CHECK -V FROM THE CHARGE PUMP **%N/
       011530  041440  042510  045503
       011536  026440  020126  051106
       011544  046517  052040  042510
       011552  041440  040510  043522
       011560  020105  052520  050115
       011566  025040  022452  000116
 4957  011574  040445  041520  041523  FMG10:  .ASCIZ  /%APCSCR    = %06%A (EXTERNAL):  %03/
       011602  020122  020040  036440
       011610  022440  033117  040445
       011616  024040  054105  042524
       011624  047122  046101  035051
       011632  020040  047445  000063
 4958  011640  040445  041520  020122  FMG11:  .ASCIZ  /%APCR      = %06%A (USYNRT R7): %03/
       011646  020040  020040  036440
       011654  022440  033117  040445
       011662  024040  051525  047131
       011670  052122  051040  024467
       011676  020072  047445  000063
 4959  011704  040445  027124  042040  FMG12:  .ASCIZ  /%AT. DATA  = %06%A (USYNRT R2): %03/
       011712  052101  020101  036440
       011720  022440  033117  040445
       011726  024040  051525  047131
       011734  052122  051040  024462
       011742  020072  047445  000063
 4960  011750  040445  027124  051440  FMG13:  .ASCIZ  /%AT. STATUS= %06%A (USYNRT R3): %03/
       011756  040524  052524  036523
       011764  022440  033117  040445
       011772  024040  051525  047131
       012000  052122  051040  024463
       012006  020072  047445  000063
 4961  012014  040445  047503  052116  FMG14:  .ASCIZ  /%ACONTENTS OF %06%A = %06%A   EXPECTED %06%N/
       012022  047105  051524  047440
       012030  020106  047445  022466
       012036  020101  020075  047445
       012044  022466  020101  020040
       012052  054105  042520  052103
       012060  042105  022440  033117
       012066  047045     000
 4962  012071     045  051101  041530  FMG15:  .ASCIZ  /%ARXCSR    = %06%A (EXTERNAL): %06/
       012076  051123  020040  036440
       012104  022440  033117  040445
       012112  024040  054105  042524
       012120  047122  046101  035051
       012126  022440  033117     000
 4963  012133     045  031523  047445  FMG16:  .ASCIZ  /%S3%06%N/
       012140  022466  000116
 4964  012144  040445  052122  020123  FMG17:  .ASCIZ  /%ARTS NOT TURNED AROUND TO CTS AND RR (CD)%N/
       012152  047516  020124  052524
       012160  047122  042105  040440
       012166  047522  047125  020104
       012174  047524  041440  051524
       012202  040440  042116  051040
       012210  020122  041450  024504
       012216  047045     000
 4965  012221     045  042101  051124  FMG18:  .ASCIZ  /%ADTR NOT TURNED AROUND TO IC (RING)%N/
```

```
                012226  047040  052117  052040
                012234  051125  042516  020104
                012242  051101  052517  042116
                012250  052040  020117  041511
                012256  024040  044522  043516
                012264  022451  000116
 4966           012270  040445  046114  047040  FMG19:  .ASCIZ  /%ALL NOT TURNED AROUND TO DM (DSR)%N/
                012276  052117  052040  051125
                012304  042516  020104  051101
                012312  052517  042116  052040
                012320  020117  046504  024040
                012326  051504  024522  047045
                012334     000
 4967           012335     045  051101  020114  FMG20:  .ASCIZ  /%ARL NOT TURNED AROUND TO TEST MODE (SIG. QUALITY)%N/
                012342  047516  020124  052524
                012350  047122  042105  040440
                012356  047522  047125  020104
                012364  047524  052040  051505
                012372  020124  047515  042504
                012400  024040  044523  027107
                012406  050440  040525  044514
                012414  054524  022451  000116
 4968           012422  040445  044103  041505  FMG21:  .ASCIZ  /%ACHECK THAT THE JUMPER IS INSTALLED%N/
                012430  020113  044124  052101
                012436  052040  042510  045040
                012444  046525  042520  020122
                012452  051511  044440  051516
                012460  040524  046114  042105
                012466  047045     000
 4969           012471     045  041501  047101  FMG22:  .ASCIZ  /%ACAN'T WRITE BIT %O6%A INTO RXCSR%N/
                012476  052047  053440  044522
                012504  042524  041040  052111
                012512  022440  033117  040445
                012520  044440  052116  020117
                012526  054122  051503  022522
                012534  000116
 4970           012536  040445  042522  042523  FMG23:  .ASCIZ  /%ARESET SUBROUTINE CALLED AT PC: %O6%N/
                012544  020124  052523  051102
                012552  052517  044524  042516
                012560  041440  046101  042514
                012566  020104  052101  050040
                012574  035103  022440  033117
                012602  047045     000
 4971           012605     045  052101  040522  FMG24:  .ASCIZ  /%ATRANSMITTED: %D2%A RECEIVED: %D2%N/
                012612  051516  044515  052124
                012620  042105  020072  042045
                012626  022462  020101  042522
                012634  042503  053111  042105
                012642  020072  042045  022462
                012650  000116
 4972           012652  040445  040503  023516  FMG25:  .ASCIZ  /%ACAN'T CLEAR BIT %O6%A IN RXCSR%N/
                012660  020124  046103  040505
                012666  020122  044502  020124
                012674  047445  022466  020101
                012702  047111  051040  041530
                012710  051123  047045     000
```

```
4973 012715    045 047101 052117 FMG26:  .ASCIZ  /%ANOTE: DATA SET INTERRUPT MAY BE DISABLED - CHECK JUMPER%N/
     012722 035105 042040 052101
     012730 020101 042523 020124
     012736 047111 042524 051122
     012744 050125 020124 040515
     012752 020131 042502 042040
     012760 051511 041101 042514
     012766 020104 020055 044103
     012774 041505 020113 052512
     013002 050115 051105 047045
     013010    000
4974 013011    045 052101 051505 FMG27:  .ASCII  /%ATEST %D2%A WILL ONLY RUN WITH RS422 ON A LSI-11/
     013016 020124 042045 022462
     013024 020101 044527 046114
     013032 047440 046116 020131
     013040 052522 020116 044527
     013046 044124 051040 032123
     013054 031062 047440 020116
     013062 020101 051514 026511
     013070 030461
4975 013072    057                        .BYTE   57
4976 013073    062 022463 000116          .ASCIZ  /23%N/
4977 013100 040445 043111 041440 FMG28:  .ASCII  /%AIF CPU IS A M7264 WITH MEMORY REFRESH ENABLED, A HIGH/
     013106 052520 044440 020123
     013114 020101 033515 033062
     013122 020064 044527 044124
     013130 046440 046505 051117
     013136 020131 042522 051106
     013144 051505 020110 047105
     013152 041101 042514 026104
     013160 040440 044040 043511
     013166    110
4978 013167    045 020101 050123          .ASCIZ  /%A SPEED TEST CAN'T RUN%N/
     013174 042505 020104 042524
     013202 052123 041440 047101
     013210 052047 051040 047125
     013216 047045    000
4979 013221    045 025101 020052 FMG29:  .ASCIZ  /%A** IF M8020 JUMPERED FOR RS422, THIS ERROR EXPECTED **%N/
     013226 043111 046440 030070
     013234 030062 045040 046525
     013242 042520 042522 020104
     013250 047506 020122 051522
     013256 031064 026062 052040
     013264 044510 020123 051105
     013272 047522 020122 054105
     013300 042520 052103 042105
     013306 025040 022452 000116
4980 013314 040445 025052 041440 FMG30:  .ASCIZ  /%A** CHECK BYTE OP SIGNAL   STUCK LOW ?? **%N/
     013322 042510 045503 041040
     013330 052131 020105 050117
     013336 051440 043511 040516
     013344 020114 020055 052123
     013352 041525 020113 047514
     013360 020127 037477 025040
     013366 022452 000116
4981
```

```
 4982  013372  042522  042523  020124  EMG0:   .ASCIZ  /RESET ERROR AFTER BUS RESET (DETECTED ONLY ON 1ST PASS)/
       013400  051105  047522  020122
       013406  043101  042524  020122
       013414  052502  020123  042522
       013422  042523  020124  042050
       013430  052105  041505  042524
       013436  020104  047117  054514
       013444  047440  020116  051461
       013452  020124  040520  051523
       013460  000051
 4983  013462  044524  042515  047440  EMG1:   .ASCIZ  /TIME OUT/
       013470  052125     000
 4984  013473     124  046511  020105  EMG2:   .ASCIZ  /TIME OUT   DURING INTERRUPT EXERCISE/
       013500  052517  020124  020055
       013506  052504  044522  043516
       013514  044440  052116  051105
       013522  052522  052120  042440
       013530  042530  041522  051511
       013536  000105
 4985  013540  042522  042523  020124  EMG3:   .ASCIZ  /RESET ERROR/
       013546  051105  047522  000122
 4986  013554  051503  020122  042522  EMG4:   .ASCIZ  /CSR READ-WRITE ERROR/
       013562  042101  053455  044522
       013570  042524  042440  051122
       013576  051117     000
 4987  013601     125  054523  051116  EMG5:   .ASCIZ  /USYNRT XMIT ACTIVE NOT SET/
       013606  020124  046530  052111
       013614  040440  052105  053111
       013622  020105  047516  020124
       013630  042523  000124
 4988  013634  051525  047131  052122  EMG6:   .ASCIZ  /USYNRT XMIT ACTIVE NOT CLEAR/
       013642  054040  044515  020124
       013650  041501  044524  042526
       013656  047040  052117  041440
       013664  042514  051101     000
 4989  013671     124  042502  047040  EMG7:   .ASCIZ  /TBE NOT CLEAR/
       013676  052117  041440  042514
       013704  051101     000
 4990  013707     124  042502  047040  EMG8:   .ASCIZ  /TBE NOT SET/
       013714  052117  051440  052105
       013722     000
 4991  013723     130  044515  020124  EMG9:   .ASCIZ  /XMIT INTERRUPT NOT RECEIVED/
       013730  047111  042524  051122
       013736  050125  020124  047516
       013744  020124  042522  042503
       013752  053111  042105     000
 4992  013757     130  044515  020124  EMG10:  .ASCIZ  /XMIT INTERRUPT RECEIVED WHEN NOT EXPECTED/
       013764  047111  042524  051122
       013772  050125  020124  042522
       014000  042503  053111  042105
       014006  053440  042510  020116
       014014  047516  020124  054105
       014022  042520  052103  042105
       014030     000
 4993  014031     122  041505  044505  EMG11:  .ASCIZ  /RECEIVER NOT DEACTIVATED/
       014036  042526  020122  047516
```

```
        014044  020124  042504  041501
        014052  044524  040526  042524
        014060  000104
  4994  014062  042522  042503  053111  EMG12:  .ASCIZ  /RECEIVER NOT ACTIVE/
        014070  051105  047040  052117
        014076  040440  052103  053111
        014104  000105
  4995  014106  042522  042503  053111  EMG13:  .ASCIZ  /RECEIVER NOT INITIALIZED AFTER RECEIVER DISABLED/
        014114  051105  047040  052117
        014122  044440  044516  044524
        014130  046101  055111  042105
        014136  040440  052106  051105
        014144  051040  041505  044505
        014152  042526  020122  044504
        014160  040523  046102  042105
        014166     000
  4996  014167     122  041505  044505  EMG14:  .ASCIZ  /RECEIVER ACTIVE BEFORE FIRST DATA CHARACTER/
        014174  042526  020122  041501
        014202  044524  042526  041040
        014210  043105  051117  020105
        014216  044506  051522  020124
        014224  040504  040524  041440
        014232  040510  040522  052103
        014240  051105     000
  4997  014243     122  053103  044440  EMG15:  .ASCIZ  /RCV INTERRUPT NOT RECEIVED/
        014250  052116  051105  052522
        014256  052120  047040  052117
        014264  051040  041505  044505
        014272  042526  000104
  4998  014276  041522  020126  047111  EMG16:  .ASCIZ  /RCV INTERRUPT RECEIVED BEFORE EXPECTED/
        014304  042524  051122  050125
        014312  020124  042522  042503
        014320  053111  042105  041040
        014326  043105  051117  020105
        014334  054105  042520  052103
        014342  042105     000
  4999  014345     122  053103  042440  EMG17:  .ASCIZ  /RCV END OF MESSAGE NOT RECEIVED/
        014352  042116  047440  020106
        014360  042515  051523  043501
        014366  020105  047516  020124
        014374  042522  042503  053111
        014402  042105     000
  5000  014405     122  053103  051440  EMG18:  .ASCIZ  /RCV STATUS NOT CLEARED/
        014412  040524  052524  020123
        014420  047516  020124  046103
        014426  040305  042522  000104
  5001  014434  041522  020126  053117  EMG19:  .ASCIZ  /RCV OVERRUN NOT RECEIVED/
        014442  051105  052522  020116
        014450  047516  020124  042522
        014456  042503  053111  042105
        014464     000
  5002  014465     122  053103  040440  EMG20:  .ASCIZ  /RCV ABORT NOT RECEIVED/
        014472  047502  052122  047040
        014500  052117  051040  041505
        014506  044505  042526  000104
  5003  014514  041522  020126  052123  EMG21:  .ASCIZ  /RCV STATUS INTERRUPT NOT RECEIVED/
```

```
        014522  052101  051525  044440
        014530  052116  051105  052522
        014536  052120  047040  052117
        014544  051040  041505  044505
        014552  042526  000104
  5004  014556  047515  042504  020115  EMG22:  .ASCIZ  /MODEM LOOPBACK ERROR/
        014564  047514  050117  040502
        014572  045503  042440  051122
        014600  051117     000
  5005  014603     115  042117  046505  EMG23:  .ASCIZ  /MODEM STATUS INTERRUPT RECEIVED WHEN DISABLED/
        014610  051440  040524  052524
        014616  020123  047111  042524
        014624  051122  050125  020124
        014632  042522  042503  053111
        014640  042105  053440  042510
        014646  020116  044504  040523
        014654  046102  042105     000
  5006  014661     115  042117  046505  EMG24:  .ASCIZ  /MODEM STATUS INTERRUPT NOT RECEIVED/
        014666  051440  040524  052524
        014674  020123  047111  042524
        014702  051122  050125  020124
        014710  047516  020124  042522
        014716  042503  053111  042105
        014724     000
  5007  014725     103  040510  040522  EMG25:  .ASCIZ  /CHARACTER COUNT ERROR/
        014732  052103  051105  041440
        014740  052517  052116  042440
        014746  051122  051117     000
  5008  014753     104  052101  020101  EMG26:  .ASCIZ  /DATA ERROR/
        014760  051105  047522  000122
  5009  014766  046530  052111  052440  EMG30:  .ASCIZ  /XMIT UNDERRUN/
        014774  042116  051105  052522
        015002  000116
  5010  015004  042522  042503  053111  EMG31:  .ASCIZ  /RECEIVER ERROR/
        015012  051105  042440  051122
        015020  051117     000
  5011  015023     101  047502  052122  EMG32:  .ASCIZ  /ABORT NOT RECEIVED/
        015030  047040  052117  051040
        015036  041505  044505  042526
        015044  000104
  5012  015046  047507  040440  042510  EMG33:  .ASCIZ  /GO AHEAD NOT RECEIVED/
        015054  042101  047040  052117
        015062  051040  041505  044505
        015070  042526  000104
  5013  015074  041101  051117  020124  EMG34:  .ASCIZ  /ABORT RECEIVED WHEN NOT EXPECTED/
        015102  042522  042503  053111
        015110  042105  053440  042510
        015116  020116  047516  020124
        015124  054105  042520  052103
        015132  042105     000
  5014  015135     101  042104  042522  EMG35:  .ASCIZ  /ADDRESS INCORRECTLY RECOGNIZED/
        015142  051523  044440  041516
        015150  051117  042522  052103
        015156  054514  051040  041505
        015164  043517  044516  042532
        015172  000104
```

```
  5015  015174  051501  042523  041115  EMG36:  .ASCIZ  /ASSEMBLED BIT COUNT ERROR/
        015202  042514  020104  044502
        015210  020124  047503  047125
        015216  020124  051105  047522
        015224  000122
  5016  015226  051103  020103  051105  EMG37:  .ASCIZ  /CRC ERROR/
        015234  047522  000122
  5017  015240  051103  020103  051105  EMG38:  .ASCIZ  /CRC ERROR NOT DETECTED/
        015246  047522  020122  047516
        015254  020124  042504  042524
        015262  052103  042105     000
  5018  015267     120  051101  052111  EMG39:  .ASCIZ  /PARITY ERROR NOT DETECTED/
        015274  020131  051105  047522
        015302  020122  047516  020124
        015310  042504  042524  052103
        015316  042105     000
  5019  015321     115  046125  044524  EMG40:  .ASCIZ  /MULTIPLE MODEM CONTROL INTERRUPTS/
        015326  046120  020105  047515
        015334  042504  020115  047503
        015342  052116  047522  020114
        015350  047111  042524  051122
        015356  050125  051524     000
  5020          015364                          .EVEN
  5021
```

```
                                  .SBTTL  LOAD DEVICE PROTECTION TABLE

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

     015364                               BGNPROT
 (3) 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
```

```
5044                                      .SBTTL  INITIALIZE SECTION
5045
5046                                      ;//////////////////////////////////////////////////////////////////
5047                                      ;/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
5048                                      ;/ AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
5049                                      ;//////////////////////////////////////////////////////////////////
5050
5051  015372                              BGNINIT
 (3)  015372                                                                                L$INIT::
5052
5053  015372                                      SETPRI  #PRI07          ;SET DIAGNOSTIC PRIORITY = 7
 (3)  015372  012700  000340                                                                        MOV     #PRI07,R0
 (3)  015376  104441                                                                                TRAP    C$SPRI
5054  015400  010637  002372                      MOV     SP,PSTACK       ;STORE BASE LEVEL PROGRAM STACK POINTER
5055  015404  005037  002416                      CLR     SUBRPC          ;CLEAR STORAGE WORD FOR SUBROUTINE PC CALL
5056  015410  005037  002330                      CLR     ERROR           ;CLEAR ERROR FLAGS
5057                                                                      ;CLEAR MISC. FLAGS
5058  015414  005037  002334                      CLR     FLAG
5059  015420  005037  002376                      CLR     RFLAG
5060  015424  005037  002424                      CLR     TFLAG
5061  015430  005037  002366                      CLR     NXMFLG
5062  015434  005037  002316                      CLR     ABORT
5063  015440  005037  002432                      CLR     TOGGLE
5064  015444  005037  002370                      CLR     OVER
5065  015450  005037  002340                      CLR     HIGH
5066
5067  015454  005737  002310                      TST     FRSTIM          ;IS THIS THE TIME THROUGH AFTER LOAD?
5068  015460  001005                              BNE     1$              ;IF NOT - ERROR TRAP VECTOR ALREADY SAVED
5069  015462  012737  000001  002310              MOV     #1,FRSTIM       ;FLAG THAT WE'VE BEEN THRU THE 1ST TIME
5070  015470  005037  002312                      CLR     FRSPAS          ;CLEAR COUNTER FOR # OF PASSES AFTER LOAD
5071
5072  015474                              1$:
5073  015474                                      CLRVEC  #4              ;ENSURE VECTOR 4 IS IN NORMAL STATE.
 (3)  015474  012700  000004                                                                        MOV     #4,R0
 (3)  015500  104436                                                                                TRAP    C$CVEC
5074
5075  015502                                      READEF  #EF.START       ;IS THIS JUST STARTED?
 (3)  015502  012700  000040                                                                        MOV     #EF.START,R0
 (3)  015506  104447                                                                                TRAP    C$REFG
5076  015510                                      BCOMPLETE STARST        ;IF YES - BRANCH.
 (2)  015510  103416                                                                                BCS     STARST
5077  015512                                      READEF  #EF.RESTART     ;IS THIS A RESTART ?
 (3)  015512  012700  000037                                                                        MOV     #EF.RESTART,R0
 (3)  015516  104447                                                                                TRAP    C$REFG
5078  015520                                      BCOMPLETE STARST        ;IF YES - BRANCH.
 (2)  015520  103412                                                                                BCS     STARST
5079  015522                                      READEF  #EF.NEW         ;IS THIS A NEW PASS?
 (3)  015522  012700  000035                                                                        MOV     #EF.NEW,R0
 (3)  015526  104447                                                                                TRAP    C$REFG
5080  015530                                      BCOMPLETE NEWST         ;IF YES - BRANCH
 (2)  015530  103410                                                                                BCS     NEWST
5081  015532                                      READEF  #EF.CONTINUE    ;IS THIS A CONTINUATION?
 (3)  015532  012700  000036                                                                        MOV     #EF.CONTINUE,R0
 (3)  015536  104447                                                                                TRAP    C$REFG
5082  015540                                      BNCOMPLETE GETPRM       ;IF NOT - GET PARAMETERS
 (2)  015540  103013                                                                                BCC     GETPRM
```

```
 5083  015542  000137  016310                 JMP     END             ;OTHERWISE - DON'T INITIALIZE.
 5084
 5085  015546                             STARST:
 5086  015546  005037  002314                 CLR     STARES          ;CLEAR THE FLAG TO SHOW START/RESTART.
 5087
 5088  015552                             NEWST:
 5089  015552  012737  177777  002354         MOV     #-1,LOGDEV      ;INITIALIZE LOGICAL UNIT NUMBER.
 5090  015560  005237  002312                 INC     FRSPAS          ;INCREMENT # OF PASSES AFTER LOAD.
 5091  015564  005237  002314                 INC     STARES          ;INCREMENT # OF PASSES SINCE START/RESTART.
 5092  015570                             GETPRM:
 5093  015570  005237  002354                 INC     LOGDEV          ;NEXT LOGICAL UNIT TO BE TESTED
 5094  015574  023737  002354  002012         CMP     LOGDEV,L$UNIT   ;IS THE MAXIMUM UNIT # EXCEEDED?
 5095  015602  002363                         BGE     NEWST           ;IF YES - DO A NEW START
 5096  015604                                 GPHARD  LOGDEV,R1       ;GET THE P-TABLE POINTER INTO R1
  (3)  015604  013700  002354                                                         MOV     LOGDEV,R0
  (3)  015610  104442                                                                 TRAP    C$GPHRD
  (3)  015612  010001                                                                 MOV     R0,R1
 5097  015614                                 BNCOMPLETE  GETPRM      ;IF NOT AVAILABLE, GET THE NEXT ONE
  (2)  015614  103365                                                                 BCC     GETPRM
 5098  015616  011100                         MOV     (R1),R0         ;SAVE THE ADDRESS
 5099  015620  032700  000007                 BIT     #7,R0           ;DOES THIS DEVICE ADDRESS END IN NON-ZERO?
 5100  015624  001414                         BEQ     10$             ;IF NOT - OK (76XXX0)
 5101  015626  042711  000007                 BIC     #7,(R1)         ;MAKE IT 76XXX0
 5102  015632                                 PRINTB  #FINIT1,(R1),R0 ;INFORM THE USER
  (9)  015632  010046                                                                 MOV     R0,-(SP)
  (8)  015634  011146                                                                 MOV     (R1),-(SP)
  (7)  015636  012746  016312                                                         MOV     #FINIT1,-(SP)
  (6)  015642  012746  000003                                                         MOV     #3,-(SP)
  (3)  015646  010600                                                                 MOV     SP,R0
  (4)  015650  104414                                                                 TRAP    C$PNTB
  (4)  015652  062706  000010                                                         ADD     #10,SP
 5103  015656                                 10$:
 5104  015656  011137  002266                     MOV     (R1),CSR0       ;CSR ADDRESS 0 - RECEIVER CSR (RXCSR)
 5105                                                                     ;                READ/WRITE
 5106  015662  013737  002266  002276             MOV     CSR0,CSR1       ;SAVE HIGH BYTE ADDRESS
 5107  015670  005237  002276                     INC     CSR1
 5108  015674  011137  002270                     MOV     (R1),CSR2
 5109  015700  062737  000002  002270             ADD     #2,CSR2         ;CSR ADDRESS 2 - RECEIVE DATA/STATUS (RDSR)
 5110                                                                     ;                READ ONLY
 5111                                                                     ;CSR ADDRESS 2 - PARAMETER CONTROL/SYNCH ADDR
 5112                                                                     ;                (PCSAR) - WRITE ONLY
 5113  015706  013737  002270  002300             MOV     CSR2,CSR3       ;SAVE HIGH BYTE ADDRESS
 5114  015714  005237  002300                     INC     CSR3
 5115  015720  011137  002272                     MOV     (R1),CSR4
 5116  015724  062737  000004  002272             ADD     #4,CSR4         ;CSR ADDRESS 4 - TRANSMITTER CSR (TXCSR)
 5117                                                                     ;                READ/WRITE
 5118
 5119  015732  013737  002272  002302             MOV     CSR4,CSR5       ;CSR ADDRESS 5 - PARAMETER CONTROL REG (PCR)
 5120                                                                     ;                READ/WRITE
 5121  015740  005237  002302                     INC     CSR5            ;                PCR IS HI BYTE OF TXCSR
 5122  015744  012137  002274                     MOV     (R1)+,CSR6
 5123  015750  062737  000006  002274             ADD     #6,CSR6         ;CSR ADDRESS 6 - TRANSMIT DATA/STATUS (TDSR)
 5124                                                                     ;                READ/WRITE
 5125  015756  013737  002274  002304             MOV     CSR6,CSR7       ;SAVE HIGH BYTE ADDRESS
 5126  015764  005237  002304                     INC     CSR7
 5127  015770  011100                             MOV     (R1),R0         ;GET VECTOR
```

```
5128  015772  032700  000007          BIT     #7,R0           ;DOES THIS VECTOR END IN NON-ZERO?
5129  015776  001414                  BEQ     11$             ;IF NOT - OK (XXO)
5130  016000  042711  000007          BIC     #7,(R1)         ;MAKE IT XXO
5131  016004                          PRINTB  #FINIT2,(R1),R0 ;INFORM THE USER
 (9)  016004  010046                                                  MOV     R0,-(SP)
 (8)  016006  011146                                                  MOV     (R1),-(SP)
 (7)  016010  012746  016405                                          MOV     #FINIT2,-(SP)
 (6)  016014  012746  000003                                          MOV     #3,-(SP)
 (3)  016020  010600                                                  MOV     SP,R0
 (4)  016022  104414                                                  TRAP    C$PNTB
 (4)  016024  062706  000010                                          ADD     #10,SP
5132  016030                  11$:
5133  016030  011137  002262          MOV     (R1),RCVEC      ;RCV. VECTOR
5134  016034  012137  002264          MOV     (R1)+,XMTVEC    ;TRANSMIT VECTOR
5135  016040  062737  000004  002264  ADD     #4,XMTVEC       ;ADJUST XMIT VECTOR
5136
5137  016046  011137  002306          MOV     (R1),TURN       ;TURNAROUND.
5138  016052  012737  000020  002402  MOV     #RXENA,RXINI    ;RECEIVER INIT WORD
5139  016060  012737  000020  002436  MOV     #TXENA,TXINI    ;TRANSMITTER INIT WORD
5140  016066  005737  002306          TST     TURN            ;WHAT WAS THE TURNAROUND
5141  016072  001004                  BNE     15$             ;IF ACTUAL TURNAROUND DON'T SET MAINT MODE
5142  016074  052737  000010  002436  BIS     #MM,TXINI       ;SET THE MAINT. MODE BIT.
5143  016102  000422                  BR      20$
5144  016104                  15$:
5145  016104  052737  000004  002402  BIS     #RTS,RXINI      ;SET RTS FOR TURNAROUND LOOP.
5146  016112  022737  000003  002306  CMP     #3,TURN         ;LOCAL LOOPBACK?
5147  016120  001004                  BNE     17$             ;IF NOT SKIP.
5148  016122  052737  000012  002402  BIS     #LL!DTR,RXINI   ;SET LOCAL LOOP AND DTR.
5149  016130  000407                  BR      20$
5150  016132                  17$:
5151  016132  022737  000004  002306  CMP     #4,TURN         ;REMOTE LOOPBACK?
5152  016140  001003                  BNE     20$
5153  016142  052737  000003  002402  BIS     #DTR!RL,RXINI   ;SET REMOTE LOOP AND DTR
5154  016150                  20$:
5155  016150  013737  002402  002404  MOV     RXINI,RXINIT    ;SAVE RECEIVER INIT WORD
5156  016156  052737  000140  002404  BIS     #RXITEN!DSITEN,RXINIT ;MAKE IT AN INTERRUPT INIT WORD
5157  016164  013737  002436  002440  MOV     TXINI,TXINIT    ;SAVE TRANSMITTER INIT WORD
5158  016172  052737  000100  002440  BIS     #TXIE,TXINIT    ;MAKE IT AN INTERRUPT INIT WORD
5159  016200  012737  000120  002406  MOV     #RXITEN!RXENA,RXMINI    ;RCV INIT FOR MAINT. LOOP.
5160  016206  012737  000130  002442  MOV     #TXIE!TXENA!MM,TXMINI   ;TRANS INIT WITH MAINT. LOOP.
5161                                  ;DETERMINE PROCESSOR TYPE
5162  016214                          SETVEC  #10,#ILLGL,#PRI07 ;SET UP ILLEGAL INSTRUCTION TRAP
 (7)  016214  012746  000340                                          MOV     #PRI07,-(SP)
 (6)  016220  012746  017744                                          MOV     #ILLGL,-(SP)
 (5)  016224  012746  000010                                          MOV     #10,-(SP)
 (4)  016230  012746  000003                                          MOV     #3,-(SP)
 (3)  016234  104437                                                  TRAP    C$SVEC
 (2)  016236  062706  000010                                          ADD     #10,SP
5163  016242  000007                  MFPT                    ;MOVE PROCESSOR TYPE TO R0
5164                                  ;FOR AN LSI 11/23 R0 = 3
5165                                  ;FOR OTHER LSI THIS WILL RESULT IN AN
5166                                  ;ILLEGAL INSTRUCTION (R0=0).
5167  016244  010037  002324          MOV     R0,CPU          ;SAVE THE PROCESSOR TYPE
5168  016250                          CLRVEC  #10             ;RESTORE TRAP TO THE SUPERVISOR
 (3)  016250  012700  000010                                          MOV     #10,R0
 (3)  016254  104436                                                  TRAP    C$CVEC
```

```
 5169  016256  005737  002324                TST     CPU             ;IS THE CPU A LSI11/23 ?
 5170  016262  001004                        BNE     25$             ;BR IF YES
 5171  016264  012737  000020  002430        MOV     #20,TIMER       ;SET THE TIMER FOR A LSI11 OR 11/2.
 5172  016272  000403                        BR      30$
 5173  016274                          25$:
 5174  016274  012737  000050  002430        MOV     #50,TIMER       ;SET THE TIMER FOR A LSI-11/23.
 5175  016302                          30$:
 5176  016302  013737  002430  002412        MOV     TIMER,SAVTIM    ;STORE THE TIMER VALUE.
 5177  016310                          END:
 5178  016310                          ENDINIT
  (3)  016310                                                                  L10017:
  (3)  016310  104411                                                                  TRAP    C$INIT
 5179  016312  040445  025052  053440  FINIT1: .ASCIZ  /%A** WARNING - WILL ASSUME DPV ADDRESS %O6%A (NOT %O6%A)%N/
       016320  051101  044516  043516
       016326  026440  053440  046111
       016334  020114  051501  052523
       016342  042515  042040  053120
       016350  040440  042104  042522
       016356  051523  022440  033117
       016364  040445  024040  047516
       016372  020124  047445  022466
       016400  024501  047045     000
 5180  016405     045  025101  020052  FINIT2: .ASCIZ  /%A** WARNING - WILL ASSUME DPV VECTOR  %O3%A (NOT %O3%A)%N/
       016412  040527  047122  047111
       016420  020107  020055  044527
       016426  046114  040440  051523
       016434  046525  020105  050104
       016442  020126  042526  052103
       016450  051117  020040  047445
       016456  022463  020101  047050
       016464  052117  022440  031517
       016472  040445  022451  000116
 5181                                          .EVEN
 5182
 5183
 5184
 5185
 5186
```

AUTO DROP UNIT SECTION

```
                                .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.
                                ;////////////////////////////////////////////////////////////////////////

                                BGNAUTO
                                                                                L$AUTO::

                                        SETVEC  #4,#NXM,#PRI07  ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
 (7) 016500  012746  000340                                                             MOV     #PRI07,-(SP)
 (6) 016504  012746  017734                                                             MOV     #NXM,-(SP)
 (5) 016510  012746  000004                                                             MOV     #4,-(SP)
 (4) 016514  012746  000003                                                             MOV     #3, (SP)
 (3) 016520  104437                                                                     TRAP    C$SVEC
 (2) 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
 (3) 016544  013700  002354                                                             MOV     LOGDEV,R0
 (3) 016550  104451                                                                     TRAP    C$DODU
016552                                DOCLN                   ;CLEAN UP CODE.
 (3) 016552  104444                                                                     TRAP    C$DCLN
016554                                CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
 (3) 016554  012700  000004                                                             MOV     #4,R0
 (3) 016560  104436                                                                     TRAP    C$CVEC
016562                          10$:

                                ENDAUTO
 (3) 016562                                                                     L10020:
 (3) 016562  104461                                                                     TRAP    C$AUTO
```

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

```
                                .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
(3) 016602                                                                      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.
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
 5296  016722                          25$:
 5297  016722  017737  163342  002400          MOV     @RDSR,RSAVE     ;SAVE RECEIVE DATA AND STATUS.
 5298
 5299  016730                          ENDSRV
  (3)  016730                                                                          L10022:
  (2)  016730  000002                                                                          RTI
 5300
```

```
                        ;*****************************************************************
                        ;       RDATA - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - GENERAL PURPOSE RECEIVE INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDITIONS
                        ;                       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
(3)  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  000011  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
```

```
  5357  017100                                  20$:
  5358  017100  032737  002000  002346                BIT     @RSTARY,IRXCSR  ;IS STATUS SET?
  5359  017106  001410                              BEQ     50$
  5360  017110  032737  106000  002350                BIT     @ERR!ROVER!RABORT,IRDSR ;WAS THERE AN ERROR?
  5361  017116  001413                              BEQ     53$             ;IF NOT - MUST BE END OF MESSAGE.
  5362  017120  012737  177777  002376                MOV     #-1,RFLAG       ;OTHERWISE, SET ERROR FLAG.
  5363  017126  000412                              BR      54$
  5364  017130                                  50$:
  5365  017130  005737  002362                      TST     MODE            ;IS THIS BCP?
  5366  017134  001012                              BNE     55$             ;IF NOT - EXIT
  5367  017136  023737  002500  002474                CMP     RCOUNT,ECOUNT   ;HAVE WE RECEIVED ALL THE CHARACTERS
  5368  017144  001006                              BNE     55$             ;IF NOT - EXIT
  5369  017146                                  53$:
  5370  017146  012737  000001  002376                MOV     #1,RFLAG        ;SET FLAG
  5371  017154                                  54$:
  5372  017154  042777  000100  163104                BIC     @RXITEN,@RXCSR  ;DISABLE INTERRUPT
  5373  017162                                  55$:
  5374
  5375  017162                                  ENDSRV
   (3)  017162                                                                          L10023:
   (2   017162  000002                                                                          RTI
  5376
  5377
```

GLOBAL INTERRUPT HANDLING ROUTINES

```
5379                                    ;*****************************************************************
5380                                    ;       RDATA2 - INTERRUPT SERVICE ROUTINE
5381                                    ;
5382                                    ;       FUNCTION - HIGH SPEED RECEIVE INTERRUPT ROUTINE
5383                                    ;
5384                                    ;       ENTRY CONDTIONS
5385                                    ;                       COUNTER= # OF CHARACTERS BE RECEIVED
5386                                    ;                       R1     = ADDRESS OF BUFFER FOR NEXT CHARACTER
5387                                    ;
5388                                    ;       EXIT CONDITIONS
5389                                    ;                       RCOUNT = COUNT OF CHARACTERS RECEIVED
5390                                    ;                       RFLAG  = RECEIVE END FLAG ( 1 = NO ERROR, -1 = ERROR)
5391                                    ;                       R1     = INCREMENTED TO NEXT BYTE IN BUFFER.
5392                                    ;
5393                                    ;
5394                                    ;       USED IN TESTS: 42 & 43
5395                                    ;
5396                                    ;*****************************************************************
5397
5398  017164                            BGNSRV  RDATA2
 (3)  017164                                                                              RDATA2::
5399
5400  017164  105777  163076                    TSTB    @RXCSR          ;IS THIS DATA?
5401  017170  100404                            BMI     5$
5402                                                                      ;DATA OR STATUS?
5403  017172  012737  177777  002376            MOV     #-1,RFLAG       ;FLAG FOR ERROR
5404  017200  000410                            BR      20$
5405
5406  017202                            5$:
5407  017202  117721  163062                    MOVB    @RDSR,(R1)+     ;SAVE THE DATA.
5408  017206  005337  002322                    DEC     COUNTER         ;DECREMENT COUNT
5409  017212  001006                            BNE     30$             ;BR IF NOT DONE.
5410  017214  012737  000001  002376            MOV     #1,RFLAG        ;SET FLAG
5411  017222                            20$:
5412  017222  042777  000100  163036            BIC     #RXITEN,@RXCSR  ;DISABLE INTERRUPT
5413  017230                            30$:
5414
5415  017230                            ENDSRV
 (3)  017230                                                                                      L10024:
 (2)  017230  000002                                                                                      RTI
5416
5417
```

```
                        ;*****************************************************************
                        ;       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                                            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$:
017332  012777  000041  162742          MOV     #41,@TDSR       ;TRANSMIT DATA.
017332  005237  002326                  INC     DATA            ;INCREMENT DATA
017336                          20$:
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)
                                ;
                                ;*****************************************************************

017340                          BGNSRV  XDATA
(3)  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
```

```
 5520  017452  153777  002342  162622          BISB    IPCR,@PCR       ;SET CHARACTER LENGTH (BOP MODE)
 5521  017460                          16$:
 5522  017460  112277  162610                  MOVB    (R2)+,@TDSR     ;TRANSMIT A CHARACTER.
 5523  017464  005237  002476                  INC     XMITD           ;INCR COUNT OF ACTUALLY SENT.
 5524  017470  005303                          DEC     R3              ;DECREMENT COUNTER
 5525  017472  001006                          BNE     20$
 5526  017474  053777  002422  162572          BIS     TEND,@TDSR      ;TRANSMIT END OF MESSAGE.
 5527  017502  042777  000100  162562          BIC     #TXIE,@TXCSR    ;DISABLE TRANSMITTER INTERRUPT.
 5528  017510                          20$:
 5529
 5530  017510                          ENDSRV
  (3)  017510                                                                  L10026:
  (2)  017510  000002                                                                  RTI
 5531
```

```
                                ;*****************************************************************************
                                ;       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
                                                                                        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
                                                                                L10027:
017616  000002                                                                        RTI
```

```
                        ;*****************************************************************************
                        ;       XDDCMP - INTERRUPT SERVICE ROUTINE
                        ;
                        ;       FUNCTION - DDCMP TRANSMIT INTERRUPT ROUTINE
                        ;
                        ;       ENTRY CONDITIONS
                        ;                       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
(3) 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  002356          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
(3) 017732                                                                              L10030:
(2) 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
                                    ;
                                    ;*****************************************************************

017734                              BGNSRV  NXM
(3)  017734                                                                         NXM::
017734  012737  000001  002366              MOV     #1,NXMFLG               ;SET FLAG IF MEMORY IS NON-EXISTENT.

017742                              ENDSRV
(3)  017742                                                                         L10031:
(2)  017742  000002                                                                         RTI
```

```
                                ;*****************************************************************
                                ;       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
(3)  017744                                                             ILLGL::

017744  005000                          CLR     R0

017746                          ENDSRV
(3)  017746                                                             L10032:
(2)  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
(3) 017750                                                                              L$DU::
017750                                          BRESET                  ;ISSUE LSI-BUS RESET TO CLEAN UP
(3) 017750  104433                                                                      TRAP    C$RESET
017752                                          PRINTF  #FMDROP,LOGDEV
(8) 017752  013746  002354                                                              MOV     LOGDEV,-(SP)
(7) 017756  012746  020000                                                              MOV     #FMDROP,-(SP)
(6) 017762  012746  000002                                                              MOV     #2,-(SP)
(3) 017766  010600                                                                      MOV     SP,R0
(4) 017770  104417                                                                      TRAP    C$PNTF
(4) 017772  062706  000006                                                              ADD     #6,SP

017776                                  ENDDU
(3) 017776                                                                              L10033:
(3) 017776  104453                                                                      TRAP    C$DU

020000  047045  040445  047125   FMDROP: .ASCIZ  /%N%AUNIT %D2%A DROPPED/
        020006  052111  022440  031104
        020014  040445  042040  047522
        020022  050120  042105     000
020030                                  .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).
                                ;*****************************************************************
020030                          BGNTST
                                                                        T1::

                                        SETVEC  #4,#LOCATE,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
 (7) 020030  012746  000340                                                     MOV     #PRI07,-(SP)
 (6) 020034  012746  020166'                                                    MOV     #LOCATE,-(SP)
 (5) 020040  012746  000004                                                     MOV     #4,-(SP)
 (4) 020044  012746  000003                                                     MOV     #3,-(SP)
 (3) 020050  104437                                                             TRAP    C$SVEC
 (2) 020052  062706  000010                                                     ADD     #10,SP
020056  005037  002366                  CLR     NXMFLG          ;FLAG USED IN THE TRAP ROUTINE.
020062  005001                          CLR     R1              ;USE REGISTER TO REMEMBER WHICH OF THE
                                                                ;4 CSRS WE ARE ADDRESSING.


                                ;;*****************************************************************
                                ; IF ADDRESSING ANY ONE OF THE CSRS RESULTS IN A TRAP TO VECTOR 04, THE TRAP
                                ; WILL REPORT THE ERROR (SEE INTERRUPT ROUTINE 'LOCATE').  OTHERWISE THE
                                ; MEMORY REFERENCE IS UNEVENTFUL AND THE DEVICE IS READY FOR FURTHER TESTS
                                ;;*****************************************************************

020064  005777  162176                  TST     @CSR0           ;TEST THE CSR AT 76XXX0
020070  012701  000002                  MOV     #2,R1           ;SAVE THE OFFSET OF THE NEXT CSR
020074  005777  162170                  TST     @CSR2           ;TEST THE CSR AT 76XXX2
020100  012701  000004                  MOV     #4,R1           ;SAVE THE OFFSET OF THE NEXT CSR
020104  005777  162162                  TST     @CSR4           ;TEST THE CSR AT 76XXX4
020110  012701  000006                  MOV     #6,R1           ;SAVE THE OFFSET OF THE NEXT CSR
020114  005777  162154                  TST     @CSR6           ;TEST THE CSR AT 76XXX6
020120  005737  002366                  TST     NXMFLG          ;WAS THERE A TRAP?
020124  001414                          BEQ     10$             ;IF NOT - EXIT.
020126                                  PRINTX  #FMT1           ;SUGGEST THE PROBLEM. (
 (7) 020126  012746  020350                                                     MOV     #FMT1,-(SP)
 (6) 020132  012746  000001                                                     MOV     #1,-(SP)
 (3) 020136  010600                                                             MOV     SP,R0
 (4) 020140  104415                                                             TRAP    C$PNTX
 (4) 020142  062706  000004                                                     ADD     #4,SP
020146                                  DODU    LOGDEV          ;DROP THE DEVICE
 (3) 020146  013700  002354                                                     MOV     LOGDEV,R0
```

```
  (3) 020152 104451                                                                     TRAP    C$DODU
      020154                                  DOCLN                ;CLEAN UP CODE - FORCE BACK TO INIT.
  (3) 020154 104444                                                                     TRAP    C$DCLN


      020156                         10$:
      020156                                  CLRVEC  #4           ;RETURN VECTOR 04 TO NORMAL STATE
  (3) 020156 012700 000004                                                              MOV     #4,R0
  (3) 020162 104436                                                                     TRAP    C$CVEC

      020164                         ENDTST
  (3) 020164                                                                  L10034:
  (3) 020164 104401                                                                     TRAP    C$ETST


      020166                         BGNSRV   LOCATE               ;INTERRUPT SERVICE ROUTINE
  (3) 020166                                                                  LOCATE::
      020166 005737 002366                    TST     NXMFLG       ;HAVE WE HAD AT LEAST 1 PREVIOUS TRAP?
      020172 001006                           BNE     10$          ;IF YES, DON'T BOTHER DECLARING ANOTHER
                                                                   ;DEVICE FATAL ERROR
      020174                                  ERRDF   9,EMTO       ;NON-EXISTENT DEVICE ERROR
  (4) 020174 104455                                                                     TRAP    C$ERDF
  (5) 020176 000011                                                                     .WORD   9
  (5) 020200 020240                                                                     .WORD   EMTO
  (5) 020202 000000                                                                     .WORD   0
      020204 005237 002366                    INC     NXMFLG       ;SET THE FLAG
      020210                         10$:
      020210                                  PRINTX  #FMTO,R1,CSRO(R1) ;PRINT THE CSR THAT DOESN'T RESPOND.
  (9) 020210 016146 002266                                                              MOV     CSRO(R1),-(SP)
  (8) 020214 010146                                                                     MOV     R1,-(SP)
  (7) 020216 012746 020276                                                              MOV     #FMTO,-(SP)
  (6) 020222 012746 000003                                                              MOV     #3,-(SP)
  (3) 020226 010600                                                                     MOV     SP,R0
  (4) 020230 104415                                                                     TRAP    C$PNTX
  (4) 020232 062706 000010                                                              ADD     #10,SP
      020236                         ENDSRV
  (3) 020236                                                                  L10035:
  (2) 020236 000002                                                                     RTI

      020240 051503 020122 042101    EMTO:    .ASCIZ  /CSR ADDRESSING ERROR - TRAP 4/
      020246 051104 051505 044523
      020254 043516 042440 051122
      020262 051117 026440 052040
      020270 040522 020120 000064
```

```
 5766  020276  051445  022463  041501  FMT0:   .ASCIZ  /%S3%ACSR%D1%A AT %O6%A DOES NOT RESPOND%N/
       020304  051123  042045  022461
       020312  020101  052101  022440
       020320  033117  040445  042040
       020326  042517  020123  047516
       020334  020124  042522  050123
       020342  047117  022504  000116
 5767  020350  040445  041450  047117  FMT1:   .ASCIZ  /%A(CONFIGURATION ERROR  OR  NO BUS REPLY SIGNAL)%N2/
       020356  044506  052507  040522
       020364  044524  047117  042440
       020372  051122  051117  020040
       020400  051117  020040  047516
       020406  041040  051525  051040
       020414  050105  054514  051440
       020422  043511  040516  024514
       020430  047045  000062
 5768                                  .EVEN
 5769
 5770
 5771
```

```
                                .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 $RESET SUBROUTINE:
                                ;*      1. ALL BITS IN THE DATA PORT REGISTERS ARE CLEARED.
                                ;*      2. ALL OUTPUT INDICATORS ARE CLEARED.
                                ;*      3. TRANSMIT BUFFER EMPTY (TBE) IS SET
                                ;*
                                ;* SUBTEST 1 - AFTER RESET, CHECK THAT MAINTENANCE MODE AND
                                ;*             TRANSMITTER CAN BE SET. ALSO CHECK THAT TRANSMITTER
                                ;*             BUFFER EMPTY (TBE) IS CLEARED WHEN TDSR IS ACCESSED
                                ;*             WITHOUT SETTING TRANSMITTER ENABLE.
                                ;* SUBTEST 2 - ON THE FIRST PASS ONLY, CHECK THAT A BUS RESET, DOES
                                ;*             A DPV11 RESET.
                                ;*
                                ;* NOTE: DATA MODE, CTS, RR (RECEIVER READY) AND IC (INCOMING CALL)
                                ;*       ARE UNAFFECTED BY A RESET.
                                ;*
                                ;*****************************************************************
5797  020434                    BGNTST
 (3)  020434                                                                    T2::
5798  020434                      BGNSUB
 (3)  020434                                                                    T2.1:
 (3)  020434  104402                                                                  TRAP    C$BSUB
5799  020436                          CALL    $RESET          ;RESET THE DPV
5800  020442                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3)  020442  104410                                                                  TRAP    C$ESCAPE
 (3)  020444  000212                                                                  .WORD   L10036-.
5801  020446  005001                    CLR     R1              ;BITS SHOULD BE CLEAR.
5802  020450  005077  161620           CLR     @TDSR           ;CLEAR TBE
5803  020454  005777  161612           TST     @TXCSR          ;IS TBE CLEARED?
5804  020460  001035                    BNE     10$             ;ERROR IF NOT CLEAR
5805  020462  012701  000010           MOV     #10,R1          ;REMEMBER BITS TO SET.
5806  020466  050177  161600           BIS     R1,@TXCSR       ;SET THOSE BITS
5807  020472  020177  161574           CMP     R1,@TXCSR       ;WERE THOSE BITS SET
5808  020476  001026                    BNE     10$
5809  020500  012701  000020           MOV     #20,R1          ;NEXT BIT TO SET
5810  020504  110177  161562           MOVB    R1,@TXCSR
5811  020510  020177  161556           CMP     R1,@TXCSR
5812  020514  001017                    BNE     10$
5813  020516  012701  000030           MOV     #30,R1
5814  020522  112777  000030  161542   MOVB    #TXEMA!MM,@TXCSR ;SET THE ENABLE AND MAINT. MODE.
5815  020530  020177  161536           CMP     R1,@TXCSR       ;ARE THOSE BITS SET?
5816  020534  001007                    BNE     10$             ;BR IF IN ERROR.
5817  020536  012701  000100           MOV     #100,R1         ;SET TX INTERRUPT ENABLE.
5818  020542  110177  161524           MOVB    R1,@TXCSR       ;SET THE INTERRUPT BIT
5819  020546  020177  161520           CMP     R1,@TXCSR       ;IS THE BIT SET?
5820  020552  001404                    BEQ     20$             ;IF YES - OK.
5821  020554                  10$:
5822  020554                          ERRUF   10,EMG4,ERRG7
 (4)  020554  104455                                                                  TRAP    C$ERDF
```

```
   (5)  020556  000012                                                                    .WORD   10
   (5)  020560  013554                                                                    .WORD   EMG4
   (5)  020562  007172                                                                    .WORD   ERRG7
 5823   020564                          20$:
 5824   020564                            ENDSUB
   (3)  020564                                                                L10037:
   (3)  020564  104403                                                                    TRAP    C$ESUB
 5825
 5826
 5827
 5828   020566                          BGNSUB
   (3)  020566                                                                T2.2:
   (3)  020566  104402                                                                    TRAP    C$BSUB
 5829   020570  022737  000001  002314        CMP     #1,$TARES       ;IS THIS THE FIRST PASS?
 5830   020576  001026                        BNE     30$             ;IF NOT - SKIP THIS TEST.
 5831   020600                                BRESET                  ;BUS RESET.
   (3)  020600  104433                                                                    TRAP    C$RESET
 5832   020602                                $DELAY  10              ;DELAY 1 MSEC.
   (1)
   (1)                                                               ;******** MACRO EXPANSION ********
   (1)  020602  004737  006604                JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
   (1)  020606  000010                        .WORD   10              ;NUMBER OF DELAY LOOPS
   (1)                                                               ;**********************************
   (1)
 5833   020610  005001                        CLR     R1              ;EXPECT 0 IN ALL R/W REGISTERS
 5834   020612  105777  161450                TSTB    @RXCSR          ;IS THE RECEIVE CSR 0?
 5835   020616  001012                        BNE     20$             ;BRANCH ON ERROR.
 5836   020620  005777  161444                TST     @RDSR           ;EXPECT READ DATA/STATUS TO BE 0
 5837   020624  001007                        BNE     20$             ;BR IF NOT
 5838   020626  022777  000004  161436        CMP     #4,@TXCSR       ;EXPECT TBE TO BE SET.
 5839   020634  001003                        BNE     20$             ;BR IF NOT
 5840   020636  005777  161432                TST     @TDSR           ;EXPECT XMIT. DATA/STATUS TO BE 0.
 5841   020642  001404                        BEQ     30$             ;BRANCH IF OK.
 5842   020644                          20$:
 5843   020644                                ERRDF   11,EMG0,ERRG11  ;PRINT ERROR MESSAGE
   (4)  020644  104455                                                                    TRAP    C$ERDF
   (5)  020646  000013                                                                    .WORD   11
   (5)  020650  013372                                                                    .WORD   EMG0
   (5)  020652  007572                                                                    .WORD   ERRG11
 5844   020654                          30$:
 5845   020654                            ENDSUB
   (3)  020654                                                                L10040:
   (3)  020654  104403                                                                    TRAP    C$ESUB
 5846
 5847   020656                          ENDTST
   (3)  020656                                                                L10036:
   (3)  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
                                                                        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
                                                                        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
```

```
 (5)  020766  007072                                                                .WORD   ERRG4
5898  020770                          30$:
5899  020770  105077  161272                  CLRB    @RXCSR          ;CLEAR THE REGISTER
5900
5901  020774                            ENDSUB
 (3)  020774                                                          L10042:
 (3)  020774  104403                                                                TRAP    C$ESUB
5902
5903
5904  020776                            BGNSUB
 (3)  020776                                                          T3.2:
 (3)  020776  104402                                                                TRAP    C$BSUB
5905  021000  012701  000377                  MOV     #377,R1         ;WRITE DATA PATTERN
5906  021004  110177  161272                  MOVB    R1,@PCR         ;WRITE THE PATTERN.
5907  021010  120177  161266                  CMPB    R1,@PCR         ;IS THE PATTERN WRITTEN?
5908  021014  001025                          BNE     20$             ;IF NOT REPORT IT
5909  021016  005001                          CLR     R1              ;REMEMBER THE DATA PATTERN
5910  021020  105077  161256                  CLRB    @PCR            ;CLEAR THOSE BITS
5911  021024  105777  161252                  TSTB    @PCR            ;WERE THE BITS CLEARED?
5912  021030  001017                          BNE     20$             ;IF NOT - REPORT IT
5913  021032  012701  000001                  MOV     #BIT0,R1        ;START ROTATE PATTERN
5914  021036  012702  000006                  MOV     #6,R2           ;ROTATE THE BIT 4 TIMES
5915  021042                          10$:
5916  021042  150177  161234                  BISB    R1,@PCR         ;WRITE PATTERN
5917  021046  120177  161230                  CMPB    R1,@PCR         ;IS THE PATTERN WRITTEN?
5918  021052  001006                          BNE     20$             ;IF NOT - REPORT IT.
5919  021054  006101                          ROL     R1              ;ROTATE THE PATTERN
5920  021056  105077  161220                  CLRB    @PCR            ;CLEAR THE PCR.
5921  021062  005302                          DEC     R2
5922  021064  001366                          BNE     10$             ;CONTINUE UNTIL DONE.
5923  021066  000404                          BR      30$             ;EXIT - WHEN DONE
5924  021070                          20$:
5925  021070                                  ERRDF   13,EMG4,ERRG8
 (4)  021070  104455                                                                TRAP    C$ERDF
 (5)  021072  000015                                                                .WORD   13
 (5)  021074  013554                                                                .WORD   EMG4
 (5)  021076  007272                                                                .WORD   ERRG8
5926  021100                          30$:
5927  021100  105077  161176                  CLRB    @PCR            ;CLEAR THE PCR
5928
5929  021104                            ENDSUB
 (3)  021104                                                          L10043:
 (3)  021104  104403                                                                TRAP    C$ESUB
5930
5931  021106                            BGNSUB
 (3)  021106                                                          T3.3:
 (3)  021106  104402                                                                TRAP    C$BSUB
5932
5933  021110  012701  000377                  MOV     #377,R1         ;WRITE DATA PATTERN
5934  021114  110177  161154                  MOVB    R1,@TDSR        ;WRITE THE PATTERN.
5935  021120  120177  161150                  CMPB    R1,@TDSR        ;IS THE PATTERN WRITTEN?
5936  021124  001025                          BNE     20$             ;IF NOT REPORT IT
5937  021126  005001                          CLR     R1              ;REMEMBER DATA PATTERN
5938  021130  105077  161140                  CLRB    @TDSR           ;CLEAR THOSE BITS
5939  021134  105777  161134                  TSTB    @TDSR           ;IS THE DATA CLEAR?
5940  021140  001017                          BNE     20$             ;IF NOT - REPORT IT.
```

```
 5941  021142  012701  000001                MOV     #BIT0,R1        ;START ROTATE PATTERN
 5942  021146  012702  000006                MOV     #6,R2           ;ROTATE THE BIT 4 TIMES
 5943  021152                          10$:
 5944  021152  150177  161116                BISB    R1,@TDSR        ;WRITE PATTERN
 5945  021156  120177  161112                CMPB    R1,@TDSR        ;IS THE PATTERN WRITTEN?
 5946  021162  001006                        BNE     20$             ;IF NOT - REPORT IT.
 5947  021164  105077  161104                CLRB    @TDSR           ;CLEAR THE DATA.
 5948  021170  006101                        ROL     R1              ;ROTATE THE PATTERN
 5949  021172  005302                        DEC     R2
 5950  021174  001366                        BNE     10$             ;CONTINUE UNTIL DONE.
 5951  021176  000404                        BR      30$             ;EXIT - WHEN DONE
 5952  021200                          20$:
 5953  021200                                EMRDF   14,EMG4,ERRG9
  (4)  021200  104455                                                                     TRAP    C$ERDF
  (5)  021202  000016                                                                     .WORD   14
  (5)  021204  013554                                                                     .WORD   EMG4
  (5)  021206  007372                                                                     .WORD   ERRG9
 5954  021210                          30$:
 5955  021210  105077  161060                CLRB    @TDSR           ;CLEAR THE TDSR
 5956
 5957
 5958  021214                          ENDSUB
  (3)  021214                                                                     L10044:
  (3)  021214  104403                                                                     TRAP    C$ESUB
 5959
 5960  021216                          BGNSUB
  (3)  021216                                                                     T3.4:
  (3)  021216  104402                                                                     TRAP    C$BSUB
 5961  021220  012701  000017                MOV     #17,R1          ;WRITE DATA PATTERN
 5962  021224  110177  161054                MOVB    R1,@CSR7        ;WRITE THE PATTERN.
 5963  021230  120177  161050                CMPB    R1,@CSR7        ;IS THE PATTERN WRITTEN?
 5964  021234  001025                        BNE     20$             ;IF NOT REPORT IT
 5965  021236  005001                        CLR     R1              ;REMEMBER DATA PATTERN.
 5966  021240  105077  161040                CLRB    @CSR7           ;CLEAR THOSE BITS
 5967  021244  105777  161034                TSTB    @CSR7           ;ARE THE STATUS BITS CLEAR?
 5968  021250  001017                        BNE     20$             ;IF NOT - REPORT IT.
 5969  021252  012701  000001                MOV     #BIT0,R1        ;START ROTATE PATTERN
 5970  021256  012702  000003                MOV     #3,R2           ;ROTATE THE BIT 4 TIMES
 5971  021262                          10$:
 5972  021262  150177  161016                BISB    R1,@CSR7        ;WRITE PATTERN
 5973  021266  120177  161012                CMPB    R1,@CSR7        ;IS THE PATTERN WRITTEN?
 5974  021272  001006                        BNE     20$             ;IF NOT - REPORT IT.
 5975  021274  105077  161004                CLRB    @CSR7           ;CLEAR STATUS BITS.
 5976  021300  006101                        ROL     R1              ;ROTATE THE PATTERN
 5977  021302  005302                        DEC     R2
 5978  021304  001366                        BNE     10$             ;CONTINUE UNTIL DONE.
 5979  021306  000404                        BR      30$             ;EXIT - WHEN DONE
 5980  021310                          20$:
 5981  021310                                ERRDF   15,EMG4,ERRG10
  (4)  021310  104455                                                                     TRAP    C$ERDF
  (5)  021312  000017                                                                     .WORD   15
  (5)  021314  013554                                                                     .WORD   EMG4
  (5)  021316  007472                                                                     .WORD   ERRG10
 5982  021320                          30$:
 5983  021320  105077  160760                CLRB    @CSR7           ;CLEAR THE XMIT STATUS REG.
 5984
```

```
5985  021324                          ENDSUB
 (3)  021324                                                                          L10045:
 (3)  021324  104403                                                                              TRAP    C$ESUB
5986
5987  021326                          BGNSUB
 (3)  021326                                                                          T3.5:
 (3)  021326  104402                                                                              TRAP    C$BSUB
5988  021330  012777  007777  160736          MOV     #7777,@TDSR       ;WRITE TO TDSR
5989  021336  105077  160742                  CLRB    @CSR7             ;CLEAR ONLY THE HIGH BYTE.
5990  021342  105777  160726                  TSTB    @CSR6             ;SEE IF THE LOW BYTE WAS ALSO CLEARED
5991  021346  001016                          BNE     10$               ;IF NOT, BYTE OP IS OK.
5992  021350  012701  000377                  MOV     #377,R1           ;DATA FOR ERROR PRINT OUT.
5993  021354                                  ERRDF   16,EMG4,ERRG9     ;PRINT ERROR
 (4)  021354  104455                                                                              TRAP    C$ERDF
 (5)  021356  000020                                                                              .WORD   16
 (5)  021360  013554                                                                              .WORD   EMG4
 (5)  021362  007372                                                                              .WORD   ERRG9
5994  021364                                  PRINTX  #FMG30            ;ALSO WARN THAT BYTE OP MAY BE STUCK LOW.
 (7)  021364  012746  013314                                                                      MOV     #FMG30,-(SP)
 (6)  021370  012746  000001                                                                      MOV     #1,-(SP)
 (3)  021374  010600                                                                              MOV     SP,R0
 (4)  021376  104415                                                                              TRAP    C$PNTX
 (4)  021400  062706  000004                                                                      ADD     #4,SP
5995  021404                        10$:
5996
5997  021404                          ENDSUB
 (3)  021404                                                                          L10046:
 (3)  021404  104403                                                                              TRAP    C$ESUB
5998
5999  021406                        ENDTST
 (3)  021406                                                                          L10041:
 (3)  021406  104401                                                                              TRAP    C$ETST
6000
6001
6002
```

```
                                .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.
                                ;*
                                ;*****************************************************************
021410                          BGNTST
021410                                                                  T4::

                                  BGNSUB
021410                                                                  T4.1:
021410  104402                                                                  TRAP    C$BSUB
021412                                  CALL    $RESET          ;RESET THE DPV
021416                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
021416  104410                                                                  TRAP    C$ESCAPE
021420  000330                                                                  .WORD   L10047-.
021422  005737  002306                 TST     TURN            ;TURNAROUND?
021426  001003                         BNE     5$              ;BR IF EXTERNAL.
021430  052777  000010  160634         BIS     #MM,@TXCSR      ;SET MAINTENANCE MODE.
021436                          5$:
021436  052777  000020  160626         BIS     #TXENA,@TXCSR   ;ENABLE THE TRANSMITTER.
021444  052777  000400  160622         BIS     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE.
021452                                  WAIT    TBE             ;WAIT FOR TBE TO BE SET.
(1)
(1)                                                             ;******** MACRO EXPANSION ********
021452  004737  003724                 JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
021456  000004                                  .WORD   TBE     ;WAIT FOR TBE TO BE SET
021460  002272                                  .WORD   TXCSR   ;IN TRANSMITTER  CSR.
(1)                                             ;**********************************
(1)
021462                                  ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
021462  104410                                                                  TRAP    C$ESCAPE
021464  000264                                                                  .WORD   L10047-.
021466  032777  000002  160576         BIT     #TXACT,@TXCSR   ;IS THE TRANSMITTER ACTIVE?
021474  001011                         BNE     10$             ;IF YES - OK.
021476  017701  160570                 MOV     @TXCSR,R1       ;SAVE THE TRANSMIT STATUS
021502  052701  000020                 BIS     #TXENA,R1       ;EXPECT TXENA TO BE SET.
021506                                  ERRDF   17,EMG5,ERRG7
021506  104455                                                                  TRAP    C$ERDF
021510  000021                                                                  .WORD   17
021512  013601                                                                  .WORD   EMG5
021514  007172                                                                  .WORD   ERRG7
021516  000425                         BR      20$             ;SKIP THE REST OF THE SUBTEST.

021520                          10$:
021520  005077  160550                 CLR     @TDSR           ;CLEAR TSOM
021524  042777  000020  160540         BIC     #TXENA,@TXCSR   ;DISABLE THE TRANSMITTER
021532                                  WAIT    TBE             ;WAIT FOR TBE TO BE SET.
```

```
  (1)
  (1)                                                    ;******** MACRO EXPANSION ********
  (1)  021532  004737  003724                 JSR     PC,$WAIT          ;CALL WAIT ROUTINE -
  (1)  021536  000004                         .WORD   TBE               ;WAIT FOR TBE TO BE SET
  (1)  021540  002272                         .WORD   TXCSR             ;IN TRANSMITTER  CSR.
  (1)                                                    ;**********************************
  (1)
 6043  021542                               ESCAPE  TST                ;IF ERROR, BRANCH TO END OF TEST.
  (3)  021542  104410                                                                  TRAP    C$ESCAPE
  (3)  021544  000204                                                                  .WORD   L10047-.
 6044  021546  032777  000002  160516       BIT     #TXACT,@TXCSR      ;IS THE TRANSMIITER INACTIVE?
 6045  021554  001406                       BEQ     20$                ;IF YES - OK.
 6046  021556  012701  000004               MOV     #TBE,R1            ;EXPECT ONLY TBE TO BE SET.
 6047  021562                               ERRDF   18,EMG6,ERRG7
  (4)  021562  104455                                                                  TRAP    C$ERDF
  (5)  021564  000022                                                                  .WORD   18
  (5)  021566  013634                                                                  .WORD   EMG6
  (5)  021570  007172                                                                  .WORD   ERRG7
 6048
 6049  021572                         20$:
 6050  021572                               ESCAPE TST                 ;IF ERROR, BRANCH TO END OF TEST
  (3)  021572  104410                                                                  TRAP    C$ESCAPE
  (3)  021574  000154                                                                  .WORD   L10047-.
 6051
 6052  021576                           ENDSUB
  (3)  021576                                                                L10050:
  (3)  021576  104403                                                                  TRAP    C$ESUB
 6053
 6054
 6055  021600                           BGNSUB
  (3)  021600                                                                T4.2:
  (3)  021600  104402                                                                  TRAP    C$BSUB
 6056  021602                               CALL    $RESET             ;RESET THE DPV
 6057  021606                               ESCAPE  TST                ;IF ERROR, EXIT THE TEST
  (3)  021606  104410                                                                  TRAP    C$ESCAPE
  (3)  021610  000140                                                                  .WORD   L10047-.
 6058  021612  005737  002306               TST     .URN               ;TURNAROUND?
 6059  021616  001003                       BNE     5$                 ;BR IF EXTERNAL.
 6060  021620  052777  000010  160444       BIS     #MM,@TXCSR         ;SET MAINTENANCE MODE.
 6061  021626                         5$:
 6062  021626  052777  000020  160436       BIS     #TXENA,@TXCSR      ;ENABLE THE TRANSMITTER.
 6063  021634  052777  000400  160432       BIS     #TSOM,@TDSR        ;TRANSMIT START OF MESSAGE.
 6064  021642                               WAIT    TBE                ;WAIT FOR TBE TO BE SET.
  (1)
  (1)                                                    ;******** MACRO EXPANSION ********
  (1)  021642  004737  003724                 JSR     PC,$WAIT          ;CALL WAIT ROUTINE -
  (1)  021646  000004                         .WORD   TBE               ;WAIT FOR TBE TO BE SET
  (1)  021650  002272                         .WORD   TXCSR             ;IN TRANSMITTER  CSR.
  (1)                                                    ;**********************************
  (1)
 6065  021652                               ESCAPE  TST                ;IF ERROR, BRANCH TO END OF TEST.
  (3)  021652  104410                                                                  TRAP    C$ESCAPE
  (3)  021654  000074                                                                  .WORD   L10047-.
 6066  021656  032777  000002  160406       BIT     #TXACT,@TXCSR      ;IS THE TRANSMITTER ACTIVE?
 6067  021664  001010                       BNE     10$                ;IF YES - OK.
 6068  021666  017701  160400               MOV     @TXCSR,R1          ;SAVE THE TRANSMIT STATUS
```

```
 6069  021672  052701  000020                BIS     #TXENA,R1       ;EXPECT TXENA TO BE SET.
 6070  021676                                ERRDF   19,EMG5,ERRG7
  (4)  021676  104455                                                   TRAP    C$ERDF
  (5)  021700  000023                                                   .WORD   19
  (5)  021702  013601                                                    WORD   EMG5
  (5)  021704  007172                                                   .WORD   ERRG7
 6071
 6072  021706                      10$:
 6073  021706                            CALL    $RESET          ;RESET THE DPV
 6074  021712                            ESCAPE  TST             ;IF ERROR, EXIT THE TEST
  (3)  021712  104410                                                   TRAP    C$ESCAPE
  (3)  021714  000034                                                   .WORD   L10047-.
 6075  021716  032777  000002  160346          BIT     #TXACT,@TXCSR   ;IS THE TRANSMIITER INACTIVE?
 6076  021724  001406                          BEQ     20$             ;IF YES - OK.
 6077  021726  012701  000004                MOV     #TBE,R1         ;EXPECT ONLY TBE TO BE SET.
 6078  021732                                ERRDF   20,EMG6,ERRG7
  (4)  021732  104455                                                   TRAP    C$ERDF
  (5)  021734  000024                                                   .WORD   20
  (5)  021736  013634                                                   .WORD   EMG6
  (5)  021740  007172                                                   .WORD   ERRG7
 6079
 6080  021742                      20$:
 6081  021742                            ESCAPE TST              ;IF ERROR, BRANCH TO END OF TEST
  (3)  021742  104410                                                   TRAP    C$ESCAPE
  (3)  021744  000004                                                   .WORD   L10047-.
 6082
 6083  021746                        ENDSUB
  (3)  021746                                                                   L10051:
  (3)  021746  104403                                                   TRAP    C$ESUB
 6084
 6085
 6086  021750                      ENDTST
  (3)  021750                                                                   L10047:
  (3)  021750  104401                                                   TRAP    C$ETST
 6087
 6088
 6089
```

```
                                .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


022052                            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-.
```

```
 6124  022064  005737  002306                    TST     TURN            ;TURNAROUND?
 6125  022070  001003                            BNE     1$              ;BR IF EXTERNAL.
 6126  022072  052777  000010  160172            BIS     #MM,@TXCSR      ;SET MAINTENANCE MODE.
 6127  022100                              1$:
 6128
 6129  022100  052777  000020  160164            BIS     #TXENA,@TXCSR   ;ENABLE THE TRANSMITTER.
 6130  022106  012777  000400  160160            MOV     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE.
 6131  022114                                    WAIT    TBE             ;WAIT FOR TBE TO BE SET.
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  022114  004737  003724                    JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
  (1)  022120  000004                                    .WORD   TBE     ;WAIT FOR TBE TO BE SET
  (1)  022122  002272                                    .WORD   TXCSR   ;IN TRANSMITTER  CSR.
  (1)                                                                   ;**********************************
  (1)
 6132  022124                                    ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
  (3)  022124  104410                                                                   TRAP    C$ESCAPE
  (3)  022126  000054                                                                   .WORD   L10052-.
 6133
 6134  022130  012777  000014  160136            MOV     #14,@TDSR       ;TRANSMIT 1ST CHARACTER.
 6135  022136                                    WAIT    TBE             ;WAIT FOR TBE TO BE SET.
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  022136  004737  003724                    JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
  (1)  022142  000004                                    .WORD   TBE     ;WAIT FOR TBE TO BE SET
  (1)  022144  002272                                    .WORD   TXCSR   ;IN TRANSMITTER  CSR.
  (1)                                                                   ;**********************************
  (1)
 6136  022146                                    ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
  (3)  022146  104410                                                                   TRAP    C$ESCAPE
  (3)  022150  000032                                                                   .WORD   L10052-.
 6137  022152  012701  002000                    MOV     #2000,R1        ;SET UP COUNTER
 6138  022156                              5$:
 6139  022156  005777  160112                    TST     @TDSR           ;CHECK FOR TRANSMIT ERROR.
 6140  022162  100406                            BMI     10$             ;WHEN SET OK.
 6141  022164  005301                            DEC     R1              ;DECREMENT COUNTER.
 6142  022166  001373                            BNE     5$              ;CONTINUE UNTIL COUNTER 0
 6143  022170                                    ERRDF   22,EMG8,ERRG2
  (4)  022170  104455                                                                   TRAP    C$ERDF
  (5)  022172  000026                                                                   .WORD   22
  (5)  022174  013707                                                                   .WORD   EMG8
  (5)  022176  006700                                                                   .WORD   ERRG2
 6144  022200                              10$:
 6145  022200                                ENDSUB
  (3)  022200                                                                   L10054:
  (3)  022200  104403                                                                   TRAP    C$ESUB
 6146
 6147
 6148  022202                              ENDTST
  (3)  022202                                                                   L10052:
  (3)  022202  104401                                                                   TRAP    C$ETST
 6149
 6150
 6151
```

```
                                .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
                                                                                T6::

                                        CALL    $RESET          ;RESET THE DPV
022204                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
022210                                                                          TRAP    C$ESCAPE
022210  104410                                                                  .WORD   L10055-.
022212  000146
022214  005037  002424                  CLR     TFLAG           ;CLEAR THE FLAG USED IN THE INTERRUPT ROUTINE.

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

                                        BIS     #TXENA!TXIE,@TXCSR ;SET THE INTERRUPT ENABLE AND ENABLE
                                                                   ;THE TRANSMITTER.
022254  052777  000120  160010          CLR     R0              ;TIMER FOR LOOP
022262  005000
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                                  $DELAY  1               ;WAIT FOR 100 MICROSECONDS.
 (1)
 (1)                                                            ;******** MACRO EXPANSION ********
 (1)    022320  004737  006604          JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
 (1)    022324  000001                  .WORD   1               ;NUMBER OF DELAY LOOPS
```

```
(1)                                                       ;************************************
(1)
     022326  005737  002334           TST     FLAG             ;WAS AN INTERRUPT RECEIVED
     022332  001404                   BEQ     30$              ;IF NOT - OK. (RESET SHOULD CLEAR INT ENABLE)
     022334                           ERRDF   24,EMG10,ERRG2   ;ERROR MESSAGE - TRANMSIT INT RECEIVED
(4)  022334  104455                                                                  TRAP     C$ERDF
(5)  022336  000030                                                                  .WORD    24
(5)  022340  013757                                                                  .WORD    EMG10
(5)  022342  006700                                                                  .WORD    ERRG2
     022344                   30$:
     022344                           SETPRI  #PRI07           ;SET PROCESSOR PRIORITY TO 7 (FOR
(3)  022344  012700  000340                                                          MOV      #PRI07,R0
(3)  022350  104441                                                                  TRAP     C$SPRI
                                                               ;LSI 11/03 THIS WILL DISABLE INTERRUPTS)
     022352                           CLRVEC  XMTVEC           ;RESTORE THE XMIT INTERRUPT VECTOR
(3)  022352  013700  002264                                                          MOV      XMTVEC,R0
(3)  022356  104436                                                                  TRAP     C$CVEC

     022360                   ENDTST
(3)  022360                                                               L10055:
(3)  022360  104401                                                                  TRAP     C$ETST
```

```
                                .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.
                                ;**************************************************************************
                                BGNTST
                                                                                T7::

                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, EXIT THE TEST
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10056-.
                                        MOV     #40252,@PCSAR   ;SET BCP MODE AND SYNCH CHARACTER.
                                        MOV     #RXENA,@RXCSR   ;ENABLE THE RECEIVER.
                                        MOV     #TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER
                                                                ;SELECT THE MAINTENANCE LOOPBACK.
                                        BIS     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE
                                        WAIT    TBE             ;WAIT FOR TBE TO BE SET.
                                                                ;******** MACRO EXPANSION ********
                                        JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
                                                .WORD   TBE     ;WAIT FOR TBE TO BE SET
                                                .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                                                                ;**********************************

                                        ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10056-.
                                        BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
                                        BNE     20$                     ;IF SET, REPORT ERROR.
                                        BIS     #TSOM,@TDSR     ;RETRANSMIT START OF MESSAGE.
                                        WAIT    TBE             ;WAIT FOR TBE TO BE SET.
                                                                ;******** MACRO EXPANSION ********
                                        JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
                                                .WORD   TBE     ;WAIT FOR TBE TO BE SET
                                                .WORD   TXCSR   ;IN TRANSMITTER  CSR.
                                                                ;**********************************

                                        ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10056-.
                                        BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
                                        BNE     20$                     ;IF SET, REPORT ERROR.
```

```
 6240  022500  012777  000123  157566          MOV     #123,@TDSR      ;TRANSMIT THE FIRST DATA CHARACTER.
 6241  022506                                  WAIT    RDATRY          ;WAIT FOR RECEIVE DATA.
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  022506  004737  003724                  JSR     PC,$WAIT        ;CALL WAIT ROUTINE -
  (1)  022512  000200                                  .WORD   RDATRY  ;WAIT FOR BIT TO BE SET
  (1)  022514  002266                                  .WORD   RXCSR   ;IN RECEIVER  CSR.
  (1)                                                                   ;**********************************
  (1)
 6242  022516                                  ESCAPE  TST             ;IF ERROR, BRANCH TO END OF TEST.
  (3)  022516  104410                                                                   TRAP    C$ESCAPE
  (3)  022520  000072                                                                   .WORD   L10056-.
 6243  022522  032777  004000  157536          BIT     @RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
 6244  022530  001005                          BNE     10$             ;IF YES - OK.
 6245  022532                                  ERRDF   25,EMG12,ERRG2
  (4)  022532  104455                                                                   TRAP    C$ERDF
  (5)  022534  000031                                                                   .WORD   25
  (5)  022536  014062                                                                   .WORD   EMG12
  (5)  022540  006700                                                                   .WORD   ERRG2
 6246  022542  000423                          BR      30$
 6247  022544                          10$:
 6248  022544  042777  000020  157514          BIC     @RXENA,@RXCSR   ;DISABLE THE RECEIVER
 6249  022552                                  $DELAY  4               ;DELAY TO ALLOW DISABLE.
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  022552  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  022556  000004                                  .WORD   4       ;NUMBER OF DELAY LOOPS
  (1)                                                                   ;**********************************
  (1)
 6250  022560  032777  004200  157500          BIT     @RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
 6251  022566  001411                          BEQ     30$             ;IF CLEAR OK
 6252  022570                                  ERRDF   26,EMG13,ERRG2
  (4)  022570  104455                                                                   TRAP    C$ERDF
  (5)  022572  000032                                                                   .WORD   26
  (5)  022574  014106                                                                   .WORD   EMG13
  (5)  022576  006700                                                                   .WORD   ERRG2
 6253  022600  000404                          BR      30$
 6254  022602                          20$:
 6255  022602                                  ERRDF   27,EMG14,ERRG2
  (4)  022602  104455                                                                   TRAP    C$ERDF
  (5)  022604  000033                                                                   .WORD   27
  (5)  022606  014167                                                                   .WORD   EMG14
  (5)  022610  006700                                                                   .WORD   ERRG2
 6256  022612                          30$:
 6257
 6258  022612                          ENDTST
  (3)  022612                                                           L10056:
  (3)  022612  104401                                                                   TRAP    C$ETST
 6259
 6260
 6261
```

```
                                .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
 (3) 022614                                                                             T8::

                                        CALL    $RESET          ;RESET THE DPV
022614                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3) 022620  104410                                                             TRAP    C$ESCAPE
 (3) 022622  000266                                                             .WORD   L10057-.
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
 (7) 022646  012746  000200                                                     MOV     #PRI04,-(SP)
 (6) 022652  012746  017232                                                     MOV     #XINT,-(SP)
 (5) 022656  013746  002264                                                     MOV     XMTVEC,-(SP)
 (4) 022662  012746  000003                                                     MOV     #3,-(SP)
 (3) 022666  104437                                                             TRAP    C$SVEC
 (2) 022670  062706  000010                                                     ADD     #10,SP
022674                                  SETVEC  RCVEC,#RINT,#PRI04
 (7) 022674  012746  000200                                                     MOV     #PRI04,-(SP)
 (6) 022700  012746  016602                                                     MOV     #RINT,-(SP)
 (5) 022704  013746  002262                                                     MOV     RCVEC,-(SP)
 (4) 022710  012746  000003                                                     MOV     #3,-(SP)
 (3) 022714  104437                                                             TRAP    C$SVEC
 (2) 022716  062706  000010                                                     ADD     #10,SP
022722                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 (3) 022722  012700  000000                                                     MOV     #PRI00,R0
 (3) 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
```

```
                                        TEST 8 - RECEIVE DATA INTERRUPT

  6302  022762  001007                  BNE     10$             ;IF YES - OK.
  6303  022764  005303                  DEC     R3              ;DECREMENT COUNTER.
  6304  022766  001372                  BNE     5$
  6305
  6306  022770                          ERRDF   28,EMG15,ERRG2
   (4)  022770  104455                                                    TRAP    C$ERDF
   (5)  022772  000034                                                    .WORD   28
   (5)  022774  014243                                                    .WORD   EMG15
   (5)  022776  006700                                                    .WORD   ERRG2
  6307  023000  000430                  BR      30$
  6308  023002                  10$:
  6309  023002  042777  000020  157256  BIC     #RXENA,@RXCSR   ;DISABLE THE RECEIVER
  6310  023010  005037  002376          CLR     RFLAG           ;CLEAR THE FLAG.
  6311  023014                          $DELAY  5               ;DELAY TO ALLOW DISABLE.
   (1)
   (1)                                            ;******** MACRO EXPANSION ********
   (1)  023014  004737  006604          JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
   (1)  023020  000005                  .WORD   5               ;NUMBER OF DELAY LOOPS
   (1)                                            ;************************************
   (1)
  6312  023022  005737  002376          TST     RFLAG           ;WAS AN INTERUPT RECEIVED?
  6313  023026  001011                  BNE     20$             ;IF YES - REPORT ERROR.
  6314  023030  032777  004200  157230  BIT     #RXACT!RDATRY,@RXCSR ;CHECK RECEIVER ACTIVE AND DATA READY.
  6315  023036  001411                  BEQ     30$                  ;IF CLEAR OK
  6316  023040                          ERRDF   29,EMG13,ERRG2
   (4)  023040  104455                                                    TRAP    C$ERDF
   (5)  023042  000035                                                    .WORD   29
   (5)  023044  014106                                                    .WORD   EMG13
   (5)  023046  006700                                                    .WORD   ERRG2
  6317  023050  000404                  BR      30$
  6318  023052                  20$:
  6319  023052                          ERRDF   30,EMG16,ERRG2
   (4)  023052  104455                                                    TRAP    C$ERDF
   (5)  023054  000036                                                    .WORD   30
   (5)  023056  014276                                                    .WORD   EMG16
   (5)  023060  006700                                                    .WORD   ERRG2
  6320  023062                  30$:
  6321  023062                          CALL    $RESET          ;RESET THE DPV.
  6322  023066                          SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
   (3)  023066  012700  000340                                            MOV     #PRI07,R0
   (3)  023072  104441                                                    TRAP    C$SPRI
  6323                                            ;(THIS WILL DISABLE INTERRUPTS)
  6324  023074                          CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
   (3)  023074  013700  002262                                            MOV     RCVEC,R0
   (3)  023100  104436                                                    TRAP    C$CVEC
  6325  023102                          CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
   (3)  023102  013700  002264                                            MOV     XMTVEC,R0
   (3)  023106  104436                                                    TRAP    C$CVEC
  6326
  6327  023110                  ENDTST
   (3)  023110                                                    L10057:
   (3)  023110  104401                                                    TRAP    C$ETST
  6328
  6329
  6330
```

```
                                .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
(3) 023112                                                                      T9::

                                  BGNSUB
(3) 023112                                                                              T9.1:
(3) 023112  104402                                                                      TRAP    C$BSUB
023114                                  CALL    $RESET          ;RESET THE DPV
023120                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
(3) 023120  104410                                                                      TRAP    C$ESCAPE
(3) 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,#PRIO4
(7) 023136  012746  000200                                                              MOV     #PRIO4,-(SP)
(6) 023142  012746  017232                                                              MOV     #XINT,-(SP)
(5) 023146  013746  002264                                                              MOV     XMTVEC,-(SP)
(4) 023152  012746  000003                                                              MOV     #3,-(SP)
(3) 023156  104437                                                                      TRAP    C$SVEC
(2) 023160  062706  000010                                                              ADD     #10,SP
023164                                  SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
(3) 023164  012700  000000                                                              MOV     #PRI00,R0
(3) 023170  1C4441                                                                      TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR
```

```
6375  023172  05277-  000130  157072          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
6376                                                                        ;MAINTENANCE MODE LOOPBACK.
6377  023200  052777  000020  157060          BIS     #RXENA,@RXCSR   ;ENABLE THE RECEIVER
6378
6379  023206  005003                          CLR     R3              ;INITIALIZE THE COUNTER
6380  023210                          5$:
6381  023210  032777  004000  157050          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
6382  023216  001007                          BNE     10$             ;BR IF YES
6383  023220  005303                          DEC     R3              ;DECREMENT THE COUNTER
6384  023222  001372                          BNE     5$
6385  023224                                  ERRDF   31,EMG12,ERRG2
 (4)  023224  104455                                                                  TRAP    C$ERDF
 (5)  023226  000037                                                                  .WORD   31
 (5)  023230  014062                                                                  .WORD   EMG12
 (5)  023232  006700                                                                  .WORD   ERRG2
6386  023234  000444                          BR      45$
6387  023236                          10$:
6388  023236  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
6389  023240                          12$:
6390  023240  032777  002200  157020          BIT     #RSTARY!RDATRY,@RXCSR   ;IS DATA OR STATUS READY?
6391  023246  001407                          BEQ     15$                     ;BR IF NOT
6392  023250  017737  157014  002400          MOV     @RDSR,RSAVE     ;SAVE THE CHARACTER
6393  023256  032737  001000  002400          BIT     #REOM,RSAVE     ;WAS THE RECEIVE END OF MESSAGE RECEIVED?
6394  023264  001007                          BNE     20$
6395  023266                          15$:
6396  023266  005303                          DEC     R3              ;DECREMENT THE COUNTER
6397  023270  001363                          BNE     12$
6398  023272                                  ERRDF   32,EMG17,ERRG2
 (4)  023272  104455                                                                  TRAP    C$ERDF
 (5)  023274  000040                                                                  .WORD   32
 (5)  023276  014345                                                                  .WORD   EMG17
 (5)  023300  006700                                                                  .WORD   ERRG2
6399  023302  000421                          BR      45$
6400  023304                          20$:
6401  023304  032777  002000  156754          BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
6402  023312  001405                          BEQ     25$
6403  023314                                  ERRDF   33,EMG18,ERRG2
 (4)  023314  104455                                                                  TRAP    C$ERDF
 (5)  023316  000041                                                                  .WORD   33
 (5)  023320  014405                                                                  .WORD   EMG18
 (5)  023322  006700                                                                  .WORD   ERRG2
6404  023324  000410                          BR      45$
6405  023326                          25$:
6406  023326  032777  004000  156732          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER INACTIVE?
6407  023334  001404                          BEQ     45$             ;BR IF YES
6408  023336                                  ERRDF   34,EMG11,ERRG2
 (4)  023336  104455                                                                  TRAP    C$ERDF
 (5)  023340  000042                                                                  .WORD   34
 (5)  023342  014031                                                                  .WORD   EMG11
 (5)  023344  006700                                                                  .WORD   ERRG2
6409
6410  023346                          45$:
6411
6412  023346                            ENDSUB
 (3)  023346                                                                L10061:
 (3)  023346  104403                                                                  TRAP    C$ESUB
```

```
6413
6414  023350                                BGNSUB
 (3)  023350                                                                T9.2:
 (3)  023350  104402                                                                TRAP    C$BSUB
6415  023352                                CALL    $RESET          ;RESET THE DPV
6416  023356                                ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3)  023356  104410                                                                TRAP    C$ESCAPE
 (3)  023360  000536                                                                .WORD   L10060-.
6417
6418  023362  005037  002424               CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
6419  023366  012737  000001  002414       MOV     #1,START        ;# OF START OF MESSAGES.
6420
6421  023374                                SETVEC  XMTVEC,#XINT,#PRI04
 (7)  023374  012746  000200                                                        MOV     #PRI04,-(SP)
 (6)  023400  012746  017232                                                        MOV     #XINT,-(SP)
 (5)  023404  012746  002264                                                        MOV     XMTVEC,-(SP)
 (4)  023410  012746  000003                                                        MOV     #3,-(SP)
 (3)  023414  104437                                                                TRAP    C$SVEC
 (2)  023416  062706  000010                                                        ADD     #10,SP
6422  023422                                SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 (3)  023422  012700  000000                                                        MOV     #PRI00,R0
 (3)  023426  104441                                                                TRAP    C$SPRI
6423                                                            ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
6424                                                            ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
6425                                                            ;LEVEL 4-7.
6426                                                            ;SET UP INTERRUPT VECTOR
6427
6428  023430  052777  000130  156634       BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
6429                                                                          ;MAINTENANCE MODE LOOPBACK.
6430  023436  052777  000020  156622       BIS     #RXENA,@RXCSR   ;ENABLE THE RECEIVER
6431
6432  023444  005003                        CLR     R3              ;INITIALIZE THE COUNTER
6433  023446                          5$:
6434  023446  032777  004000  156612       BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
6435  023454  001007                        BNE     10$             ;BR IF YES
6436  023456  005303                        DEC     R3              ;DECREMENT THE COUNTER
6437  023460  001372                        BNE     5$
6438  023462                                ERRDF   35,EMG12,ERRG2
 (4)  023462  104455                                                                TRAP    C$ERDF
 (5)  023464  000043                                                                .WORD   35
 (5)  023466  014062                                                                .WORD   EMG12
 (5)  023470  006700                                                                .WORD   ERRG2
6439  023472  000464                        BR      55$
6440  023474                          10$:
6441  023474  005003                        CLR     R3              ;INITIALIZE THE COUNTER.
6442  023476                          12$:
6443  023476  032777  002000  156562       BIT     #RSTARY,@RXCSR  ;IS THE STATUS READY?
6444  023504  001007                        BNE     20$
6445  023506  005303                        DEC     R3              ;DECREMENT THE COUNTER
6446  023510  001372                        BNE     12$
6447
6448  023512                                ERRDF   36,EMG1,ERRG2   ;TIME OUT
 (4)  023512  104455                                                                TRAP    C$ERDF
 (5)  023514  000044                                                                .WORD   36
 (5)  023516  013462                                                                .WORD   EMG1
 (5)  023520  006700                                                                .WORD   ERRG2
```

```
6449  023522  000450                          BR      55$
6450
6451  023524                          20$:
6452
6453  023524  032777  004000  156536          BIT     #ROVER,@RDSR    ;WAS THE RECEIVE OVERRUN RECEIVED?
6454  023532  001005                          BNE     40$             ;IF YES OK.
6455  023534                                  ERRDF   37,EMG19,ERRG2
 (4)  023534  104455                                                          TRAP    C$ERDF
 (5)  023536  000045                                                          .WORD   37
 (5)  023540  014434                                                          .WORD   EMG19
 (5)  023542  006700                                                          .WORD   ERRG2
6456  023544  000437                          BR      55$
6457  023546                          40$:
6458
6459  023546  032777  002000  156512          BIT     #RSTARY,@RXCSR  ;WAS THE STATUS CLEARED
6460  023554  001405                          BEQ     42$             ;IF YES OK
6461  023556                                  ERRDF   38,EMG18,ERRG2
 (4)  023556  104455                                                          TRAP    C$ERDF
 (5)  023560  000046                                                          .WORD   38
 (5)  023562  014405                                                          .WORD   EMG18
 (5)  023564  006700                                                          .WORD   ERRG2
6462  023566  000426                          BR      55$
6463  023570                          42$:
6464  023570  032777  002000  156470          BIT     #RSTARY,@RXCSR  ;IS THE STATUS READY?
6465  023576  001007                          BNE     47$
6466  023600  005303                          DEC     R3              ;DECREMENT THE COUNTER
6467  023602  001372                          BNE     42$
6468
6469  023604                                  ERRDF   39,EMG1,ERRG2   ;TIME OUT
 (4)  023604  104455                                                          TRAP    C$ERDF
 (5)  023606  000047                                                          .WORD   39
 (5)  023610  013462                                                          .WORD   EMG1
 (5)  023612  006700                                                          .WORD   ERRG2
6470  023614  000413                          BR      55$
6471
6472
6473  023616                          47$:
6474  023616  042777  000020  156442          BIC     #RXENA,@RXCSR   ;DISABLE THE RECEIVER.
6475
6476  023624  032777  002000  156434          BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
6477  023632  001404                          BEQ     55$
6478  023634                          50$:
6479  023634                                  ERRDF   40,EMG18,ERRG2
 (4)  023634  104455                                                          TRAP    C$ERDF
 (5)  023636  000050                                                          .WORD   40
 (5)  023640  014405                                                          .WORD   EMG18
 (5)  023642  006700                                                          .WORD   ERRG2
6480  023644                          55$:
6481
6482  023644                            ENDSUB
 (3)  023644                                                          L10062:
 (3)  023644  104403                                                          TRAP    C$ESUB
6483
6484
6485
6486  023646                            BGNSUB
```

```
 (3) 023646                                                              T9.3:
 (3) 023646 104402                                                                       TRAP    C$BSUB
6487 023650                               CALL    $RESET          ;RESET THE DPV
6488 023654                               ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3) 023654 104410                                                                       TRAP    C$ESCAPE
 (3) 023656 000240                                                                       .WORD   L10060-.
6489 023660 005037 002424                 CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
6490 023664 012737 000001 002414          MOV     #1,START        ;# OF START OF MESSAGES.
6491 023672 012737 000001 002316          MOV     #1,ABORT        ;SEND AN ABORT
6492
6493 023700                               SETVEC  XMTVEC,#XINT,#PRI04
 (7) 023700 012746 000200                                                                MOV     #PRI04,-(SP)
 (6) 023704 012746 017232                                                                MOV     #XINT,-(SP)
 (5) 023710 013746 002264                                                                MOV     XMTVEC,-(SP)
 (4) 023714 012746 000003                                                                MOV     #3,-(SP)
 (3) 023720 104437                                                                       TRAP    C$SVEC
 (2) 023722 062706 000010                                                                ADD     #10,SP
6494 023726                               SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 (3) 023726 012700 000000                                                                MOV     #PRI00,R0
 (3) 023732 104441                                                                       TRAP    C$SPRI
6495                                                              ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
6496                                                              ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
6497                                                              ;LEVEL 4-7.
6498                                                              ;SET UP INTERRUPT VECTOR
6499
6500 023734 052777 000130 156330          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
6501                                                                    ;MAINTENANCE MODE LOOPBACK.
6502 023742 052777 000020 156316          BIS     #RXENA,@RXCSR   ;ENABLE THE RECEIVER
6503
6504 023750 005003                        CLR     R3              ;INITIALIZE THE COUNTER
6505 023752                        5$:
6506 023752 032777 004000 156306          BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
6507 023760 001007                        BNE     10$             ;BR IF YES
6508 023762 005303                        DEC     R3              ;DECREMENT THE COUNTER
6509 023764 001372                        BNE     5$
6510 023766                               ERRDF   41,EMG12,ERRG2
 (4) 023766 104455                                                                       TRAP    C$ERDF
 (5) 023770 000051                                                                       .WORD   41
 (5) 023772 014062                                                                       .WORD   EMG12
 (5) 023774 006700                                                                       .WORD   ERRG2
6511 023776 000444                        BR      45$
6512 024000                        10$:
6513 024000 005003                        CLR     R3              ;INITIALIZE THE COUNTER.
6514 024002                        12$:
6515 024002 032777 002000 156256          BIT     #RSTARY,@RXCSR  ;IS THE STATUS READY?
6516 024010 001016                        BNE     20$
6517 024012 032777 000200 156246          BIT     #RDATRY,@RXCSR
6518 024020 001403                        BEQ     15$
6519 024022                               $DELAY  5               ;DELAY .5 MSEC.
 (1)
 (1)                                                              ;******** MACRO EXPANSION ********
 (1) 024022 004737 006604                 JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
 (1) 024026 000005                                .WORD   5       ;NUMBER OF DELAY LOOPS
 (1)                                                              ;*********************************
 (1)
6520 024030                        15$:
```

```
 6521  024030  005303                          DEC     R3              ;DECREMENT THE COUNTER
 6522  024032  001363                          BNE     12$
 6523  024034                                  ERRDF   42,EMG1,ERRG2   ;TIME OUT
  (4)  024034  104455                                                            TRAP    C$ERDF
  (5)  024036  000052                                                            .WORD   42
  (5)  024040  013462                                                            .WORD   EMG1
  (5)  024042  006700                                                            .WORD   ERRG2
 6524  024044  000421                          BR      45$
 6525
 6526  024046                          20$:
 6527
 6528  024046  032777  002000  156214          BIT     @RABORT,@RDSR   ;WAS THE RECEIVE ABORT RECEIVED?
 6529  024054  001005                          BNE     40$             ;IF YES OK.
 6530  024056                                  ERRDF   43,EMG20,ERRG2
  (4)  024056  104455                                                            TRAP    C$ERDF
  (5)  024060  000053                                                            .WORD   43
  (5)  024062  014465                                                            .WORD   EMG20
  (5)  024064  006700                                                            .WORD   ERRG2
 6531  024066  000410                          BR      45$
 6532  024070                          40$:
 6533  024070  032777  002000  156170          BIT     @RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
 6534  024076  001404                          BEQ     45$
 6535
 6536  024100                                  ERRDF   44,EMG18,ERRG2
  (4)  024100  104455                                                            TRAP    C$ERDF
  (5)  024102  000054                                                            .WORD   44
  (5)  024104  014405                                                            .WORD   EMG18
  (5)  024106  006700                                                            .WORD   EHRG2
 6537  024110                          45$:
 6538  024110  005037  002316                  CLR     ABORT           ;CLEAR THE ABORT FLAG.
 6539  024114                            ENDSUB
  (3)  024114                                                                L10063:
  (3)  024114  104403                                                            TRAP    C$ESUB
 6540
 6541
 6542
 6543  024116                          ENDTST
  (3)  024116                                                                L10060:
  (3)  024116  104401                                                            TRAP    C$ETST
 6544
 6545
```

```
                                .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
(3) 024120                                                              T10::

                                BGNSUB
024120                                                                  T10.1:
(3) 024120  104402                                                              TRAP    C$BSUB
024122                                  CALL    $RESET          ;RESET THE DPV
024126                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
(3) 024126  104410                                                              TRAP    C$ESCAPE
(3) 024130  001102                                                              .WORD   L10064-.
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.

024154                                  SETVEC  XMTVEC,#XINT,#PRIO4
(7) 024154  012746  000200                                                      MOV     #PRIO4,-(SP)
(6) 024160  012746  017232                                                      MOV     #XINT,-(SP)
(5) 024164  013746  002264                                                      MOV     XMTVEC,-(SP)
(4) 024170  012746  000003                                                      MOV     #3,-(SP)
(3) 024174  104437                                                              TRAP    C$SVEC
(2) 024176  062706  000010                                                      ADD     #10,SP
024202                                  SETVEC  RCVEC,#RINT,#PRIO4
(7) 024202  012746  000200                                                      MOV     #PRIO4,-(SP)
(6) 024206  012746  016602                                                      MOV     #RINT,-(SP)
(5) 024212  013746  002262                                                      MOV     RCVEC,-(SP)
(4) 024216  012746  000003                                                      MOV     #3,-(SP)
(3) 024222  104437                                                              TRAP    C$SVEC
(2) 024224  062706  000010                                                      ADD     #10,SP
024230                                  SETPRI  #PRIOO          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
(3) 024230  012700  000000                                                      MOV     #PRIOO,R0
(3) 024234  104441                                                              TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR

024236  052777  000130  156026          BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
                                                                ;MAINTENANCE MODE LOOPBACK.
024244  052777  000120  156014          BIS     #RXITEN!RXENA,@RXCSR  ;ENABLE THE RECEIVER

024252  005003                          CLR     R3              ;INITIALIZE THE COUNTER
024254                          5$:
```

```
 6584  024254  032777  004000  156004          BIT     @RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
 6585  024262  001007                          BNE     10$             ;BR IF YES
 6586  024264  005303                          DEC     R3              ;DECREMENT THE COUNTER
 6587  024266  001372                          BNE     5$
 6588  024270                                  ERRDF   45,EMG12,ERRG2
  (4)  024270  104455                                                          TRAP    C$ERDF
  (5)  024272  000055                                                          .WORD   45
  (5)  024274  014062                                                          .WORD   EMG12
  (5)  024276  006700                                                          .WORD   ERRG2
 6589  024300  000434                          BR      45$
 6590  024302                          10$:
 6591  024302  005003                          CLR     R3              ;INITIALIZE THE COUNTER.
 6592  024304                          12$:
 6593  024304  032737  000002  002376          BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
 6594  024312  001007                          BNE     20$
 6595  024314  005303                          DEC     R3              ;DECREMENT THE COUNTER
 6596  024316  001372                          BNE     12$
 6597  024320                                  ERRDF   46,EMG21,ERRG2
  (4)  024320  104455                                                          TRAP    C$ERDF
  (5)  024322  000056                                                          .WORD   46
  (5)  024324  014514                                                          .WORD   EMG21
  (5)  024326  006700                                                          .WORD   ERRG2
 6598  024330  000420                          BR      45$
 6599
 6600  024332                          20$:
 6601  024332  032737  001000  002400          BIT     @REOM,RSAVE     ;WAS THE RECEIVE END OF MESSAGE RECEIVED?
 6602  024340  001004                          BNE     40$             ;IF YES OK.
 6603  024342                                  ERRDF   47,EMG17,ERRG2
  (4)  024342  104455                                                          TRAP    C$ERDF
  (5)  024344  000057                                                          .WORD   47
  (5)  024346  014345                                                          .WORD   EMG17
  (5)  024350  006700                                                          .WORD   ERRG2
 6604  024352                          40$:
 6605  024352  032777  002000  155706          BIT     @RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
 6606  024360  001404                          BEQ     45$
 6607  024362                                  ERRDF   48,EMG18,ERRG2
  (4)  024362  104455                                                          TRAP    C$ERDF
  (5)  024364  000060                                                          .WORD   48
  (5)  024366  014405                                                          .WORD   EMG18
  (5)  024370  006700                                                          .WORD   ERRG2
 6608  024372                          45$:
 6609  024372                          SETPRI  @PRI07          ;SET PROCESSOR PRI TO 7
  (3)  024372  012700  000340                                                  MOV     @PRI07,R0
  (3)  024376  104441                                                          TRAP    C$SPRI
 6610                                                     ;(DISABLE INTERRUPT)
 6611  024400                          CLRVEC  RCVEC           ;RESTORE THE INTERRUPT VECTOR.
  (3)  024400  013700  002262                                                  MOV     RCVEC,R0
  (3)  024404  104436                                                          TRAP    C$CVEC
 6612  024406                          CLRVEC  XMTVEC          ;RESORE THE VECTOR.
  (3)  024406  013700  002264                                                  MOV     XMTVEC,R0
  (3)  024412  104436                                                          TRAP    C$CVEC
 6613
 6614  024414                  ENDSUB
  (3)  024414                                                          L10065:
  (3)  024414  104403                                                          TRAP    C$ESUB
 6615
```

```
     024416                                 BGNSUB
(3)  024416                                                                         T10.2:
(3)  024416  104402                                                                         TRAP    C$BSUB
     024420                                         CALL    $RESET          ;RESET THE DPV
     024424                                         ESCAPE  TST             ;IF ERROR, EXIT THE TEST
(3)  024424  104410                                                                         TRAP    C$ESCAPE
(3)  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,#PRIO4
(7)  024460  012746  000200                                                                 MOV     #PRIO4,-(SP)
(6)  024464  012746  017232                                                                 MOV     #XINT,-(SP)
(5)  024470  013746  002264                                                                 MOV     XMTVEC,-(SP)
(4)  024474  012746  000003                                                                 MOV     #3,-(SP)
(3)  024500  104437                                                                         TRAP    C$SVEC
(2)  024502  062706  000010                                                                 ADD     #10,SP
     024506                                         SETVEC  RCVEC,#RINT,#PRIO4
(7)  024506  012746  000200                                                                 MOV     #PRIO4,-(SP)
(6)  024512  012746  016602                                                                 MOV     #RINT,-(SP)
(5)  024516  013746  002262                                                                 MOV     RCVEC,-(SP)
(4)  024522  012746  000003                                                                 MOV     #3,-(SP)
(3)  024526  104437                                                                         TRAP    C$SVEC
(2)  024530  062706  000010                                                                 ADD     #10,SP
     024534                                         SETPRI  #PRIO0          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
(3)  024534  012700  000000                                                                 MOV     #PRIO0,R0
(3)  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
(4)  024574  104455                                                                         TRAP    C$ERDF
(5)  024576  000061                                                                         .WORD   49
(5)  024600  014062                                                                         .WORD   EMG12
(5)  024602  006700                                                                         .WORD   ERRG2
     024604  000434                                 BR      45$
     024606                                 10$:
     024606  005003                                 CLR     R3              ;INITIALIZE THE COUNTER.
     024610                                 12$:
     024610  032737  000002  002376                 BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
```

```
 6650  024616  001007                        BNE     20$
 6651  024620  005303                        DEC     R3              ;DECREMENT THE COUNTER
 6652  024622  001372                        BNE     12$
 6653  024624                                ERRDF   50,EMG21,ERRG2
  (4)  024624  104455                                                TRAP    C$ERDF
  (5)  024626  000062                                                .WORD   50
  (5)  024630  014514                                                .WORD   EMG21
  (5)  024632  006700                                                .WORD   ERRG2
 6654  024634  000420                        BR      45$
 6655
 6656  024636                          20$:
 6657
 6658  024636  032737  004000  002400        BIT     @#OVER,@#SAVE   ;WAS THE RECEIVE OVERRUN RECEIVED?
 6659  024644  001004                        BNE     40$             ;IF YES OK.
 6660  024646                                ERRDF   51,EMG19,ERRG2
  (4)  024646  104455                                                TRAP    C$ERDF
  (5)  024650  000063                                                .WORD   51
  (5)  024652  014434                                                .WORD   EMG19
  (5)  024654  006700                                                .WORD   ERRG2
 6661  024656                          40$:
 6662  024656  032777  002000  155402        BIT     @#RSTARY,@#RXCSR ;IS THE STATUS DROPPED?
 6663  024664  001404                        BEQ     45$
 6664  024666                                ERRDF   52,EMG18,ERRG2
  (4)  024666  104455                                                TRAP    C$ERDF
  (5)  024670  000064                                                .WORD   52
  (5)  024672  014405                                                .WORD   EMG18
  (5)  024674  006700                                                .WORD   ERRG2
 6665  024676                          45$:
 6666  024676                                SETPRI  @#PRI07         ;SET PROCESSOR PRI TO 7
  (3)  024676  012700  000340                                        MOV     @#PRI07,R0
  (3)  024702  104441                                                TRAP    C$SPRI
 6667                                                               ;(DISABLE INTERRUPT)
 6668  024704                                CLRVEC  RCVEC           ;RESTORE THE INTERRUPT VECTOR.
  (3)  024704  013700  002262                                        MOV     RCVEC,R0
  (3)  024710  104436                                                TRAP    C$CVEC
 6669  024712                                CLRVEC  XMTVEC
  (3)  024712  013700  002264                                        MOV     XMTVEC,R0
  (3)  024716  104436                                                TRAP    C$CVEC
 6670  024720  005037  002370                CLR     OVER            ;CLEAR OVERRUN FLAG.
 6671
 6672  024724                          ENDSUB
  (3)  024724                                                                L10066:
  (3)  024724  104403                                                TRAP    C$ESUB
 6673
 6674
 6675
 6676  024726                          BGNSUB
  (3)  024726                                                                T10.3:
  (3)  024726  104402                                                TRAP    C$BSUB
 6677  024730                                CALL    $RESET          ;RESET THE DPV
 6678  024734                                ESCAPE  TST             ;IF ERROR, EXIT THE TEST
  (3)  024734  104410                                                TRAP    C$ESCAPE
  (3)  024736  000274                                                .WORD   L10064-.
 6679
 6680  024740  005037  002376                CLR     RFLAG           ;CLEAR RECEIVE INTERRUPT
 6681  024744  005037  002424                CLR     TFLAG           ;CLEAR TRANSMIT INTERRUPT FLAG.
```

```
                                        TEST 10 - RECEIVE STATUS INTERRUPT

 6682  024750  005037  002360                CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 6683  024754  012737  000001  002414        MOV     #1,START        ;# OF START OF MESSAGES.
 6684  024762  012737  000001  002316        MOV     #1,ABORT        ;FLAG TO SEND ABORT
 6685
 6686  024770                                SETVEC  XMTVEC,#XINT,#PRI04
  (7)  024770  012746  000200                                                    MOV     #PRI04,-(SP)
  (6)  024774  012746  017232                                                    MOV     #XINT,-(SP)
  (5)  025000  013746  002264                                                    MOV     XMTVEC,-(SP)
  (4)  025004  012746  000003                                                    MOV     #3,-(SP)
  (3)  025010  104437                                                            TRAP    C$SVEC
  (2)  025012  062706  000010                                                    ADD     #10,SP
 6687  025016                                SETVEC  RCVEC,#RINT,#PRI04
  (7)  025016  012746  000200                                                    MOV     #PRI04,-(SP)
  (6)  025022  012746  016602                                                    MOV     #RINT,-(SP)
  (5)  025026  013746  002262                                                    MOV     RCVEC,-(SP)
  (4)  025032  012746  000003                                                    MOV     #3,-(SP)
  (3)  025036  104437                                                            TRAP    C$SVEC
  (2)  025040  062706  000010                                                    ADD     #10,SP
 6688  025044                                SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
  (3)  025044  012700  000000                                                    MOV     #PRI00,R0
  (3)  025050  104441                                                            TRAP    C$SPRI
 6689                                                   ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
 6690                                                   ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
 6691                                                   ;LEVEL 4-7.
 6692                                                   ;SET UP INTERRUPT VECTOR
 6693
 6694  025052  052777  000130  155212        BIS     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND SELECT
 6695                                                                        ;MAINTENANCE MODE LOOPBACK.
 6696  025060  052777  000120  155200        BIS     #RXITEN!RXENA,@RXCSR  ;ENABLE THE RECEIVER
 6697
 6698  025066  005003                        CLR     R3              ;INITIALIZE THE COUNTER
 6699  025070                          5$:
 6700  025070  032777  004000  155170        BIT     #RXACT,@RXCSR   ;IS THE RECEIVER ACTIVE?
 6701  025076  001007                        BNE     10$             ;BR IF YES
 6702  025100  005303                        DEC     R3              ;DECREMENT THE COUNTER
 6703  025102  001372                        BNE     5$
 6704  025104                                ERRDF   53,EMG12,ERRG2
  (4)  025104  104455                                                            TRAP    C$ERDF
  (5)  025106  000065                                                            .WORD   53
  (5)  025110  014062                                                            .WORD   EMG12
  (5)  025112  006700                                                            .WORD   ERRG2
 6705  025114  000435                        BR      45$
 6706  025116                          10$:
 6707  025116  005003                        CLR     R3              ;INITIALIZE THE COUNTER.
 6708  025120                          12$:
 6709  025120  032737  000002  002376        BIT     #2,RFLAG        ;WAS STATUS RECEIVED?
 6710  025126  001007                        BNE     20$
 6711  025130  005303                        DEC     R3              ;DECREMENT THE COUNTER
 6712  025132  001372                        BNE     12$
 6713  025134                                ERRDF   54,EMG21,ERRG2
  (4)  025134  104455                                                            TRAP    C$ERDF
  (5)  025136  000066                                                            .WORD   54
  (5)  025140  014514                                                            .WORD   EMG21
  (5)  025142  006700                                                            .WORD   ERRG2
 6714  025144  000421                        BR      45$
 6715
```

```
                                20$:
6716  025146                            BIT     #RABORT,RSAVE   ;WAS THE RECEIVE ABORT RECEIVED?
6717  025146  032737  002000  002400    BNE     40$             ;IF YES OK.
6718  025154  001005                    ERRDF   55,EMG20,ERRG2
6719  025156                                                                  TRAP    C$ERDF
 (4)  025156  104455                                                          .WORD   55
 (5)  025160  000067                                                          .WORD   EMG20
 (5)  025162  014465                                                          .WORD   ERRG2
 (5)  025164  006700
6720  025166  000410                    BR      45$
6721  025170                          40$:
6722  025170  032777  002000  155070    BIT     #RSTARY,@RXCSR  ;IS THE STATUS DROPPED?
6723  025176  001404                    BEQ     45$
6724
6725  025200                            ERRDF   56,EMG18,ERRG2
 (4)  025200  104455                                                          TRAP    C$ERDF
 (5)  025202  000070                                                          .WORD   56
 (5)  025204  014405                                                          .WORD   EMG18
 (5)  025206  006700                                                          .WORD   ERRG2
6726  025210                          45$:
6727  025210                            SETPRI  #PRI07          ;SET PROCESSOR PRI TO 7
 (3)  025210  012700  000340                                                  MOV     #PRI07,R0
 (3)  025214  104441                                                          TRAP    C$SPRI
6728                                                        ;(DISABLE INTERRUPT)
6729  025216                            CLRVEC  RCVEC         ;RESTORE THE INTERRUPT VECTOR.
 (3)  025216  013700  002262                                                  MOV     RCVEC,R0
 (3)  025222  104436                                                          TRAP    C$CVEC
6730  025224  005037  002316           CLR     ABORT           ;CLEAR THE ABORT FLAG.
6731
6732
6733  025230                          ENDSUB
 (3)  025230                                                        L10067:
 (3)  025230  104403                                                          TRAP    C$ESUB
6734
6735
6736  025232                          ENDTST
 (3)  025232                                                        L10064:
 (3)  025232  104401                                                          TRAP    C$ETST
6737
6738
6739
6740
6741
6742
6743
```

```
                                .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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                T11::

                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, EXIT THE TEST
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10070-.
                                        CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
                                        CLR     RFLAG
                                        CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
                                        SETVEC  RCVEC,#RINT,#PRI04
                                                                                MOV     #PRI04,-(SP)
                                                                                MOV     #RINT,-(SP)
                                                                                MOV     RCVEC,-(SP)
                                                                                MOV     #3,-(SP)
                                                                                TRAP    C$SVEC
                                                                                ADD     #10,SP
                                        SETVEC  XMTVEC,#XINT,#PRI04
                                                                                MOV     #PRI04,-(SP)
                                                                                MOV     #XINT,-(SP)
                                                                                MOV     XMTVEC,-(SP)
                                                                                MOV     #3,-(SP)
                                                                                TRAP    C$SVEC
                                                                                ADD     #10,SP
                                        SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
                                                                                MOV     #PRI00,R0
                                                                                TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR

                                        MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
                                        MOV     #2,START        ;# OF STARTS TO SEND.
                                        MOV     #RXITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND SET
                                                                ;SET INTERRUPT ENABLE.
                                        MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
                                                                ;SELECT THE MAINTENANCE LOOPBACK.
                                        CLR     R1              ;LOOP COUNTER
                                10$:
                                        CMP     #4,DATA         ;ARE THE 4 DATA CHARACTERS RECEIVED?
                                        BEQ     20$             ;IF YES - CHECK RECEIVE INTERRUPT.
                                        DEC     R1              ;DECREMENT COUNTER
                                        BNE     10$
```

```
 6784
 6785  025410  005737  002424                TST     TFLAG           ;WERE ANY XMIT INTERRUPTS RECEIVED
 6786  025414  001005                        BNE     20$             ;IF YES, KEEP CHECKING
 6787  025416                                ERRDF   57,EMG9,ERRG2
  (4)  025416  104455                                                                    TRAP    C$ERDF
  (5)  025420  000071                                                                    .WORD   57
  (5)  025422  013723                                                                    .WORD   EMG9
  (5)  025424  006700                                                                    .WORD   ERRG2
 6788  025426  000410                        BR      30$
 6789
 6790  025430                          20$:
 6791  025430  032737  000001  002376        BIT     #1,RFLAG        ;WAS ANY DATA RECEIVED?
 6792  025436  001004                        BNE     30$             ;IF YES - OK.
 6793  025440                                ERRDF   58,EMG15,ERRG2
  (4)  025440  104455                                                                    TRAP    C$ERDF
  (5)  025442  000072                                                                    .WORD   58
  (5)  025444  014243                                                                    .WORD   EMG15
  (5)  025446  006700                                                                    .WORD   ERRG2
 6794
 6795  025450                          30$:
 6796  025450                                CALL    $RESET          ;RESET THE DPV
 6797  025454                                SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
  (3)  025454  012700  000340                                                           MOV     #PRI07,R0
  (3)  025460  104441                                                                   TRAP    C$SPRI
 6798                                                   ;(THIS WILL DISABLE INTERRUPTS)
 6799  025462                                CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
  (3)  025462  013700  002262                                                           MOV     RCVEC,R0
  (3)  025466  104436                                                                   TRAP    C$CVEC
 6800  025470                                CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
  (3)  025470  013700  002264                                                           MOV     XMTVEC,R0
  (3)  025474  104436                                                                   TRAP    C$CVEC
 6801
 6802
 6803
 6804  025476                          ENDTST
  (3)  025476                                                                   L10070:
  (3)  025476  104401                                                                   TRAP    C$ETST
 6805
 6806
```

```
                                .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
                                                                                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                                  $DELAY  1               ;DELAY 100 MICROSECONDS
                                (1)
                                (1)                             ;******** MACRO EXPANSION ********
025526  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025532  000001                                  .WORD   1       ;NUMBER OF DELAY LOOPS
                                (1)             ;************************************
                                (1)
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                                  $DELAY  1               ;DELAY 100 MICROSECONDS
                                (1)
                                (1)                             ;******** MACRO EXPANSION ********
025564  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025570  000001                                  .WORD   1       ;NUMBER OF DELAY LOOPS
                                (1)             ;************************************
                                (1)
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                                  $DELAY  1               ;DELAY 100 MICROSECONDS
                                (1)
                                (1)                             ;******** MACRO EXPANSION ********
025612  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
025616  000001                                  .WORD   1       ;NUMBER OF DELAY LOOPS
                                (1)             ;************************************
                                (1)
```

```
 6844  025620  032777  000040  154444          BIT     #SQ,@TXCSR      ;IS SIGNAL QUALITY SET?
 6845  025626  001413                          BEQ     10$             ;IF NOT - ERROR.
 6846  025630  012702  000010                  MOV     #LL,R2          ;SAVE LL IN REGISTER (FOR ERRCR REPORT).
 6847  025634  010277  154426                  MOV     R2,@RXCSR       ;SET LOCAL LOOP
 6848  025640                                  $DELAY  1               ;DELAY 100 MICROSECONDS
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  025640  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  025644  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
  (1)                                                                   ;************************************
  (1)
 6849  025646  032777  001000  154412          BIT     #DM,@RXCSR      ;IS DATA MODE SET?
 6850  025654  001004                          BNE     20$
 6851
 6852  025656                          10$:
 6853  025656                                  ERRDF   59,EMG22,ERRG13
  (4)  025656  104455                                                                   TRAP    C$ERDF
  (5)  025660  000073                                                                   .WORD   59
  (5)  025662  014556                                                                   .WORD   EMG22
  (5)  025664  010272                                                                   .WORD   ERRG13
 6854
 6855  025666                          20$:
 6856                                                                   ;CLEAR ALL THOSE BITS
 6857  025666  042777  000017  154372          BIC     #RTS!DTR!SF!LL,@RXCSR
 6858  025674                                  $DELAY  1               ;DELAY 100 MICRO SECONDS
  (1)
  (1)                                                                   ;******** MACRO EXPANSION ********
  (1)  025674  004737  006604                  JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  025700  000001                          .WORD   1               ;NUMBER OF DELAY LOOPS
  (1)                                                                   ;************************************
  (1)
 6859
 6860  025702  012702  000004                  MOV     #RTS,R2         ;CHECK RTS.
 6861  025706  030277  154354                  BIT     R2,@RXCSR       ;IS IT SET?
 6862  025712  001021                          BNE     30$             ;IF YES, ERROR.
 6863  025714  012702  000002                  MOV     #DTR,R2         ;CHECK DTR.
 6864  025720  030277  154342                  BIT     R2,@RXCSR       ;IS IT SET?
 6865  025724  001014                          BNE     30$             ;IF YES, ERROR.
 6866  025726  012777  000001  154332          MOV     #SF,@RXCSR      ;CHECK SF.
 6867  025734  030277  154326                  BIT     R2,@RXCSR       ;IS IT SET?
 6868  025740  001006                          BNE     30$             ;IF YES, ERROR.
 6869  025742  012777  000010  154316          MOV     #LL,@RXCSR      ;CHECK LL
 6870  025750  030277  154312                  BIT     R2,@RXCSR       ;IS IT SET?
 6871  025754  001404                          BEQ     40$             ;IF NOT, OK
 6872  025756                          30$:
```

```
 6873  025756                                ERRDF   60,EMG22,ERRG15
  (4)  025756  104455                                                   TRAP    C$ERDF
  (5)  025760  000074                                                   .WORD   60
  (5)  025762  014556                                                   .WORD   EMG22
  (5)  025764  011044                                                   .WORD   ERRG15
 6874  025766                      40$:
 6875  025766                      ENDTST
  (3)  025766                                                L10071:
  (3)  025766  104401                                                   TRAP    C$ETST
 6876
 6877
 6878
 6879
```

```
                                .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.
                                ;*
                                ;*****************************************************************************
                                BGNTST
                                                                                T13::
                                        CALL    $TURN           ;CHECK THE TURNAROUND.
                                        BCC     1$              ;PROCEED IF TURNAROUND.
                                        EXIT    TST
                                                                                TRAP    C$EXIT
                                                                                .WORD   L10072-.
                                1$:
                                        SETVEC  RCVEC,#RINT,#PRI04
                                                                                MOV     #PRI04,-(SP)
                                                                                MOV     #RINT,-(SP)
                                                                                MOV     RCVEC,-(SP)
                                                                                MOV     #3,-(SP)
                                                                                TRAP    C$SVEC
                                                                                ADD     #10,SP
                                        SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
                                                                                MOV     #PRI00,R0
                                                                                TRAP    C$SPRI
                                                                ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                ;LEVEL 4-7.
                                                                ;SET UP INTERRUPT VECTOR


                                BGNSUB
                                                                        T13.1:
                                                                                TRAP    C$BSUB
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  YST             ;IF ERROR, EXIT THE TEST
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10072-.
                                        CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
                                        CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
```

```
 6922
 6923                                                          ;ENABLE RCV INT AND SET RTS, DTR AND L. LOOP
 6924  026060  012777  000116  154200          MOV     #RXITEN!LL!DTR!RTS,@RXCSR
 6925
 6926  026066                            10$:
 6927  026066                                  $DELAY  10              ;WAIT 1 MS
  (1)
  (1)                                                          ;******** MACRO EXPANSION ********
  (1)  026066  004737  006604                    JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  026072  000010                            .WORD   10              ;NUMBER OF DELAY LOOPS
  (1)                                                          ;************************************
  (1)
 6928  026074  005737  002360                    TST     MCFLAG          ;WAS AN MODEM CONTROL INTERRUPT RECEIVED?
 6929  026100  001404                            BEQ     30$             ;IF NOT OK.
 6930  026102                                    ERRDF   61,EMG23,ERRG2
  (4)  026102  104455                                                                   TRAP    C$ERDF
  (5)  026104  000075                                                                   .WORD   61
  (5)  026106  014603                                                                   .WORD   EMG23
  (5)  026110  006700                                                                   .WORD   ERRG2
 6931
 6932  026112                            30$:
 6933
 6934  026112                              ENDSUB
  (3)  026112                                                                   L10073:
  (3)  026112  104403                                                                   TRAP    C$ESUB
 6935
 6936
 6937  026114                          BGNSUB
  (3)  026114                                                                   T13.2:
  (3)  026114  104402                                                                   TRAP    C$BSUB
 6938  026116                                  CALL    $RESET          ;RESET THE DPV
 6939  026122                                  ESCAPE  TST             ;IF ERROR, EXIT THE TEST
  (3)  026122  104410                                                                   TRAP    C$ESCAPE
  (3)  026124  000552                                                                   .WORD   L10072-.
 6940  026126  005037  002376                    CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
 6941  026132  005037  002360                    CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 6942
 6943                                                          ;ENABLE DS. INT, SET RTS, DTR AND LL
 6944  026136  012777  000056  154122          MOV     #DSITEN!LL!RTS!DTR,@RXCSR
 6945
 6946  026144                            10$:
 6947  026144                                  $DELAY  10              ;WAIT 1 MS
  (1)
  (1)                                                          ;******** MACRO EXPANSION ********
  (1)  026144  004737  006604                    JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  026150  000010                            .WORD   10              ;NUMBER OF DELAY LOOPS
  (1)                                                          ;************************************
  (1)
 6948  026152  005737  002360                    TST     MCFLAG          ;WAS AN MODEM CONTROL INTERRUPT RECEIVED?
 6949  026156  001404                            BEQ     30$             ;IF NOT OK.
 6950  026160                                    ERRDF   62,EMG23,ERRG2
  (4)  026160  104455                                                                   TRAP    C$ERDF
  (5)  026162  000076                                                                   .WORD   62
  (5)  026164  014603                                                                   .WORD   EMG23
  (5)  026166  006700                                                                   .WORD   ERRG2
 6951
```

```
 6952  026170                          30$:
 6953
 6954  026170                            ENDSUB
  (3)  026170                                                                 L10074:
  (3)  026170  104403                                                                 TRAP    C$ESUB
 6955
 6956
 6957
 6958  026172                            BGNSUB
  (3)  026172                                                                 T13.3:
  (3)  026172  104402                                                                 TRAP    C$BSUB
 6959  026174                                 CALL    $RESET          ;RESET THE DPV
 6960  026200                                 ESCAPE  TST             ;IF ERROR, EXIT THE TEST
  (3)  026200  104410                                                                 TRAP    C$ESCAPE
  (3)  026202  000474                                                                 .WORD   L10072-.
 6961  026204  005037  002376                 CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
 6962  026210  005037  002360                 CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 6963
 6964                                                                  ;SET LOCAL LOOP, DTR AND RTS.
 6965  026214  012777  000016  154044         MOV     #LL!RTS!DTR,@RXCSR
 6966  026222                          10$:
 6967  026222                                 $DELAY  10              ;WAIT 1 MS
  (1)
  (1)                                                                 ;******** MACRO EXPANSION ********
  (1)  026222  004737  006604                JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
  (1)  026226  000010                                .WORD   10      ;NUMBER OF DELAY LOOPS
  (1)                                                                 ;************************************
  (1)
 6968  026230  005737  002360                 TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
 6969  026234  001404                         BEQ     30$             ;IF NOT OK.
 6970  026236                                 ERRDF   63,EMG23,ERRG2
  (4)  026236  104455                                                                 TRAP    C$ERDF
  (5)  026240  000077                                                                 .WORD   63
  (5)  026242  014603                                                                 .WORD   EMG23
  (5)  026244  006700                                                                 .WORD   ERRG2
 6971
 6972  026246                          30$:
 6973
 6974  026246                            ENDSUB
  (3)  026246                                                                 L10075:
  (3)  026246  104403                                                                 TRAP    C$ESUB
 6975
 6976
 6977  026250                            BGNSUB
  (3)  026250                                                                 T13.4:
  (3)  026250  104402                                                                 TRAP    C$BSUB
 6978  026252                                 CALL    $RESET          ;RESET THE DPV
 6979  026256                                 ESCAPE  TST             ;IF ERROR, EXIT THE TEST
  (3)  026256  104410                                                                 TRAP    C$ESCAPE
  (3)  026260  000416                                                                 .WORD   L10072-.
 6980  026262  005037  002376                 CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
 6981  026266  005037  002360                 CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 6982
 6983                                                                  ;ENABLE INTERRUPTS AND SET RTS.
 6984  026272  012777  000144  153766         MOV     #RXITEN!DSITEN!RTS,@RXCSR
 6985
```

```
                                10$:
                                        $DELAY  10              ;WAIT 1 MS
 (1)
 (1)                                                            ;******** MACRO EXPANSION ********
 (1)  026300  004737  006604            JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
 (1)  026304  000010                    .WORD   10              ;NUMBER OF DELAY LOOPS
 (1)                                                            ;**********************************
 (1)
6988  026306  005737  002360            TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
6989  026312  001015                    BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
6990  026314                            ERRDF   64,EMG24,ERRG2
 (4)  026314  104455                                                            TRAP    C$ERDF
 (5)  026316  000100                                                            .WORD   64
 (5)  026320  014661                                                            .WORD   EMG24
 (5)  026322  006700                                                            .WORD   ERRG2
6991  026324                            PRINTB  #FMG26
 (7)  026324  012746  012715                                                    MOV     #FMG26,-(SP)
 (6)  026330  012746  000001                                                    MOV     #1,-(SP)
 (3)  026334  010600                                                            MOV     SP,R0
 (4)  026336  104414                                                            TRAP    C$PNTB
 (4)  026340  062706  000004                                                    ADD     #4,SP
6992  026344  000410                    BR      30$
6993  026346                        20$:
6994  026346  022737  000001  002360    CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
6995  026354  001404                    BEQ     30$             ;IF YES - OK
6996  026356                            ERRDF   65,EMG40        ;REPORT MULTIPLE INTERRUPTS
 (4)  026356  104455                                                            TRAP    C$ERDF
 (5)  026360  000101                                                            .WORD   65
 (5)  026362  015321                                                            .WORD   EMG40
 (5)  026364  000000                                                            .WORD   0
6997  026366                        30$:
6998
6999  026366                          ENDSUB
 (3)  026366                                                                                    L10076:
 (3)  026366  104403                                                                            TRAP    C$ESUB
7000
7001
7002  026370                          BGNSUB
 (3)  026370                                                                                    T13.5:
 (3)  026370  104402                                                                            TRAP    C$BSUB
7003  026372                                CALL    $RESET          ;RESET THE DPV
7004  026376                                ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3)  026376  104410                                                                            TRAP    C$ESCAPE
 (3)  026400  000276                                                                            .WORD   L10072-.
7005  026402  005037  002376                CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
7006  026406  005037  002360                CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
7007
7008                                                                  ;ENABLE INTERRUPTS AND SET DTR.
7009  026412  012777  000142  153646        MOV     #RXITEN!DSITEN!DTR,@RXCSR
7010
7011  026420                        10$:
7012  026420                                $DELAY  10              ;WAIT 1 MS
 (1)
 (1)                                                            ;******** MACRO EXPANSION ********
 (1)  026420  004737  006604            JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
 (1)  026424  000010                    .WORD   10              ;NUMBER OF DELAY LOOPS
```

```
 (1)                                                    ;**********************************
 (1)
7013  026426  005737  002360          TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
7014  026432  001015                  BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
7015  026434                          ERRDF   66,EMG24,ERRG2
 (4)  026434  104455                                                          TRAP    C$ERDF
 (5)  026436  000102                                                          .WORD   66
 (5)  026440  014661                                                          .WORD   EMG24
 (5)  026442  006700                                                          .WORD   ERRG2
7016  026444                          PRINTB  #FMG26
 (7)  026444  012746  012715                                                  MOV     #FMG26,-(SP)
 (6)  026450  012746  000001                                                  MOV     #1,-(SP)
 (3)  026454  010600                                                          MOV     SP,R0
 (4)  026456  104414                                                          TRAP    C$PNTB
 (4)  026460  062706  000004                                                  ADD     #4,SP
7017  026464  000410                  BR      30$
7018  026466                  20$:
7019  026466  022737  000001  002360        CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
7020  026474  001404                        BEQ     30$             ;IF YES - OK
7021  026476                              ERRDF   67,EMG40        ;REPORT MULTIPLE INTERRUPTS
 (4)  026476  104455                                                          TRAP    C$ERDF
 (5)  026500  000103                                                          .WORD   67
 (5)  026502  015321                                                          .WORD   EMG40
 (5)  026504  000000                                                          .WORD   0
7022  026506                  30$:
7023
7024  026506                    ENDSUB
 (3)  026506                                                                L10077:
 (3)  026506  104403                                                          TRAP    C$ESUB
7025
7026
7027  026510                    BGNSUB
 (3)  026510                                                                T13.6:
 (3)  026510  104402                                                          TRAP    C$BSUB
7028  026512                          CALL    $RESET          ;RESET THE DPV
7029  026516                          ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3)  026516  104410                                                          TRAP    C$ESCAPE
 (3)  026520  000156                                                          .WORD   L10072-.
7030  026522  005037  002376          CLR     RFLAG           ;CLEAR THE FLAG USED IN THE ISR
7031  026526  005037  002360          CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
7032
7033                                                          ;ENABLE INTERRUPTS AND SET LL.
7034  026532  012777  000150  153526      MOV     #RXITEN!DSITEN!LL,@RXCSR
7035
7036  026540                  10$:
7037  026540                          $DELAY  10              ;WAIT 1 MS
 (1)
 (1)                                                    ;******** MACRO EXPANSION ********
 (1)  026540  004737  006604          JSR     PC,$DLAY        ;CALL DELAY SUBROUTINE
 (1)  026544  000010                  .WORD   10              ;NUMBER OF DELAY LOOPS
 (1)                                                    ;**********************************
 (1)
7038  026546  005737  002360          TST     MCFLAG          ;WAS AN INTERRUPT RECEIVED?
7039  026552  001025                  BNE     20$             ;IF YES - CHECK FOR MULTIPLE INTERRUPTS.
7040  026554                          ERRDF   68,EMG24,ERRG2
 (4)  026554  104455                                                          TRAP    C$ERDF
```

```
 (5)  026556  000104                                                                    .WORD   68
 (5)  026560  014661                                                                    .WORD   EMG24
 (5)  026562  006700                                                                    .WORD   ERRG2
7041  026564                          PRINTB  #FMG26
 (7)  026564  012746  012715                                                           MOV     #FMG26,-(SP)
 (6)  026570  012746  000001                                                           MOV     #1,-(SP)
 (3)  026574  010600                                                                   MOV     SP,R0
 (4)  026576  104414                                                                   TRAP    C$PNTB
 (4)  026600  062706  000004                                                           ADD     #4,SP
7042  026604                          PRINTB  #FMG29
 (7)  026604  012746  013221                                                           MOV     #FMG29,-(SP)
 (6)  026610  012746  000001                                                           MOV     #1,-(SP)
 (3)  026614  010600                                                                   MOV     SP,R0
 (4)  026616  104414                                                                   TRAP    C$PNTB
 (4)  026620  062706  000004                                                           ADD     #4,SP
7043  026624  000410                          BR      30$
7044  026626                    20$:
7045  026626  022737  000001  002360          CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
7046  026634  001404                          BEQ     30$             ;IF YES - OK
7047  026636                                  ERRDF   69,EMG40        ;REPORT MULTIPLE INTERRUPTS
 (4)  026636  104455                                                                   TRAP    C$ERDF
 (5)  026640  000105                                                                   .WORD   69
 (5)  026642  015321                                                                   .WORD   EMG40
 (5)  026644  000000                                                                   .WORD   0
7048  026646                    30$:
7049
7050  026646                      ENDSUB
 (3)  026646                                                                L10100:
 (3)  026646  104403                                                                   TRAP    C$ESUB
7051
7052
7053
7054  026650                          CALL    $RESET          ;RESET THE DPV
7055  026654                          SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
 (3)  026654  012700  000340                                                           MOV     #PRI07,R0
 (3)  026660  104441                                                                   TRAP    C$SPRI
7056                                                          ;(THIS WILL DISABLE INTERRUPTS)
7057  026662                          CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
 (3)  026662  013700  002262                                                           MOV     RCVEC,R0
 (3)  026666  104436                                                                   TRAP    C$CVEC
7058  026670                          CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
 (3)  026670  013700  002264                                                           MOV     XMTVEC,R0
 (3)  026674  104436                                                                   TRAP    C$CVEC
7059
7060
7061  026676                    ENDTST
 (3)  026676                                                                L10072:
 (3)  026676  104401                                                                   TRAP    C$ETST
7062
7063
7064
```

```
                                .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
                                                                        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$SVEC
026770  062706  000010                                                      ADD     #10,SP
026774                                  SETVEC  XMTVEC,#..NT,#PRI04
026774  012746  000200                                                      MOV     #PRI04,-(SP)
027000  012746  017232                                                      MOV     #XINT,-(SP)
027004  013746  002264                                                      MOV     XMTVEC,-(SP)
027010  012746  000003                                                      MOV     #3,-(SP)
027014  104437                                                              TRAP    C$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
```

```
7101
7102
7103  027030  012777  043652  153232          MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
7104  027036  012737  000002  002414          MOV     #2,START        ;# OF START CHARACTERS.
7105  027044  012777  000160  153214          MOV     #RXITEN!DSITEN!RXENA @RXCSR ;ENABLE THE RECEIVER AND INT.
7106  027052  012777  000130  153212          MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
7107                                                                  ;SELECT THE MAINTENANCE LOOPBACK.
7108  027060  005001                          CLR     R1              ;LOOP COUNTER
7109  027062                          10$:
7110  027062  005737  002360                  TST     MCFLAG          ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
7111  027066  001017                          BNE     20$             ;IF YES, EXIT.
7112  027070  005301                          DEC     R1              ;DECREMENT COUNTER
7113  027072  001373                          BNE     10$
7114
7115  027074                                  ERRDF   70,EMG24,ERRG2
 (4)  027074  104455                                                                    TRAP    C$ERDF
 (5)  027076  000106                                                                    .WORD   70
 (5)  027100  014661                                                                    .WORD   EMG24
 (5)  027102  006700                                                                    .WORD   ERRG2
7116
7117  027104                                  PRINTB  #FMG26          ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
 (7)  027104  012746  012715                                                            MOV     #FMG26,-(SP)
 (6)  027110  012746  000001                                                            MOV     #1,-(SP)
 (3)  027114  010600                                                                    MOV     SP,R0
 (4)  027116  104414                                                                    TRAP    C$PNTB
 (4)  027120  062706  000004                                                            ADD     #4,SP
7118                                                            ;REMOVING THE WIRE WRAP.
7119  027124  000410                          BR      30$
7120  027126                          20$:
7121  027126  022737  000001  002360          CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
7122  027134  001404                          BEQ     30$             ;IF YES - OK
7123  027136                                  ERRDF   71,EMG40        ;REPORT MULTIPLE INTERRUPTS
 (4)  027136  104455                                                                    TRAP    C$ERDF
 (5)  027140  000107                                                                    .WORD   71
 (5)  027142  015321                                                                    .WORD   EMG40
 (5)  027144  000000                                                                    .WORD   0
7124  027146                          30$:
7125  027146                                  CALL    $RESET          ;RESET THE DPV
7126  027152                                  SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
 (3)  027152  012700  000340                                                            MOV     #PRI07,R0
 (3)  027156  104441                                                                    TRAP    C$SPRI
7127                                                            ;(THIS WILL DISABLE INTERRUPTS)
7128  027160                                  CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
 (3)  027160  013700  002262                                                            MOV     RCVEC,R0
 (3)  027164  104436                                                                    TRAP    C$CVEC
7129  027166                                  CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
 (3)  027166  013700  002264                                                            MOV     XMTVEC,R0
 (3)  027172  104436                                                                    TRAP    C$CVEC
7130  027174                                  ESCAPE  TST             ;IF ERROR, ESCAPE
 (3)  027174  104410                                                                    TRAP    C$ESCAPE
 (3)  027176  000604                                                                    .WORD   L10101-.
7131
7132  027200                          ENDSUB
 (3)  027200                                                                    L10102:
 (3)  027200  104403                                                                    TRAP    C$ESUB
7133
```

```
      027202                                     BGNSUB
 (3)  027202                                                                                   T14.2:
 (3)  027202  104402                                                                                   TRAP    C$BSUB
      027204                                           CALL    $RESET          ;RESET THE DPV
      027210                                           ESCAPE  TST             ;IF ERROR, EXIT THE TEST
 (3)  027210  104410                                                                                   TRAP    C$ESCAPE
 (3)  027212  000570                                                                                   .WORD   L10101-.
      027214  005037  002424                           CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
      027220  005037  002376                           CLR     RFLAG
      027224  005037  002360                           CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
      027230  012737  000002  002432                   MOV     #DTR,TOGGLE     ;TOGGLE DTR.

      027236                                           SETVEC  RCVEC,#RINT,#PRI04
 (7)  027236  012746  000200                                                                           MOV     #PRI04,-(SP)
 (6)  027242  012746  016602                                                                           MOV     #RINT,-(SP)
 (5)  027246  013746  002262                                                                           MOV     RCVEC,-(SP)
 (4)  027252  012746  000003                                                                           MOV     #3,-(SP)
 (3)  027256  104437                                                                                   TRAP    C$SVEC
 (2)  027260  062706  000010                                                                           ADD     #10,SP
      027264                                           SETVEC  XMTVEC,#XINT,#PRI04
 (7)  027264  012746  000200                                                                           MOV     #PRI04,-(SP)
 (6)  027270  012746  017232                                                                           MOV     #XINT,-(SP)
 (5)  027274  013746  002264                                                                           MOV     XMTVEC,-(SP)
 (4)  027300  012746  000003                                                                           MOV     #3,-(SP)
 (3)  027304  104437                                                                                   TRAP    C$SVEC
 (2)  027306  062706  000010                                                                           ADD     #10,SP
      027312                                           SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 (3)  027312  012700  000000                                                                           MOV     #PRI00,R0
 (3)  027316  104441                                                                                   TRAP    C$SPRI
                                                                       ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
                                                                       ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
                                                                       ;LEVEL 4-7.
                                                                       ;SET UP INTERRUPT VECTOR


      027320  012777  043652  152742                   MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
      027326  012737  000002  002414                   MOV     #2,START        ;# OF START CHARACTERS.
      027334  012777  000160  152724                   MOV     #RXITEN!DSITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND INT.
      027342  012777  000130  152722                   MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
                                                                                   ;SELECT THE MAINTENANCE LOOPBACK.
      027350  005001                                   CLR     R1              ;LOOP COUNTER
      027352                                   10$:
      027352  005737  002360                           TST     MCFLAG          ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
      027356  001017                                   BNE     20$             ;IF YES, EXIT.
      027360  005301                                   DEC     R1              ;DECREMENT COUNTER
      027362  001373                                   BNE     10$

      027364                                           ERRDF   72,EMG24,ERRG2
 (4)  027364  104455                                                                                   TRAP    C$ERDF
 (5)  027366  000110                                                                                   .WORD   72
 (5)  027370  014661                                                                                   .WORD   EMG24
 (5)  027372  006700                                                                                   .WORD   ERRG2

      027374                                           PRINTB  #FMG26          ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
 (7)  027374  012746  012715                                                                           MOV     #FMG26,-(SP)
 (6)  027400  012746  000001                                                                           MOV     #1,-(SP)
```

```
   (3)  027404  010600                                                                    MOV     SP,R0
   (4)  027406  104414                                                                    TRAP    C$PNTB
   (4)  027410  062706  000004                                                           ADD     #4,SP
 7166                                                    ;REMOVING THE WIRE WRAP.
 7167  027414  000410                    BR      30$
 7168  027416                      20$:
 7169  027416  022737  000001  002360    CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
 7170  027424  001404                    BEQ     30$             ;IF YES - OK
 7171  027426                            ERRDF   73,EMG40        ;REPORT MULTIPLE INTERRUPTS
   (4)  027426  104455                                                                    TRAP    C$ERDF
   (5)  027430  000111                                                                    .WORD   73
   (5)  027432  015321                                                                    .WORD   EMG40
   (5)  027434  000000                                                                    .WORD   0
 7172  027436                      30$:
 7173  027436                            CALL    $RESET          ;RESET THE DPV
 7174  027442                            SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
   (3)  027442  012700  000340                                                           MOV     #PRI07,R0
   (3)  027446  104441                                                                   TRAP    C$SPRI
 7175                                                    ;(THIS WILL DISABLE INTERRUPTS)
 7176  027450                            CLRVEC  RCVEC           ;RESTORE THE RECV. VECTOR
   (3)  027450  013700  002262                                                           MOV     RCVEC,R0
   (3)  027454  104436                                                                   TRAP    C$CVEC
 7177  027456                            CLRVEC  XMTVEC          ;RESTORE THE XMIT. VECTOR
   (3)  027456  013700  002264                                                           MOV     XMTVEC,R0
   (3)  027462  104436                                                                   TRAP    C$CVEC
 7178  027464                            ESCAPE  TST             ;IF ERROR, ESCAPE
   (3)  027464  104410                                                                   TRAP    C$ESCAPE
   (3)  027466  000314                                                                   .WORD   L10101-.
 7179
 7180  027470                      ENDSUB
   (3)  027470                                                                                   L10103:
   (3)  027470  104403                                                                           TRAP    C$ESUB
 7181
 7182  027472                      BGNSUB
   (3)  027472                                                                                   T14.3:
   (3)  027472  104402                                                                           TRAP    C$BSUB
 7183  027474                            CALL    $RESET          ;RESET THE DPV
 7184  027500                            ESCAPE  TST             ;IF ERROR, EXIT THE TEST
   (3)  027500  104410                                                                   TRAP    C$ESCAPE
   (3)  027502  000300                                                                   .WORD   L10101-.
 7185  027504  005037  002424            CLR     TFLAG           ;CLEAR THE FLAGS USED IN THE ISRS.
 7186  027510  005037  002376            CLR     RFLAG
 7187  027514  005037  002360            CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 7188  027520  012737  000010  002432    MOV     #LL,TOGGLE      ;TOGGLE LL
 7189
 7190  027526                            SETVEC  RCVEC,#RINT,#PRI04
   (7)  027526  012746  000200                                                                   MOV     #PRI04,-(SP)
   (6)  027532  012746  016602                                                                   MOV     #RINT,-(SP)
   (5)  027536  013746  002262                                                                   MOV     RCVEC,-(SP)
   (4)  027542  012746  000003                                                                   MOV     #3,-(SP)
   (3)  027546  104437                                                                           TRAP    C$SVEC
   (2)  027550  062706  000010                                                                   ADD     #10,SP
 7191  027554                            SETVEC  XMTVEC,#XINT,#PRI04
   (7)  027554  012746  000200                                                                   MOV     #PRI04,-(SP)
   (6)  027560  012746  017232                                                                   MOV     #XINT,-(SP)
   (5)  027564  013746  002264                                                                   MOV     XMTVEC,-(SP)
```

```
 (4) 027570 012746 000003                                                    MOV     #3,-(SP)
 (3) 027574 104437                                                           TRAP    C$SVEC
 (2) 027576 062706 000010                                                    ADD     #10,SP
7192 027602                         SETPRI  #PRI00          ;SET PROCESSOR PRIORITY.  FOR LSI 11/03
 (3) 027602 012700 000000                                                    MOV     #PRI00,R0
 (3) 027606 104441                                                           TRAP    C$SPRI
7193                                                        ;THIS WILL ENABLE INTERRUPTS.  FOR 11/23
7194                                                        ;THIS WILL ALLOW ACKNOWLEDGMENT OF INTERRUPTS
7195                                                        ;LEVEL 4-7.
7196                                                        ;SET UP INTERRUPT VECTOR
7197
7198
7199 027610 012777 043652 152452    MOV     #43652,@PCSAR   ;SET BCP MODE, NO ERROR AND SYNCH CHARACTER.
7200 027616 012737 000002 002414    MOV     #2,START        ;# OF START CHARACTERS.
7201 027624 012777 000160 152434    MOV     #RXITEN!DSITEN!RXENA,@RXCSR ;ENABLE THE RECEIVER AND INT.
7202 027632 012777 000130 152432    MOV     #TXIE!TXENA!MM,@TXCSR ;ENABLE THE TRANSMITTER AND INT.
7203                                                        ;SELECT THE MAINTENANCE LOOPBACK.
7204 027640 005001                  CLR     R1              ;LOOP COUNTER
7205 027642                     10$:
7206 027642 005737 002360           TST     MCFLAG          ;WAS A MODEM CHANGE INTERRUPT RECEIVED?
7207 027646 001027                  BNE     20$             ;IF YES, EXIT.
7208 027650 005301                  DEC     R1              ;DECREMENT COUNTER
7209 027652 001373                  BNE     10$
7210
7211 027654                         ERRDF   74,EMG24,ERRG2
 (4) 027654 104455                                                           TRAP    C$ERDF
 (5) 027656 000112                                                           .WORD   74
 (5) 027660 014661                                                           .WORD   EMG24
 (5) 027662 006700                                                           .WORD   ERRG2
7212
7213 027664                         PRINTB  #FMG26          ;NOTIFY THAT INTERRUPT MAY BE DISABLED BY
 (7) 027664 012746 012715                                                    MOV     #FMG26,-(SP)
 (6) 027670 012746 000001                                                    MOV     #1,-(SP)
 (3) 027674 010600                                                           MOV     SP,R0
 (4) 027676 104414                                                           TRAP    C$PNTB
 (4) 027700 062706 000004                                                    ADD     #4,SP
7214                                                        ;REMOVING THE WIRE WRAP.
7215 027704                         PRINTB  #FMG29
 (7) 027704 012746 013221                                                    MOV     #FMG29,-(SP)
 (6) 027710 012746 000001                                                    MOV     #1,-(SP)
 (3) 027714 010600                                                           MOV     SP,R0
 (4) 027716 104414                                                           TRAP    C$PNTB
 (4) 027720 062706 000004                                                    ADD     #4,SP
7216 027724 000410                  BR      30$
7217 027726                     20$:
7218 027726 022737 000001 002360    CMP     #1,MCFLAG       ;WAS ONLY 1 RECEIVED?
7219 027734 001404                  BEQ     30$             ;IF YES - OK
7220 027736                         ERRDF   75,EMG40        ;REPORT MULTIPLE INTERRUPTS
 (4) 027736 104455                                                           TRAP    C$ERDF
 (5) 027740 000113                                                           .WORD   75
 (5) 027742 015321                                                           .WORD   EMG40
 (5) 027744 000000                                                           .WORD   0
7221 027746                     30$:
7222 027746                         CALL    $RESET          ;RESET THE DPV
7223 027752                         SETPRI  #PRI07          ;SET THE PROCESSOR PRI TO 7
 (3) 027752 012700 000340                                                    MOV     #PRI07,R0
```

```
   (3)  027756  104441                                                      TRAP    C$SPRI
  7224                                                ;(THIS WILL DISABLE INTERRUPTS)
  7225  027760                   CLRVEC  RCVEC        ;RESTORE THE RECV. VECTOR
   (3)  027760  013700  002262                                              MOV     RCVEC,R0
   (3)  027764  104436                                                      TRAP    C$CVEC
  7226  027766                   CLRVEC  XMTVEC       ;RESTORE THE XMIT. VECTOR
   (3)  027766  013700  002264                                              MOV     XMTVEC,R0
   (3)  027772  104436                                                      TRAP    C$CVEC
  7227  027774                   ESCAPE  TST          ;IF ERROR, ESCAPE
   (3)  027774  104410                                                      TRAP    C$ESCAPE
   (3)  027776  000004                                                      .WORD   L10101-.
  7228
  7229  030000               ENDSUB
   (3)  030000                                                      L10104:
   (3)  030000  104403                                                      TRAP    C$ESUB
  7230
  7231  030002             ENDTST
   (3)  030002                                                      L10101:
   (3)  030002  104401                                                      TRAP    C$ETST
  7232
```

```
                                .SBTTL          TEST 15 - SECONDARY & ALL PARTIES ADDRESSING

                                ;*****************************************************************************
                                ;*                      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.
                                ;*
                                ;*****************************************************************************
 7258  030004                   BGNTST
  (3)  030004                                                                   T15::
 7259
 7260  030004                     BGNSUB
  (3)  030004                                                                   T15.1:
  (3)  030004  104402                                                                   TRAP    C$BSUB
 7261  030006                   BGNSEG
  (3)  030006  104404                                                                   TRAP    C$BSEG
 7262  030010                       CALL    $RESET          ;RESET THE DPV
 7263  030014                       ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  030014  104410                                                                   TRAP    C$ESCAPE
  (3)  030016  000674                                                                   .WORD   L10105-.
 7264  030020  012737  100000  002362       MOV     @BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
 7265  030026  012737  000000  002344       MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
 7266  030034  052737  010120  002344       BIS     #SECADR!120,IPCSAR ;SECONDARY ADDRESS
 7267  030042  012737  000001  002414       MOV     #1,START        ;SEND 1 FLAG
 7268  030050  012737  000002  002336       MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
 7269  030056  012737  000003  002352       MOV     #3,LENGTH       ;CHARACTER LENGTH OF 3 BITS.
 7270  030064  012737  000400  002434       MOV     #TSOM,TSTART    ;START OF MESSAGE.
 7271  030072  012737  001000  002422       MOV     #TEOM,TEND      ;END OF MESSAGE
 7272  030100  012737  002502  002470       MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
 7273  030106  012737  000012  002472       MOV     #10.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
 7274                                       ;
 7275  030114  013777  002344  152146       MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 7276  030122  112737  000143  002342       MOVB    #143,IPCR       ;SET UP CHARACTER LENGTH
 7277
 7278
 7279  030130                       CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 7280  030134  012737  000001  002356       MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
 7281  030142  005037  002332               CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
 7282  030146                       CALL    $DATA           ;
 7283  030152                       ESCAPE  TST             ;IF ERROR - EXIT
  (3)  030152  104410                                                                   TRAP    C$ESCAPE
```

```
 (3)  030154  000536                                                                    .WORD   L10105-.
7284
7285  030156                          CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
7286  030162                          ESCAPE  TST             ;IF ERROR - EXIT
 (3)  030162  104410                                                                    TRAP    C$ESCAPE
 (3)  030164  000526                                                                    .WORD   L10105-.
7287  030166                    ENDSEG
 (3)  030166                                                                  10000$:
 (3)  030166  104405                                                                    TRAP    C$ESEG
7288
7289  030170                    BGNSEG
 (3)  030170  104404                                                                    TRAP    C$BSEG
7290  030172                          CALL    $RESET          ;RESET THE DPV
7291  030176                          ESCAPE  TST             ;IF ERROR, BR TO THE END.
 (3)  030176  104410                                                                    TRAP    C$ESCAPE
 (3)  030200  000512                                                                    .WORD   L10105-.
7292  030202  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
7293  030210  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
7294                                          ;
7295  030216  013777  002344  152044          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
7296  030224  112737  000143  002342          MOVB    #143,IPCR       ;SET UP CHARACTER LENGTH
7297
7298  030232  012737  000001  002430          MOV     #1,TIMER        ;CHANGE TIMEOUT VALUE
7299  030240  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
7300  030246  105037  002674                  CLRB    XMTBUF          ;CLEAR SECONDARY ADDRESS FROM XMIT BUFFER.
7301  030252                                  CALL    $DATA           ;
7302  030256  013737  002412  002430          MOV     SAVTIM,TIMER    ;RESTORE THE TIMER
7303  030264  005737  002426                  TST     TIMEO           ;DID THE RECEIVER TIME OUT?
7304  030270  001004                          BNE     1$              ;IF YES - OK.
7305  030272                                  ERROF   76,EMG35
 (4)  030272  104455                                                                    TRAP    C$EROF
 (5)  030274  000114                                                                    .WORD   76
 (5)  030276  015135                                                                    .WORD   EMG35
 (5)  030300  000000                                                                    .WORD   0
7306  030302                    1$:
7307  030302                        ENDSEG
 (3)  030302                                                                  10001$:
 (3)  030302  104405                                                                    TRAP    C$ESEG
7308  030304                      ENDSUB
 (3)  030304                                                                  L10106:
 (3)  030304  104403                                                                    TRAP    C$ESUB
7309
7310
7311  030306                      BGNSUB
 (3)  030306                                                                  T15.2:
 (3)  030306  104402                                                                    TRAP    C$BSUB
7312  030310                        BGNSEG
 (3)  030310  104404                                                                    TRAP    C$BSEG
7313  030312                          CALL    $RESET          ;RESET THE DPV
7314  030316                          ESCAPE  TST             ;IF ERROR, BR TO THE END.
 (3)  030316  104410                                                                    TRAP    C$ESCAPE
 (3)  030320  000372                                                                    .WORD   L10105-.
7315  030322  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
7316  030330  012737  000400  002344          MOV     #CCITTO,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
7317  030336  052737  110231  002344          BIS     #APA!SECADR!231,IPCSAR  ;ALL PARTIES ADDRESS AND
7318                                                                          ;SECONDARY ADDRESS
```

TEST 15 - SECONDARY & ALL PARTIES ADDRESSING

```
 7319  030344  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
 7320  030352  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
 7321  030360  012737  000004  002352          MOV     #4,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
 7322  030366  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
 7323  030374  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
 7324  030402  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
 7325  030410  012737  000012  002472          MOV     #10.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
 7326                                                                  ;
 7327  030416  013777  002344  151644          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 7328  030424  112737  000204  002342          MOVB    #204,IPCR       ;SET UP CHARACTER LENGTH
 7329
 7330
 7331  030432                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 7332  030436  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
 7333  030444  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
 7334  030450                                  CALL    $DATA           ;
 7335  030454                                  ESCAPE  TST             ;IF ERROR - EXIT
  (3)  030454  104410                                                                    TRAP    C$ESCAPE
  (3)  030456  000234                                                                    .WORD   L10105-.
 7336
 7337  030460                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
 7338  030464                                  ESCAPE  TST             ;IF ERROR - EXIT
  (3)  030464  104410                                                                    TRAP    C$ESCAPE
  (3)  030466  000224                                                                    .WORD   L10105-.
 7339  030470                          ENDSEG
  (3)  030470                                                                    10000$:
  (3)  030470  104405                                                                    TRAP    C$ESEG
 7340
 7341  030472                          BGNSEG
  (3)  030472  104404                                                                    TRAP    C$BSEG
 7342  030474                              CALL    $RESET          ;RESET THE DPV
 7343  030500                              ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  030500  104410                                                                    TRAP    C$ESCAPE
  (3)  030502  000210                                                                    .WORD   L10105-.
 7344  030504  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
 7345  030512  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
 7346                                                                  ;
 7347  030520  013777  002344  151542          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 7348  030526  112737  000204  002342          MOVB    #204,IPCR       ;SET UP CHARACTER LENGTH
 7349
 7350  030534  012737  000001  002430          MOV     #1,TIMER        ;CHANGE TIME OUT VALUE
 7351  030542  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
 7352  030550  105037  002674                  CLRB    XMTBUF          ;CLEAR SECONDARY ADDRESS FROM XMIT BUFFER.
 7353  030554                                  CALL    $DATA           ;
 7354  030560  013737  002412  002430          MOV     SAVTIM,TIMER    ;RESTORE THE TIME OUT VALUE.
 7355  030566  005737  002426                  TST     TIMEO           ;DID THE RECEIVER TIME OUT?
 7356  030572  001006                          BNE     1$              ;IF YES - OK.
 7357  030574                                  ERRDF   77,EMG35
  (4)  030574  104455                                                                    TRAP    C$ERDF
  (5)  030576  000115                                                                    .WORD   77
  (5)  030600  015135                                                                    .WORD   EMG35
  (5)  030602  000000                                                                    .WORD   0
 7358  030604                                  ESCAPE  TST
  (3)  030604  104410                                                                    TRAP    C$ESCAPE
  (3)  030606  000104                                                                    .WORD   L10105-.
 7359  030610                          1$:
```

```
7360  030610                             ENDSEG
 (3)  030610                                                                          10001$:
 (3)  030610  104405                                                                          TRAP    C$ESEG
7361
7362  030612                             BGNSEG
 (3)  030612  104404                                                                          TRAP    C$BSEG
7363  030614                                  CALL    $RESET          ;RESET THE DPV
7364  030620                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
 (3)  030620  104410                                                                          TRAP    C$ESCAPE
 (3)  030622  000070                                                                          .WORD   L10105-.
7365  030624  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
7366  030632  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
7367                                                                  ;
7368  030640  013777  002344  151422          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
7369  030646  112737  000204  002342          MOVB    #204,IPCR       ;SET UP CHARACTER LENGTH
7370
7371  030654  112737  000231  002674          MOVB    #231,XMTBUF     ;CHANGE FIRST XMIT CHARACTER.
7372  030662  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
7373  030666                                  CALL    $DATA           ;
7374  030672                                  ESCAPE  TST             ;IF ERROR - EXIT
 (3)  030672  104410                                                                          TRAP    C$ESCAPE
 (3)  030674  000016                                                                          .WORD   L10105-.
7375
7376  030676                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
7377  030702                                  ESCAPE  TST             ;IF ERROR - EXIT
 (3)  030702  104410                                                                          TRAP    C$ESCAPE
 (3)  030704  000006                                                                          .WORD   L10105-.
7378  030706                             ENDSEG
 (3)  030706                                                                          10002$:
 (3)  030706  104405                                                                          TRAP    C$ESEG
7379  030710                           ENDSUB
 (3)  030710                                                                          L10107:
 (3)  030710  104403                                                                          TRAP    C$ESUB
7380
7381
7382  030712                         ENDTST
 (3)  030712                                                                          L10105:
 (3)  030712  104401                                                                          TRAP    C$ETST
```

```
                                .SBTTL          TEST 16 - ABORT TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                        T16::
                                  BGNSUB
                                                                                        T16.1:
                                                                                                TRAP    C$BSUB
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                                TRAP    C$ESCAPE
                                                                                                .WORD   L10110-.
                                        MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
                                        MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
                                        MOV     #1,START        ;SEND 1 FLAG
                                        MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
                                        MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE.
                                        MOV     #TXABO,TEND     ;END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #12.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
                                        MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
                                        MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BIT     #RABORT,IRDSR   ;WAS AN ABORT RECEIVED?
                                        BNE     20$             ;IF YES - OK.
                                        ERRDF   78,EMG32        ;ABORT NOT RECEIVED.
                                                                                                TRAP    C$ERDF
                                                                                                .WORD   78
                                                                                                .WORD   EMG32
                                                                                                .WORD   0
                                20$:
                                  ENDSUB
                                                                                L10111:
                                                                                                TRAP    C$ESUB

                                  BGNSUB
```

```
  (3) 031076                                                                    T16.2:
  (3) 031076  104402                                                                    TRAP    C$BSUB
7429  031100                        CALL    $RESET          ;RESET THE DPV
7430  031104                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3) 031104  104410                                                                    TRAP    C$ESCAPE
  (3) 031106  000130                                                                    .WORD   L10110-.
7431  031110  012737  001000  002344  MOV     @NONE1,IPCSAR   ;NO ERROR CHECKING.
7432  031116  052737  004000  002344  BIS     @IDLE,IPCSAR    ;SET THE IDLE BIT.
7433  031124  012737  000001  002414  MOV     #1,START        ;SEND 1 FLAG
7434  031132  012737  000002  002336  MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
7435  031140  012737  002502  002470  MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
7436  031146  012737  000014  002472  MOV     #12.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
7437                                  ;
7438  031154  013777  002344  151106  MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
7439  031162  112737  000245  002342  MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH
7440
7441
7442  031170                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
7443  031174  012737  000001  002356  MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
7444  031202  012737  000001  002332  MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
7445  031210                        CALL    $DATA           ;
7446  031214  032737  002000  002350  BIT     @RABORT,IRDSR   ;WAS AN ABORT RECEIVED?
7447  031222  001404                BEQ     20$             ;IF NOT - OK.
7448  031224                        ERRDF   79,EMG33        ;ABORT NOT RECEIVED.
  (4) 031224  104455                                                                    TRAP    C$ERDF
  (5) 031226  000117                                                                    .WORD   79
  (5) 031230  015046                                                                    .WORD   EMG33
  (5) 031232  000000                                                                    .WORD   0
7449  031234                  20$:
7450  031234                    ENDSUB
  (3) 031234                                                                L10112:
  (3) 031234  104403                                                                    TRAP    C$ESUB
7451
7452  031236                  ENDTST
  (3) 031236                                                                L10110:
  (3) 031236  104401                                                                    TRAP    C$ETST
```

```
                                .SBTTL          TEST 17 - EXTENDED CONTROL AND ADDRESSING

                                ;*****************************************************************
                                ;*              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
                                ;*
                                ;*****************************************************************
031240                          BGNTST
(3) 031240                                                                      T17::

                                        CALL    $RESET          ;RESET THE DPV
031240                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 031244  104410                                                              TRAP    C$ESCAPE
(3) 031246  000142                                                              .WORD   L10113-.
031250  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
031256  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
031264  012737  000001  002414          MOV     #1.START        ;SEND 1 FLAG
031272  012737  000004  002336          MOV     #4.HEADER       ;SEND 2 HEADER CHARACTERS
031300  012737  000003  002352          MOV     #3,LENGTH       ;CHARACTER LENGTH OF 3 BITS.
031306  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
031314  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
031322  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
031330  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
031336  013777  002344  150724          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
031344  112737  000173  002342          MOVB    #173,IPCR       ;SET UP CHARACTER LENGTH AND EXTENDED
                                                                ;ADDRESS AND CONTROL BITS.
031352  112777  000030  150722          MOVB    #30,@PCR        ;SET THE EXTENDED ADDRESS AND CONTROL BITS.


031360                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
031364  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
031372  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
031376                                  CALL    $DATA           ;
031402  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

031404                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
031410                          20$:


031410                          ENDTST
(3) 031410                                                              L10113:
(3) 031410  104401                                                              TRAP    C$ETST
```

```
                                .SBTTL          TEST 18 - TRANSMIT GO AHEAD

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                T18::
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10114-.
                                        MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
                                        MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
                                        BIS     #LOOP,IPCSAR    ;SET LOOP MODE TO RECOGNIZE GO AHEAD
                                        MOV     #1,START        ;SEND 1 FLAG
                                        MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
                                        MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE.
                                        MOV     #TGA!TEOM,TEND  ;TRANSMIT GO AHEAD AT THE END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #10.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
                                        MOV     IPCSAR,@IPCSAR  ;SET UP PARAMETERS AND ADDRESS
                                        MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
                                        MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BCS     20$             ;IF ERROR SKIP DATA CHECK.

                                        CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
                                        ESCAPE  TST             ;IF ERROR - EXIT
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10114-.

                                        BIT     #REOM,IRDSR     ;WAS END OF MESSAGE RECEIVED?
                                        BEQ     10$             ;IF NOT ERROR
                                        BIT     #RABORT,IRDSR   ;WAS AN GO AHEAD RECEIVED?
                                        BNE     20$             ;IF YES - OK.
                                10$:
```

```
 7544  031610                                  ERRDF   80,EMG33        ;GO AHEAD NOT RECEIVED
  (4)  031610  104455                                                           TRAP    C$ERDF
  (5)  031612  000120                                                           .WORD   80
  (5)  031614  015046                                                           .WORD   EMG33
  (5)  031616  000000                                                           .WORD   0
 7545  031620                        20$:
 7546
 7547
 7548  031620                        ENDTST
  (3)  031620                                                           L10114:
  (3)  031620  104401                                                           TRAP    C$ETST
 7549
 7550
```

```
                                .SBTTL          TEST 19 - ASSEMBLED BIT COUNT

                                ;*****************************************************************************
                                ;*                      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.
                                ;*
                                ;*****************************************************************************
 7564  031622                   BGNTST
  (3)  031622                                                                                    T19::
 7565
 7566  031622  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
 7567  031630  012737  003400  002344          MOV     #NOERR,IPCSAR   ;NO ERROR CHECKING
 7568
 7569  031636  012737  000007  002352          MOV     #7,LENGTH       ;CHARACTER LENGTH.
 7570
 7571  031644  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
 7572  031652  012737  001000  002422          MOV     #TEOM,TEND      ;ABORT MESSAGE
 7573  031660  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
 7574  031666  012737  000001  002472          MOV     #1,XCOUNT       ;# OF CHARACTERS TO TRANSMIT
 7575  031674                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 7576  031700  012737  000001  002352          MOV     #1,LENGTH       ;CHANGE THE LENGTH
 7577  031706                   7$:                                    ;
 7578  031706                                  CALL    $RESET          ;RESET THE DPV
 7579  031712                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  031712  104410                                                                            TRAP    C$ESCAPE
  (3)  031714  000132                                                                            .WORD   L10115-.
 7580  031716  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
 7581  031724  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
 7582  031732  013777  002344  150330          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 7583  031740  013701  002352                  MOV     LENGTH,R1       ;GET CHARACTER LENGTH
 7584  031744  116137  032050  002342          MOVB    CHLEN(R1),IPCR  ;SET UP CHARACTER LENGTH.
 7585
 7586
 7587  031752  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
 7588  031760  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
 7589  031766                                  CALL    $DATA           ;
 7590  031772                                  ESCAPE  TST             ;IF ERROR - EXIT
  (3)  031772  104410                                                                            TRAP    C$ESCAPE
  (3)  031774  000052                                                                            .WORD   L10115-.
 7591
 7592
 7593  031776  013701  002352                  MOV     LENGTH,R1       ;GET CHARACTER LENGTH
 7594  032002  142737  000217  002351          BICB    #217,IRDSR+1    ;CLEAR ALL BUT ABC FROM LAST RDSR.
 7595  032010  126137  032061  002351          CMPB    ABC(R1),IRDSR+1 ;IS THE ABC THE EXPECTED VALUE?
 7596  032016  001405                          BEQ     10$
 7597  032020                                  ERRDF   81,EMG36
  (4)  032020  104455                                                                            TRAP    C$ERDF
  (5)  032022  000121                                                                            .WORD   81
  (5)  032024  015174                                                                            .WORD   EMG36
  (5)  032026  000000                                                                            .WORD   0
 7598  032030  000406                          BR      20$
```

```
 7599  032032                          10$:
 7600  032032  005237  002352                INC     LENGTH          ;THE NEXT CHARACTER LENGTH
 7601  032036  022737  000011  002352        CMP     #9.,LENGTH      ;8 BITS?
 7602  032044  001320                        BNE     7$              ;IF NOT - CONTINUE
 7603
 7604  032046                          20$:
 7605
 7606
 7607  032046                          ENDTST
  (3)  032046                                                                  L10115:
  (3)  032046  104401                                                                  TRAP    C$ETST
 7608
 7609  032050     000     040     100  CHLEN:  .BYTE   0,40,100,140,200,240,300,340,0
       032053     140     200     240
       032056     300     340     000
 7610  032061     000     020     040  ABC:    .BYTE   0,20,40,60,100,120,140,160,0
       032064     060     100     120
       032067     140     160     000
 7611                                        .EVEN
 7612
```

```
                                .SBTTL          TEST 20 - SPECIAL SPACE SEQUENCING

                                ;**********************************************************************
                                ;*              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.
                                ;*
                                ;**********************************************************************
032072                          BGNTST
(3) 032072                                                                              T20::

                                        CALL    $RESET          ;RESET THE DPV
032072                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 032076  104410                                                                      TRAP    C$ESCAPE
(3) 032100  000136                                                                      .WORD   L10116-.
032102  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
032110  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
032116  012737  000002  002414          MOV     #2,START        ;SEND 1 FLAG
032124  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
032132  012737  000005  002352          MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
032140  012737  000003  002434          MOV     #3,TSTART       ;SET TSOM AND TEOM IN BYTE MODE.
032146  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
032154  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
032162  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
032170  013777  002344  150072          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
032176  112737  000245  002342          MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH

032204                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
032210  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
032216  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
032222                                  CALL    $DATA           ;
032226                                  ESCAPE  TST             ;IF ERROR, ESCAPE TEST
(3) 032226  104410                                                                      TRAP    C$ESCAPE
(3) 032230  000006                                                                      .WORD   L10116-.

032232                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
032236                          20$:

032236                          ENDTST
(3) 032236                                                                      L10116:
(3) 032236  104401                                                                      TRAP    C$ETST
```

```
                                        .SBTTL          TEST 21 - SYNCH CHARACTER

                                        ;*****************************************************************************
                                        ;*                      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.
                                        ;*
                                        ;*****************************************************************************
032240                                  BGNTST
(3) 032240                                                                                      T21::

032240                                          CALL    $RESET          ;RESET THE DPV
032244                                          ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 032244  104410                                                                              TRAP    C$ESCAPE
(3) 032246  000154                                                                              .WORD   L10117-.
032250  005037  002362                          CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
032254  012737  002400  002344                  MOV     #VRCE,IPCSAR    ;SET VRC EVEN
032262  112737  000271  002344                  MOVB    #271,IPCSAR     ;SYNCH CHARACTER
032270  052737  040000  002344                  BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
032276  012737  000002  002414                  MOV     #2,START        ;SEND 2 FLAGS
032304  012737  000001  002336                  MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
032312  012737  000007  002352                  MOV     #7,LENGTH       ;CHARACTER LENGTH OF 7 BITS.
032320  012737  000400  002434                  MOV     #TSOM,TSTART    ;START OF MESSAGE.
032326  012737  001000  002422                  MOV     #TEOM,TEND      ;END OF MESSAGE
032334  012737  002502  002470                  MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
032342  012737  000017  002472                  MOV     #15.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                        ;

032350  112737  000347  002342                  MOVB    #347,IPCR       ;CHARACTER LENGTH
032356  013777  002344  147704                  MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
032364  113777  002342  147710                  MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH

032372                                          CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
032376  012737  000001  002356                  MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
032404  005037  002332                          CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
032410                                          CALL    $DATA           ;
032414  103402                                  BCS     20$             ;IF ERROR SKIP DATA CHECK.

032416                                          CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
032422                                  20$:

032422                                  ENDTST
(3) 032422                                                                              L10117:
(3) 032422  104401                                                                              TRAP    C$ETST
```

```
                                .SBTTL          TEST 22 - SYNCH FROM TRANSMIT DATA PATH

                                ;*****************************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************************
                                BGNTST
                                                                                        T22::

                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                                TRAP    C$ESCAPE
                                                                                                .WORD   L10120-.
                                        CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
                                        MOV     #VRC0,IPCSAR    ;VRC ODD
                                        BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
                                        BIS     #IDLE,IPCSAR    ;SET THE IDLE BIT
                                        MOV     #2,START        ;SEND 2 SYNCHS
                                        MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
                                        MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE.
                                        MOV     #TEOM,TEND      ;END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #17.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;

                                        MOVB    #245,IPCR       ;CHARACTER LENGTH
                                        MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
                                        CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BCS     20$             ;IF ERROR SKIP DATA CHECK.

                                        CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
                                20$:

                                ENDTST
                                                                                L10120:
                                                                                        TRAP    C$ETST
```

```
                                .SBTTL          TEST 23 - STRIP SYNCHS

                                ;*****************************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************************
 7768  032610                   BGNTST
  (3)  032610                                                                    T23::
 7769
 7770  032610                           CALL    $RESET          ;RESET THE DPV
 7771  032614                           ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  032614  104410                                                            TRAP    C$ESCAPE
  (3)  032616  000154                                                            .WORD   L10121-.
 7772  032620  005037  002362           CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
 7773  032624  012737  002000  002344   MOV     #VRC0,IPCSAR    ;VRC ODD
 7774  032632  052737  020014  002344   BIS     #SSYNCH!14,IPCSAR ;SYNCH + STRIP SYNCHS
 7775  032640  052737  040000  002344   BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
 7776  032646  012737  000010  002414   MOV     #8.,START       ;SEND 8 SYNCHS
 7777  032654  012737  000001  002336   MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
 7778  032662  012737  000006  002352   MOV     #6,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
 7779  032670  012737  000400  002434   MOV     #TSOM,TSTART    ;START OF MESSAGE.
 7780  032676  012737  001000  002422   MOV     #TEOM,TEND      ;END OF MESSAGE
 7781  032704  012737  002502  002470   MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
 7782  032712  012737  000015  002472   MOV     #13.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
 7783                                   ;
 7784  032720  112737  000306  002342   MOVB    #306,IPCR       ;CHARACTER LENGTH
 7785  032726  113777  002342  147346   MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH
 7786  032734  013777  002344  147326   MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 7787
 7788
 7789  032742                           CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 7790  032746  012737  000001  002356   MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
 7791  032754  005037  002332           CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
 7792  032760                           CALL    $DATA           ;
 7793  032764  103402                   BCS     20$             ;IF ERROR SKIP DATA CHECK.
 7794
 7795  032766                           CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
 7796  032772                   20$:
 7797
 7798
 7799  032772                   ENDTST
  (3)  032772                                                                    L10121:
  (3)  032772  104401                                                                    TRAP    C$ETST
 7800
 7801
 7802
```

```
                                .SBTTL          TEST 24 - CRC-CCITT PRESET TO ONES

                                ;*****************************************************************
                                ;*              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 REQM=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.
                                ;*
                                ;*****************************************************************
                                BCNTST
                                                                                T24::

                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10122-.
                                        MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
                                        MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
                                        BIS     #LOOP,IPCSAR    ;SET LOOP MODE TO RECOGNIZE GO AHEAD.
                                        MOV     #1,START        ;SEND 1 FLAG
                                        MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
                                        MOV     #4,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
                                        MOV     #TSOM,TSTART    ;START MESSAGE
                                        MOV     #TXABO,TEND     ;ABORT MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
                                        MOVB    #204,IPCR       ;SET UP CHARACTER LENGTH

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
                                        MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        ESCAPE  TST             ;IF ERROR - EXIT TEST
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10122-.
                                        TST     IRDSR           ;IS THE ERR BIT SET
                                        BMI     20$             ;IF YES - OK
                                        ERRDF   82,EMG38
                                                                                TRAP    C$ERDF
                                                                                .WORD   82
                                                                                .WORD   EMG38
                                                                                .WORD   0
                                20$:

                                ENDTST
                                                                        L10122:
                                                                                TRAP    C$ETST
```

```
                                .SBTTL          TEST 25 - CRC-CCITT PRESET TO ZERO

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
033164                          BGNTST
033164                                                                          T25::


                                        CALL    $RESET          ;RESET THE DPV
033170                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
033170  104410                                                                  TRAP    C$ESCAPE
033172  000156                                                                  .WORD   L10123 .
033174  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
033202  012737  000400  002344          MOV     #CCITTO,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
033210  052737  020000  002344          BIS     #LOOP,IPCSAR    ;SET LOOP MODE TO RECOGNIZE GO AHEAD.
033216  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
033224  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
033232  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
033240  012737  000400  002434          MOV     #TSOM,TSTART    ;START MESSAGE
033246  012737  002000  002422          MOV     #TXABO,TEND     ;ABORT MESSAGE
033254  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
033262  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
033270  013777  002344  146772          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
033276  105037  002342                  CLRB    IPCR            ;SET UP CHARACTER LENGTH


033302                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
033306  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
033314  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
033322                                  CALL    $DATA           ;
033326                                  ESCAPE  TST             ;IF ERROR - EXIT TEST
033326  104410                                                                  TRAP    C$ESCAPE
033330  000020                                                                  .WORD   L10123-.
033332  005737  002350                   ST     IRDSR           ;IS THE ERR BIT SET
033336  100404                          BMI     20$             ;IF YES - OK
```

```
7892  033340                          ERRDF   83,EMG38
 (4)  033340  104455                                                     TRAP    C$ERDF
 (5)  033342  000123                                                     .WORD   83
 (5)  033344  015240                                                     .WORD   EMG38
 (5)  033346  000000                                                     .WORD   0
7893  033350                  20$:
7894
7895
7896  033350                  ENDTST
 (3)  033350                                                     L10123:
 (3)  033350  104401                                                     TRAP    C$ETST
7897
```

```
                                .SBTTL          TEST 26 - CRC-16 PRESET TO 0

                                ;*****************************************************************
                                ;*              TEST 26 - DPV-11
                                ;* CRC-16 PR SET 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.
                                ;*
                                ;*****************************************************************
033352                          BGNTST
 (3) 033352                                                                     T26::

                                 BGNSUB
 (3) 033352                                                                     T26.1:
 (3) 033352  104402                                                                     TRAP    C$BSUB
033354                                  CALL    $RESET          ;RESET THE DPV
033360                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
 (3) 033360  104410                                                                     TRAP    C$ESCAPE
 (3) 033362  000404                                                                     .WORD   L10124-.
033364  005037  002362                  CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
033370  012737  001400  002344          MOV     @CRC16,IPCSAR   ;SET CRC 16
033376  112737  000271  002344          MOVB    @271,IPCSAR     ;SYNCH CHARACTER
033404  052737  040000  002344          BIS     @PROTO,IPCSAR   ;SET BCP PROTOCOL
033412  012737  000002  002414          MOV     @2,START        ;SEND 2 SYNCHS
033420  012737  000001  002336          MOV     @1,HEADER       ;SEND 1 HEADER CHARACTER
033426  012737  000010  002352          MOV     @8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
033434  012737  000400  002434          MOV     @TSOM,TSTART    ;START OF MESSAGE.
033442  012737  001000  002422          MOV     @TEOM,TEND      ;END OF MESSAGE
033450  012737  002502  002470          MOV     @$CCITT,XTYPE   ;USE CCITT DATA PATTERN
033456  012737  000017  002472          MOV     @15.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
033464  105037  002342                  CLRB    IPCR            ;CHARACTER LENGTH.
033470  013777  002344  146572          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS


033476                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
033502  012737  000001  002356          MOV     @1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
033510  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
033514  005337  002474                  DEC     ECOUNT          ;CHANGE THE END COUNT
033520                                  CALL    $DATA           ;
033524                                  ESCAPE  TST             ;IF ERROR - EXIT TEST
 (3) 033524  104410                                                                     TRAP    C$ESCAPE
 (3) 033526  000240                                                                     .WORD   L10124-.
033530  005737  002350                  TST     IPDSR           ;IS THE ERR BIT SET
033534  100004                          BPL     20$             ;IF YES - OK
```

```
     033536                                         ERRDF   84,EMG38
(4)  033536 104455                                                                                        TRAP    C$ERDF
(5)  033540 000124                                                                                        .WORD   84
(5)  033542 015240                                                                                        .WORD   EMG38
(5)  033544 000000                                                                                        .WORD   0
     033546                                20$:
     033546                                  ENDSUB
(3)  033546                                                                                   L10125:
(3)  033546 104403                                                                                        TRAP    C$ESUB

     033550                                  BGNSUB
(3)  033550                                                                                   T26.2:
(3)  033550 104402                                                                                        TRAP    C$BSUB
     033552                                         CALL    $RESET          ;RESET THE DPV
     033556                                         ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3)  033556 104410                                                                                        TRAP    C$ESCAPE
(3)  033560 000206                                                                                        .WORD   L10124-.
     033562 005037 002362                           CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
     033566 012737 001400 002344                    MOV     #CRC16,IPCSAR   ;SET VRC EVEN
     033574 112737 000271 002344                    MOVB    #271,IPCSAR     ;SYNCH CHARACTER
     033602 052737 040000 002344                    BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
     033610 012737 000002 002414                    MOV     #2,START        ;SEND 2 SYNCHS
     033616 012737 000001 002336                    MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
     033624 012737 000010 002352                    MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
     033632 012737 000400 002434                    MOV     #TSOM,TSTART    ;START OF MESSAGE.
     033640 012737 001000 002422                    MOV     #TEOM,TEND      ;END OF MESSAGE
     033646 012737 002502 002470                    MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
     033654 012737 000017 002472                    MOV     #15.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                            ;
     033662 013777 002344 146400                    MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
     033670 105037 002342                           CLRB    IPCR            ;SET UP CHARACTER LENGTH

     033674                                         CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.

     033700 012737 000001 002356                    MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
     033706 005037 002332                           CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA

     033712 062737 000002 002474                    ADD     #2,ECOUNT       ;CHANGE END COUNT TO GET CRC

     033720                                         CALL    $DATA           ;
     033724                                         ESCAPE  TST             ;IF ERROR - EXIT TEST
(3)  033724 104410                                                                                        TRAP    C$ESCAPE
(3)  033726 000040                                                                                        .WORD   L10124-.
     033730 012701 003274                           MOV     #RCVBUF,R1      ;ADDRESS OF RECEIVE BUFFER
     033734 063701 002472                           ADD     XCOUNT,R1       ;CALCULATE ADDRESS OF CRC
     033740 122127 000332                           CMPB    (R1)+,#CRCLO    ;CHECK LO BYTE OF THE CRC
     033744 001003                                  BNE     10$             ;IF ERROR - REPORT
     033746 122127 000266                           CMPB    (R1)+,#CRCHI    ;CHECK HI BYTE OF THE CRC
     033752 001404                                  BEQ     20$             ;IF NOT ERROR - OK
     033754                                10$:
     033754                                         ERRDF   85,EMG37        ;CRC ERROR.
(4)  033754 104455                                                                                        TRAP    C$ERDF
(5)  033756 000125                                                                                        .WORD   85
(5)  033760 015226                                                                                        .WORD   EMG37
(5)  033762 000000                                                                                        .WORD   0
     033764                                20$:
```

```
 7988  033764                          ENDSUB
  (3)  033764                                                    L10126:
  (3)  033764  104403                                                    TRAP    C$ESUB
 7989
 7990  033766                        ENDTST
  (3)  033766                                                    L10124:
  (3)  033766  104401                                                    TRAP    C$ETST
 7991
 7992
 7993
```

```
                                .SBTTL          TEST 27 - VRC ODD PARITY ERROR

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
033770                          BGNTST
(3) 033770                                                                              T27::

                                        CALL    $RESET          ;RESET THE DPV
033770                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 033774  104410                                                                              TRAP    C$ESCAPE
(3) 033776  000160                                                                              .WORD   L10127-.
034000  005037  002362                  CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
034004  012737  002000  002344          MOV     #VRC0,IPCSAR    ;SET VRC ODD
034012  112737  000271  002344          MOVB    #271,IPCSAR     ;SYNCH CHARACTER
034020  052737  040000  002344          BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
034026  012737  000002  002414          MOV     #2,START        ;SEND 2 SYNCHS
034034  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
034042  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
034050  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
034056  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
034064  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
034072  012737  000017  002472          MOV     #15.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
034100  112737  000346  002342          MOVB    #346,IPCR       ;SET UP A XMIT CHARACTER = 7
                                        ;AND A RECEIVE CHARACTER = 6
034106  013777  002344  146154          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

034114                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
034120  012737  000001  002356          MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
034126  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
034134                                  CALL    $DATA           ;
034140  005737  002350                  TST     IRDSR           ;IS THE ERROR BIT SET (BIT 15)?
034144  100404                          BMI     20$             ;IF SET OK
034146                                  ERRDF   86,EMG39
(4) 034146  104455                                                                              TRAP    C$ERDF
(5) 034150  000126                                                                              .WORD   86
(5) 034152  015267                                                                              .WORD   EMG39
(5) 034154  000000                                                                              .WORD   0
034156                          20$:

                                ENDTST
034156                                                                          L10127:
(3) 034156  104401                                                                              TRAP    C$ETST
```

```
                                .SBTTL          TEST 28 - VRC EVEN PARITY ERROR

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
034160                          BGNTST
034160                                                                          T28::

                                        CALL    $RESET          ;RESET THE DPV
034160                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
034164  104410                                                                  TRAP    C$ESCAPE
034166  000160                                                                  .WORD   L10130-.
034170  005037  002362                   CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
034174  012737  002400  002344           MOV     #VRCE,IPCSAR    ;SET VRC EVEN
034202  112737  000271  002344           MOVB    #271,IPCSAR     ;SYNCH CHARACTER
034210  052737  040000  002344           BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
034216  012737  000002  002414           MOV     #2,START        ;SEND 2 SYNCHS
034224  012737  000002  002336           MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
034232  012737  000010  002352           MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
034240  012737  000400  002434           MOV     #TSOM,TSTART    ;START OF MESSAGE.
034246  012737  001000  002422           MOV     #TEOM,TEND      ;END OF MESSAGE
034254  012737  002502  002470           MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
034262  012737  000017  002472           MOV     #15.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
034270  112737  000244  002342           MOVB    #244,IPCR       ;SET UP A XMIT CHARACTER = 5
                                                                ;AND A RECEIVE CHARACTER = 4
034276  013777  002344  145764           MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

034304                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
034310  012737  000001  002356           MOV     #1,MAINT        ;FLAG TO USE MAINTENANCE MODE LOOPBACK.
034316  012737  000001  002332           MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
034324                                  CALL    $DATA           ;
034330  005737  002350                   TST     IRDSR           ;IS THE ERROR BIT SET (BIT 15)?
034334  100404                          BMI     20$             ;IF SET OK
034336                                  ERRDF   87,EMG39
034336  104455                                                                  TRAP    C$ERDF
034340  000127                                                                  .WORD   87
034342  015267                                                                  .WORD   EMG39
034344  000000                                                                  .WORD   0
034346                          20$:

                                ENDTST
034346                                                                  L10130:
034346  104401                                                                  TRAP    C$ETST
```

```
 8091                                   .SBTTL          TEST 29 - DATA TEST
 8092
 8093                                   ;*****************************************************************************
 8094                                   ;*              TEST 29 - DPV-11
 8095                                   ;* DATA TEST
 8096                                   ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE WITHOUT THE USE OF INTERRUPT
 8097                                   ;* SERVICE ROUTINES. CHECK THAT THE DATA IS  CORRECT.
 8098                                   ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
 8099                                   ;*                        8 BIT CHARACTERS, MAINTENANCE MODE LOOPBACK.
 8100                                   ;*
 8101                                   ;*****************************************************************************
 8102  034350                           BGNTST
  (3)  034350                                                                                    T29::
 8103  034350                                   CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
 8104  034354  103573                          BCS     50$             ;IF NOT, SKIP THE TEST.
 8105  034356                                   CALL    $RESET          ;RESET THE DPV
 8106  034362                                   ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  034362  104410                                                                            TRAP    C$ESCAPE
  (3)  034364  000360                                                                            .WORD   L10131-.
 8107  034366  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT MODE IS BOP.
 8108  034374  005037  002344                  CLR     IPCSAR          ;IMAGE OF PCSAR = 0.
 8109  034400  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
 8110  034406  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS
 8111  034414  012737  002602  002470          MOV     #ALPHA,XTYPE    ;USE ALPHANUMERIC DATA PATTERN
 8112  034422  012737  000045  002472          MOV     #ACOUNT,XCOUNT  ;# OF CHARACTERS TO TRANSMIT
 8113                                                                  ;
 8114
 8115
 8116  034430                                   CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 8117
 8118  034434  012701  003274                  MOV     #RCVBUF,R1      ;RECEIVE BUFFER
 8119  034440  012702  002674                  MOV     #XMTBUF,R2      ;TRANSMIT BUFFER
 8120  034444  013703  002472                  MOV     XCOUNT,R3       ;TRANSMIT COUNT
 8121  034450  005037  002500                  CLR     RCOUNT          ;CLEAR THE RECEIVE COUNTER.
 8122  034454  013704  002430                  MOV     TIMER,R4        ;SET UP THE TIMER.
 8123
 8124  034460  013777  002402  145600          MOV     RXINI,@RXCSR    ;ENABLE THE RECEIVER
 8125  034466  013777  002436  145576          MOV     TXINI,@TXCSR    ;ENABLE THE RECEIVER
 8126
 8127  034474  012777  000400  145572          MOV     #TSOM,@TDSR     ;TRANSMIT START OF MESSAGE
 8128  034502                           9$:
 8129  034502  012705  002000                  MOV     #2000,R5        ;INNER TIMER LOOP COUNTER.
 8130  034506                           10$:
 8131  034506  005777  145562                  TST     @TDSR           ;IS THERE A TRANSMIT ERROR?
 8132  034512  100005                          BPL     12$             ;IF NOT PROCEED.
 8133  034514                                   ERRDF   88,EMG30        ;TRANSMIT UNDERRUN.
  (4)  034514  104455                                                                            TRAP    C$ERDF
  (5)  034516  000130                                                                            .WORD   88
  (5)  034520  014766                                                                            .WORD   EMG30
  (5)  034522  000000                                                                            .WORD   0
 8134  034524  000507                          BR      50$
 8135  034526                           12$:
 8136
 8137
 8138  034526  032777  000004  145536          BIT     #TBE,@TXCSR     ;IS TRANSMIT BUFFER EMPTY?
 8139  034534  001056                          BNE     20$             ;IF YES - SEND A CHARACTER.
```

```
 8140
 8141  034536  005305                        DEC     R5              ;DECREMENT LOOP COUNTER
 8142  034540  001010                        BNE     15$             ;IF NOT ZERO OK.
 8143  034542                                EBREAK                  ;BREAK FOR SUPERVISOR INTERRUPT.
  (3)  034542  104422                                                                TRAP    C$BRK
 8144  034544  005304                        DEC     R4              ;IS OUTER LOOP 0?
 8145  034546  001355                        BNE     9$              ;IF NOT, RESET INNER LOOP COUNTER
 8146                                                                ;OTHERWISE, REPORT ERROR
 8147  034550                          13$:
 8148  034550                                ERRDF   89,EMG1
  (4)  034550  104455                                                               TRAP    C$ERDF
  (5)  034552  000131                                                               .WORD   89
  (5)  034554  013462                                                               .WORD   EMG1
  (5)  034556  000000                                                               .WORD   0
 8149  034560  000471                        BR      50$
 8150
 8151  034562                          15$:
 8152  034562  032777  002200  145476        BIT     #RSTARY!RDATRY,@RXCSR ;IS STATUS OR DATA READY?
 8153  034570  001746                        BEQ     10$             ;IF NOT CHECK TBE
 8154  034572  017737  145470  002346        MOV     @RXCSR,IRXCSR   ;SAVE RXCSR
 8155  034600  017737  145464  002350        MOV     @RDSR,IRDSR     ;SAVE RDSR
 8156  034606  032737  000200  002346        BIT     #RDATRY,IRXCSR  ;IS DATA READY?
 8157  034614  001404                        BEQ     17$
 8158  034616  113721  002350                MOVB    IRDSR,(P1)+     ;SAVE THE DATA
 8159  034622  005237  002500                INC     RCOUNT          ;INCREMENT COUNT
 8160  034626                          17$:
 8161  034626  032737  002000  002346        BIT     #RSTARY,IRXCSR  ;IS STATUS READY?
 8162  034634  001724                        BEQ     10$             ;IF NOT CHECK TBE
 8163  034636  032737  106000  002350        BIT     #ERR!ROVER!RABORT,IRDSR ;ANY ERRORS?
 8164  034644  001005                        BNE     18$             ;IF YES, REPORT.
 8165  034646  032737  001000  002350        BIT     #REOM,IRDSR     ;END OF MESSAGE.
 8166  034654  001031                        BNE     30$
 8167  034656  000713                        BR      10$
 8168  034660                          18$:
 8169  034660                                ERRDF   90,EMG31
  (4)  034660  104455                                                               TRAP    C$ERDF
  (5)  034662  000132                                                               .WORD   90
  (5)  034664  015004                                                               .WORD   EMG31
  (5)  034666  000000                                                               .WORD   0
 8170  034670  000425                        BR      50$
 8171
 8172
 8173  034672                          20$:
 8174  034672  032777  000400  145374        BIT     #TSOM,@TDSR     ;IS START OF MESSAGE SENT.
 8175  034700  001405                        BEQ     25$             ;IF NOT, CONTINUE.
 8176  034702  005037  002476                CLR     XMITD           ;CLEAR XMIT COUNTER
 8177  034706  042777  000400  145360        BIC     #TSOM,@TDSR     ;CLEAR START OF MESSAGE.
 8178  034714                          25$:
 8179  034714  112277  145354                MOVB    (R2)+,@TDSR     ;TRANSMIT A CHARACTER.
 8180  034720  005237  002476                INC     XMITD           ;COUNT CHARACTER ACTUALLY TRANSMITTED.
 8181  034724  005303                        DEC     R3              ;DECREMENT COUNTER
 8182  034726  001315                        BNE     15$             ;IF NOT DONE LOOP
 8183  034730  052777  001000  145336        BIS     #TEOM,@TDSR     ;SEND END OF MESSAGE.
 8184  034736  000711                        BR      15$
 8185
 8186  034740                          30$:
```

```
 8187  034740                                    CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
 8188
 8189
 8190  034744                              50$:
 8191
 8192  034744                              ENDTST
  (3)  034744                                                                 L10131:
  (3)  034744  104401                                                                 TRAP    C$ETST
 8193
 8194
 8195
 8196
 8197
 8198
```

```
                                .SBTTL          TEST 30 - BOP DATA TEST

                                ;*************************************************************************
                                ;*              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.
                                ;*
                                ;*************************************************************************
034746                          BGNTST
(3) 034746                                                                      T30::
034746                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
034752  103462                          BCS     50$             ;IF NOT, SKIP THE TEST.
034754                                  CALL    $RESET          ;RESET THE DPV
034760                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 034760  104410                                                              TRAP    C$ESCAPE
(3) 034762  000136                                                              .WORD   L10132-.
034764  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
034772  012737  000400  002344          MOV     #CCITT0,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
035000  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
035006  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
035014  012737  000006  002352          MOV     #6,LENGTH       ;CHARACTER LENGTH OF 6 BITS.
035022  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
035030  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
035036  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
035044  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
035052  013777  002344  145210          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
035060  112737  000306  002342          MOVB    #306,IPCR       ;SET UP CHARACTER LENGTH

035066                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
035072  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
035076  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
035102                                  CALL    $DATA           ;
035106  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

035110                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
035114                          20$:
035114                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
035120                          50$:

035120                          ENDTST
(3) 035120                                                                      L10132:
(3) 035120  104401                                                                      TRAP    C$ETST
```

```
                                .SBTTL          TEST 31 - BOP DATA TEST

                                ;*****************************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************************
035122                          BGNTST
                                                                                T31::
035122                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
035126  103465                          BCS     50$             ;IF NOT, SKIP THE TEST.
035130                                  CALL    $RESET          ;RESET THE DPV
035134                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
035134  104410                                                                  TRAP    C$ESCAPE
035136  000144                                                                  .WORD   L10133-.
035140  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
035146  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
035154  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
035162  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
035170  012737  000005  002352          MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
035176  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
035204  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
035212  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
035220  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
035226  013777  002344  145034          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
035234  112737  000245  002342          MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH

035242                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
035246  005C37  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
035252  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
035256  012737  000001  002340          MOV     #1,HIGH         ;FLAG TO USE HIGH SPEED INT. SERVICE ROUTINE.
035264                                  CALL    $DATA           ;
035270  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

035272                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
035276                          20$:
035276  005037  002340                  CLR     HIGH            ;CLEAR FLAG FOR HIGH SPEED ISRS.
035302                          50$:

035302                          ENDTST
                                                                L10133:
035302                                                                  TRAP    C$ETST
```

```
                                .SBTTL          TEST 32 - BOP DATA TEST

                                ;*************************************************************************
                                ;*              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.
                                ;*
                                ;*************************************************************************
035304                          BGNTST
                                                                                T32::
035304                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
035310  103470                          BCS     50$             ;IF NOT, SKIP THE TEST.
035312                                  CALL    $RESET          ;RESET THE DPV
035316                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
035316  104410                                                                  TRAP    C$ESCAPE
035320  000152                                                                  .WORD   L10134-.
035322  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
035330  012737  000400  002344          MOV     #CCITTO,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
035336  052737  010000  002344          BIS     #SECADR,IPCSAR  ;SET SECONDARY ADDRESS.
035344  112737  000123  002344          MOVB    #123,IPCSAR     ;SECONDARY ADDRESS.
035352  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
035360  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
035366  012737  000007  002352          MOV     #7,LENGTH       ;CHARACTER LENGTH OF 7 BITS.
035374  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE.
035402  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
035410  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
035416  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
035424  013777  002344  144636          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
035432  112737  000347  002342          MOVB    #347,IPCR       ;SET UP CHARACTER LENGTH

035440                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
035444  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
035450  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
035454                                  CALL    $DATA           ;
035460  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

035462                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
035466                          20$:
035466                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
035472                          50$:

035472                          ENDTST
035472                                                                  L10134:
035472  104401                                                                  TRAP    C$ETST
```

```
                                    .SBTTL          TEST 33 - BOP DATA TEST

                                    ;*****************************************************************************
                                    ;*                  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.
                                    ;*
                                    ;*****************************************************************************
035474                              BGNTST
(3) 035474                                                                              T33::
035474                                      CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
035500  103461                              BCS     50$             ;IF NOT, SKIP THE TEST.
035502                                      CALL    $RESET          ;RESET THE DPV
035506                                      ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 035506  104410                                                                      TRAP    C$ESCAPE
(3) 035510  000134                                                                      .WORD   L10135-.
035512  012737  100000  002362              MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
035520  012737  000000  002344              MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
035526  012737  000001  002414              MOV     #1,START        ;SEND 1 FLAG
035534  012737  000002  002336              MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
035542  012737  000010  002352              MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
035550  012737  000400  002434              MOV     #TSOM,TSTART    ;START OF MESSAGE.
035556  012737  001000  002422              MOV     #TEOM,TEND      ;END OF MESSAGE
035564  012737  002502  002470              MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
035572  012737  000100  002472              MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                    ;
035600  013777  002344  144462              MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
035606  105037  002342                      CLRB    IPCR            ;SET UP CHARACTER LENGTH

035612                                      CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
035616  005037  002356                      CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
035622  005037  002332                      CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
035626                                      CALL    $DATA           ;
035632  103402                              BCS     20$             ;IF ERROR SKIP DATA CHECK.

035634                                      CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
035640                              20$:
035640                                      CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
035644                              50$:

035644                              ENDTST
(3) 035644                                                                      L10135:
(3) 035644  104401                                                                      TRAP    C$ETST
```

```
                                .SBTTL          TEST 34 - BOP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
035646                          BGNTST
(3) 035646                                                                      T34::
035646                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
035652  103462                          BCS     50$             ;IF NOT, SKIP THE TEST.
035654                                  CALL    $RESET          ;RESET THE DPV
035660                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 035660  104410                                                              TRAP    C$ESCAPE
(3) 035662  000136                                                              .WORD   L10136-.
035664  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
035672  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT PRESET TO ONE
035700  012737  000002  002414          MOV     #2,START        ;SEND 1 FLAG
035706  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
035714  012737  000006  002352          MOV     #6,LENGTH       ;CHARACTER LENGTH OF 6 BITS.
035722  012737  000003  002434          MOV     #3,TSTART       ;SET TSOM AND TEOM IN BYTE MODE.
035730  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
035736  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
035744  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
035752  013777  002344  144310          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
035760  112737  000306  002342          MOVB    #306,IPCR       ;SET UP CHARACTER LENGTH

035766                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
035772  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
035776  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
036002                                  CALL    $DATA           ;
036006  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

036010                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
036014                          20$:
036014                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
036020                          50$:
036020                          ENDTST
(3) 036020                                                                      L10136:
(3) 036020  104401                                                                      TRAP    C$ETST
                                .
```

```
                                .SBTTL          TEST 35 - BOP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                        T35::
                                        CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
                                        BCS     50$             ;IF NOT, SKIP THE TEST.
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10137-.
                                        MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
                                        MOV     #CCITTO,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
                                        MOV     #APA,IPCSAR     ;ALL PARTIES ADDRESS.
                                        MOV     #1,START        ;SEND 1 FLAG
                                        MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
                                        MOV     #7,LENGTH       ;CHARACTER LENGTH OF 7 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE
                                        MOV     #TEOM,TEND      ;END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
                                        MOVB    #347,IPCR       ;SET UP CHARACTER LENGTH

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
                                        CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BCS     20$             ;IF ERROR SKIP DATA CHECK.

                                        CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
                                20$:
                                        CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
                                50$:

                                ENDTST
                                                                                L10137:
                                                                                        TRAP    C$ETST
```

```
                                .SBTTL          TEST 36 - BOP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
036204                          BGNTST
                                                                                T36::
036204                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
036210  103465                          BCS     50$             ;IF NOT, SKIP THE TEST.
036212                                  CALL    $RESET          ;RESET THE DPV
036216                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
036216  104410                                                          TRAP    C$ESCAPE
036220  000144                                                          .WORD   L10140-.
036222  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT WE ARE IN BOP MODE.
036230  012737  000400  002344          MOV     #CCITTO,IPCSAR  ;SET CRC-CCITT PRESET TO ZERO
036236  052737  020000  002344          BIS     #LOOP,IPCSAR    ;SET LOOP MODE TO RECOGNIZE THE GO AHEAD.
036244  012737  000001  002414          MOV     #1,START        ;SEND 1 FLAG
036252  012737  000002  002336          MOV     #2,HEADER       ;SEND 2 HEADER CHARACTERS
036260  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
036266  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE
036274  012737  005000  002422          MOV     #TGA!TEOM,TEND  ;TRANSMIT GO AHEAD AT END OF MESSAGE.
036302  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
036310  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
036316  013777  002344  143744          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
036324  105037  002342                  CLRB    IPCR            ;SET UP CHARACTER LENGTH

036330                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
036334  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
036340  012737  000001  002332          MOV     #1,EXERR        ;FLAG THAT AN ERROR IS EXPECTED IN $DATA
036346                                  CALL    $DATA           ;
036352  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

036354                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
036360                          20$:
036360                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
036364                          50$:

036364                          ENDTST
036364                                                  L10140:
036364  104401                                                  TRAP    C$ETST
```

```
                                .SBTTL          TEST 37 - BCP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
036366                          BGNTST
(3) 036366                                                                              T37::
036366                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
036372  103475                          BCS     50$             ;IF NOT, SKIP THE TEST.
036374                                  CALL    $RESET          ;RESET THE DPV
036400                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 036400  104410                                                              TRAP    C$ESCAPE
(3) 036402  000164                                                              .WORD   L10141-.
036404  005037  002362                  CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
036410  012737  000024  002344          MOV     #24,IPCSAR      ;LOAD SYNCH IN PCSAR (FOR RECEIVER ONLY)
036416  052737  002000  002344          BIS     #VRCO,IPCSAR    ;SET ODD VRC
036424  052737  040000  002344          BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
036432  052737  004000  002344          BIS     #IDLE,IPCSAR    ;TRANSMIT SYNCH FROM TDSR
036440  012737  000002  002414          MOV     #2,START        ;SEND 2 SYNCHS
036446  012737  000001  002336          MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
036454  012737  000006  002352          MOV     #6,LENGTH       ;CHARACTER LENGTH OF 6 BITS.
036462  012737  000424  002434          MOV     #TSOM!24,TSTART ;START OF MESSAGE AND SYNCH CHARACTER.
036470  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
036476  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
036504  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
036512  112737  000306  002342          MOVB    #306,IPCR       ;SET UP CHARACTER LENGTH
036520  113777  002342  143554          MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH
036526  013777  002344  143534          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

036534                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
036540  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
036544  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
036550                                  CALL    $DATA           ;
036554  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

036556                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
036562                          20$:
036562                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
036566                          50$:

036566                          ENDTST
036566                                                                  L10141:
(3) 036566  104401                                                              TRAP    C$ETST
```

```
                                .SBTTL          TEST 38 - BCP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                        T38::
                                        CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
                                        BCS     50$             ;IF NOT, SKIP THE TEST.
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO THE END.
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10142-.
                                        CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
                                        MOV     #VRCE,IPCSAR    ;SET EVEN VRC
                                        BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
                                        MOVB    #105,IPCSAR     ;SYNCH.
                                        MOV     #2,START        ;SEND 2 SYNCHS
                                        MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
                                        MOV     #5,LENGTH       ;CHARACTER LENGTH OF 5 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE
                                        MOV     #TEOM,TEND      ;END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                        ;
                                        MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH
                                        MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        MOV     #1,HIGH         ;FLAG TO USE HIGH SPEED INT. SERVICE ROUTINE.
                                        CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
                                        CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BCS     20$             ;IF ERROR SKIP DATA CHECK.

                                        CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
                                20$:
                                        CLR     HIGH            ;CLEAR FLAG TO USE HIGH SPEED ISRS.
                                50$:

                                ENDTST
                                                                                L10142:
                                                                                        TRAP    C$ETST
```

```
                                .SBTTL          TEST 39 - BCP DATA TEST

                                ;*****************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************
                                BGNTST
                                                                                        T39::
                                        CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
                                        BCS     50$             ;IF NOT, SKIP THE TEST.
                                        CALL    $RESET          ;RESET THE DPV
                                        ESCAPE  TST             ;IF ERROR, BR TO TST END.
                                                                                        TRAP    C$ESCAPE
                                                                                        .WORD   L10143-.
                                        CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
                                        MOV     #CRC16,IPCSAR   ;SET CRC 16
                                        BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
                                        BIS     #SSYNCH,IPCSAR  ;STRIP SYNCH.
                                        MOVB    #217,IPCSAR     ;SYNCH
                                        MOV     #5,START        ;SEND 5 SYNCHS
                                        MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
                                        MOV     #7,LENGTH       ;CHARACTER LENGTH OF 7 BITS.
                                        MOV     #TSOM,TSTART    ;START OF MESSAGE
                                        MOV     #TEOM,TEND      ;END OF MESSAGE
                                        MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
                                        MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
                                        MOVB    #347,IPCR       ;CHARACTER LENGTH
                                        MOVB    IPCR,@PCR       ;SET UP CHARACTER LENGTH
                                        MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS


                                        CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
                                        CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
                                        CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
                                        CALL    $DATA           ;
                                        BCS     20$             ;IF ERROR SKIP DATA CHECK.

                                        CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
                                20$:
                                        CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
                                50$:

                                ENDTST
                                                                                L10143:
                                                                                        TRAP    C$ETST
```

```
                                .SBTTL          TEST 40 - BCP DATA TEST

                                ;*****************************************************************************
                                ;*              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.
                                ;*
                                ;*****************************************************************************
037174                          BGNTST
                                                                                        T40::
037174                                  CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
037200  103463                          BCS     50$             ;IF NOT, SKIP THE TEST.
037202                                  CALL    $RESET          ;RESET THE DPV
037206                                  ESCAPE  TST             ;IF ERROR, BR TO THE END.
037206  104410                                                                  TRAP    C$ESCAPE
037210  000140                                                                  .WORD   L10144-.
037212  005037  002362                  CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
037216  012737  001400  002344          MOV     #CRC16,IPCSAR   ;SET CRC16
037224  052737  040000  002344          BIS     #PROTO,IPCSAR   ;SET BCP PROTOCOL
037232  012737  000002  002414          MOV     #2,START        ;SEND 2 SYNCHS
037240  012737  000001  002336          MOV     #1,HEADER       ;SEND 1 HEADER CHARACTER
037246  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
037254  012737  000400  002434          MOV     #TSOM,TSTART    ;START OF MESSAGE
037262  012737  001000  002422          MOV     #TEOM,TEND      ;END OF MESSAGE
037270  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
037276  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
                                                                ;
037304  105037  002342                  CLRB    IPCR            ;CHARACTER LENGTH
037310  013777  002344  142752          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS

037316                                  CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
037322  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
037326  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
037332                                  CALL    $DATA           ;
037336  103402                          BCS     20$             ;IF ERROR SKIP DATA CHECK.

037340                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
037344                          20$:
037344                                  CALL    $MODEM          ;PRINT OUT MODEM CONTROL STATUS.
037350                          50$:

037350                          ENDTST
                                                                        L10144:
037350                                                                          TRAP    C$ETST
```

```
 8711                                   .SBTTL          TEST 41 - DDCMP DATA TEST
 8712
 8713                                   ;*****************************************************************************
 8714                                   ;*              TEST 41 - DPV-11
 8715                                   ;* DDCMP DATA TEST
 8716                                   ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE USING THE
 8717                                   ;* DDCMP MESSAGE FORMAT.  CHECK THAT THE DATA IS CORRECTLY RECEIVED
 8718                                   ;* AND THAT THE CRC CHARACTERS ARE RECEIVED IN THE PROPER DDCMP
 8719                                   ;* ORDER.
 8720                                   ;*      SELECTED OPTIONS: BCP MODE, CRC-16 PRESET TO ONES, STRIP SYNCHS
 8721                                   ;*                        8 BIT CHARACTERS, USER SELECTED LOOPBACK.
 8722                                   ;*
 8723                                   ;*****************************************************************************
 8724  037352                           BGNTST
  (3)  037352                                                                                  T41::
 8725  037352                                   CALL    $SPEED          ;CAN THE CPU SUPPORT THE LOOPBACK?
 8726  037356  103521                           BCS     50$             ;IF NOT, SKIP THE TEST.
 8727  037360                                   CALL    $RESET          ;RESET THE DPV
 8728  037364                                   ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  037364  104410                                                                          TRAP    C$ESCAPE
  (3)  037366  000234                                                                          .WORD   L10145-.
 8729  037370  012737  000006  002414          MOV     #6,START        ;SEND 6 SYNCHS
 8730  037376  005037  002336                  CLR     HEADER          ;CLEAR DDCMP HEADER FLAG
 8731                                           ;
 8732  037402  012777  061626  142660          MOV     #SSYNCH!PROTO!CRC16!SYN,@PCSAF  ;SET BCP PROTOCOL AND CRC16.
 8733                                                                   ;STRIP SYNCH AND SYNCH CHAR.
 8734  037410  012701  003274                  MOV     #RCVBUF,R1      ;RECEIVE BUFFER
 8735  037414  012703  000014                  MOV     #14,R3          ;BUFFER COUNT
 8736  037420                           1$:
 8737  037420  005021                          CLR     (R1)+           ;CLEAR THE BUFFER
 8738  037422  005303                          DEC     R3              ;DECREMENT COUNT
 8739  037424  001375                          BNE     1$              ;CONTINUE UNTIL DONE.
 8740
 8741
 8742  037426  012701  003274                  MOV     #RCVBUF,R1      ;RECEIVE BUFFER.
 8743  037432  012702  002650                  MOV     #DDCMP,R2       ;TRANSMIT BUFFER ADDRESS
 8744  037436  012703  000006                  MOV     #DDCMP1,R3      ;TRANSMIT COUNT
 8745  037442  005037  002376                  CLR     RFLAG           ;CLEAR RECEIVE FLAG.
 8746  037446  005037  002360                  CLR     MCFLAG          ;CLEAR MODEM CONTROL FLAG.
 8747
 8748  037452                                   SETVEC  XMTVEC,#XDDCMP,#PRI04   ;TRANSMIT VECTOR
  (7)  037452  012746  000200                                                                  MOV     #PRI04,-(SP)
  (6)  037456  012746  017620                                                                  MOV     #XDDCMP,-(SP)
  (5)  037462  013746  002264                                                                  MOV     XMTVEC,-(SP)
  (4)  037466  012746  000003                                                                  MOV     #3,-(SP)
  (3)  037472  104437                                                                          TRAP    C$SVEC
  (2)  037474  062706  000010                                                                  ADD     #10,SP
 8749  037500                                   SETVEC  RCVEC,#RDATA,#PRI04     ;RECEIVE VECTOR.
  (7)  037500  012746  000200                                                                  MOV     #PRI04,-(SP)
  (6)  037504  012746  016732                                                                  MOV     #RDATA,-(SP)
  (5)  037510  013746  002262                                                                  MOV     RCVEC,-(SP)
  (4)  037514  012746  000003                                                                  MOV     #3,-(SP)
  (3)  037520  104437                                                                          TRAP    C$SVEC
  (2)  037522  062706  000010                                                                  ADD     #10,SP
 8750  037526                                   SETPRI  #PRI00          ;ENABLE INTERRUPTS
  (3)  037526  012700  000000                                                                  MOV     #PRI00,R0
```

```
(3)  037532  104441                                                                      TRAP    C$SPRI
     037534  005037  002332              CLR     EXERR               ;NO ERROR EXPECTED.
     037540  012737  000027  002474      MOV     #DDCMP1+DDCMP2+4,ECOUNT ;DETERMINE END COUNT
     037546                              CALL    $DATA1              ;
     037552                              ESCAPE  TST                 ;IF ERROR, BR TO END
(3)  037552  104410                                                                      TRAP    C$ESCAPE
(3)  037554  000046                                                                      .WORD   L10145-.

     037556  012701  003274              MOV     #RCVBUF,R1          ;RECEIVE BUFFER.
     037562  012702  002650              MOV     #DDCMP,R2           ;TRANSMIT BUFFER ADDRESS
     037566  012703  000006              MOV     #DDCMP1,R3          ;TRANSMIT COUNT

     037572                              CALL    $CHK1               ;CHECK THE DATA RECEIVED
     037576                              ESCAPE  TST                 ;IF ERROR, BR TO END
(3)  037576  104410                                                                      TRAP    C$ESCAPE
(3)  037600  000022                                                                      .WORD   L10145-.
     037602  062701  000002              ADD     #2,R1               ;INCREMENT THE RECEIVE BUFFER BY 2
                                                                     ;IN ORDER TO COMPENSATE FOR CRC
     037606  012703  000015              MOV     #DDCMP2,R3          ;MESSAGE COUNT
     037612                              CALL    $CHK1               ;CHECK THE CATA RECEIVED
     037616                              ESCAPE  TST                 ;IF ERROR, BR TO END
(3)  037616  104410                                                                      TRAP    C$ESCAPE
(3)  037620  000002                                                                      .WORD   L10145-.
     037622                      50$:


     037622                      ENDTST
(3)  037622                                                                      L10145:
(3)  037622  104401                                                                      TRAP    C$ETST


```

```
                                        .SBTTL          TEST 42 - HIGH SPEED BCP DATA TEST

                                        ;*********************************************************************
                                        ;*                      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.
                                        ;*
                                        ;*********************************************************************
037624                                  BGNTST
(3) 037624                                                                                      T42::
037624                                          CALL    $RESET          ;RESET THE DPV
037630                                          ESCAPE  TST             ;IF ERROR, BR TO THE END.
(3) 037630  104410                                                                              TRAP    C$ESCAPE
(3) 037632  000200                                                                              .WORD   L10146-.
                                                                        ;SET CRC16 AND BCP PROTOCOL.
037634  012737  041413  002344                  MOV     #CRC16!PROTO!13,IPCSAR ;CRC16 AND BCP MODE.
037642  012737  000002  002414                  MOV     #2,START        ;SEND 2 SYNCHS

037650  005037  002362                          CLR     MODE            ;FLAG THAT WE ARE IN BCP MODE.
037654  012737  002502  002470                  MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
037662  012737  000100  002472                  MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
037670  005737  002324                          TST     CPU             ;IS THIS A LSI 11/23?
037674  001412                                  BEQ     5$              ;BRANCH IF NOT.
037676  012737  000005  002352                  MOV     #5.,LENGTH      ;CHARACTER LENGTH OF 5 BITS.
037704  112777  000245  142370                  MOVB    #245,@PCR       ;SET UP CHARACTER LENGTH.
037712  112737  000245  002342                  MOVB    #245,IPCR       ;REMEMBER CHARACTER LENGTH.
037720  000405                                  BR      7$
037722                                  5$:
037722  012737  000010  002352                  MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 8 BITS.
037730  105037  002342                          CLRB    IPCR            ;SET UP CHARACTER LENGTH.
037734                                  7$:
037734  013777  002344  142326                  MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
037742                                          CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
037746  005037  002356                          CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
037752  005037  002332                          CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
037756  012737  000001  002340                  MOV     #1,HIGH         ;FLAG THAT THIS IS A HIGH SPEED TEST.
037764                                          CALL    $DATA           ;DO THE DATA TRANSFER.
037770  103014                                  BCC     10$             ;IF NO ERROR, PROCEED.
037772  005737  002324                          TST     CPU             ;WAS THIS A LSI 11/23?
037776  001013                                  BNE     20$             ;IF YES - SKIP THE PROMPT.
040000                                          PRINTX  #FMG28          ;PROMPT USER: IF THIS IS A LSI11 (M7264)
(7) 040000  012746  013100                                                              MOV     #FMG28,-(SP)
(6) 040004  012746  000001                                                              MOV     #1,-(SP)
(3) 040010  010600                                                                      MOV     SP,R0
(4) 040012  104415                                                                      TRAP    C$PNTX
(4) 040014  062706  000004                                                              ADD     #4,SP
```

```
                                                                ;WITH MEMORY REFRESH, CAN'T RUN.
040020  000402                          BR      20$
040022                          10$:
040022                          CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
040026                          20$:
040026  005037  002340          CLR     HIGH            ;CLEAR HIGH SPEED TEST FLAG.
040032                          ENDTST
                                                                        L10146:
040032                                                                          TRAP    C$ETST
040032  104401
```

```
 8827                                   .SBTTL          TEST 43 - HIGH SPEED BOP DATA TEST
 8828
 8829                                   ;*****************************************************************************
 8830                                   ;*              TEST 43 - DPV-11
 8831                                   ;* BOP DATA TEST
 8832                                   ;* TRANSMIT AND RECEIVE A COMPLETE DATA MESSAGE.  CHECK THAT THE
 8833                                   ;* DATA IS CORRECTLY RECEIVED.
 8834                                   ;*      SELECTED OPTIONS: BOP MODE, CRC-CCITT PRESET TO ONES,
 8835                                   ;*                        5 OR 8 BIT CHARACTERS, USER SELECTED LOOPBACK.
 8836                                   ;*
 8837                                   ;*****************************************************************************
 8838  040034                           BGNTST
  (3)  040034                                                                                    T43::
 8839  040034                                   CALL    $RESET          ;RESET THE DPV
 8840  040040                                   ESCAPE  TST             ;IF ERROR, BR TO THE END.
  (3)  040040  104410                                                                            TRAP    C$ESCAPE
  (3)  040042  000202                                                                            .WORD   L10147-.
 8841  040044  012737  000000  002344          MOV     #CCITT1,IPCSAR  ;SET CRC-CCITT
 8842  040052  012737  000002  002414          MOV     #2,START        ;SEND 2 SYNCHS
 8843
 8844
 8845  040060  012737  100000  002362          MOV     #BOP,MODE       ;FLAG THAT THIS A BOP MODE TEST.
 8846
 8847  040066  012737  000002  002414          MOV     #2,START        ;SEND 2 SYNCHS
 8848  040074  012737  002502  002470          MOV     #$CCITT,XTYPE   ;USE CCITT DATA PATTERN
 8849  040102  012737  000100  002472          MOV     #64.,XCOUNT     ;# OF CHARACTERS TO TRANSMIT
 8850  040110  005737  002324                  TST     CPU             ;IS THIS A LSI 11/23?
 8851  040114  001407                          BEQ     5$              ;BRANCH IF NOT
 8852  040116  012737  000005  002352          MOV     #5.,LENGTH      ;CHARACTER LENGTH OF 5 BITS.
 8853  040124  112737  000245  002342          MOVB    #245,IPCR       ;SET UP CHARACTER LENGTH
 8854  040132  000405                          BR      7$
 8855  040134                           5$:
 8856  040134  012737  000010  002352          MOV     #8.,LENGTH      ;CHARACTER LENGTH OF 7 BITS.
 8857  040142  105037  002342                  CLRB    IPCR            ;SET UP CHARACTER LENGTH.
 8858  040146                           7$:
 8859  040146  013777  002344  142114          MOV     IPCSAR,@PCSAR   ;SET UP PARAMETERS AND ADDRESS
 8860  040154                                   CALL    $BUFRS          ;SET UP TRANSMIT AND RECEIVE BUFFERS.
 8861  040160  005037  002356                  CLR     MAINT           ;CLEAR FLAG TO INDICATE NO MAINTENACE LOOPBACK
 8862  040164  005037  002332                  CLR     EXERR           ;FLAG THAT NO ERRORS ARE EXPECTED IN $DATA
 8863  040170  012737  000001  002340          MOV     #1,HIGH         ;FLAG THAT THIS IS A HIGH SPEED TEST.
 8864  040176                                   CALL    $DATA           ;DO THE DATA TRANSFER.
 8865  040202  103014                          BCC     10$             ;IF NO ERROR, PROCEED.
 8866  040204  005737  002324                  TST     CPU             ;WAS THIS A LSI 11/23?
 8867  040210  001013                          BNE     20$             ;IF YES - SKIP THE PROMPT.
 8868  040212                                   PRINTX  #FMG28          ;PROMPT USER: IF THIS IS A LSI11 (M7264)
  (7)  040212  012746  013100                                                                    MOV     #FMG28,-(SP)
  (6)  040216  012746  000001                                                                    MOV     #1,-(SP)
  (3)  040222  010600                                                                            MOV     SP,R0
  (4)  040224  104415                                                                            TRAP    C$PNTX
  (4)  040226  062706  000004                                                                    ADD     #4,SP
```

```
 8869
 8870  040232  000402                        BR      20$
 8871  040234                          10$:
 8872  040234                                  CALL    $CHECK          ;CHECK THAT THE DATA WAS CORRECT.
 8873  040240                          20$:
 8874  040240  005037  002340                 CLR     HIGH            ;CLEAR HIGH SPEED TEST FLAG.
 8875  040244                          ENDTST
  (3)  040244                                                                  L10147:
  (3)  040244  104401                                                                  TRAP    C$ETST
 8876
 8877
 8878
 8879
 8880
```

;WITH MEMORY REFRESH, CAN'T RUN.

```
                                .SBTTL  HARDWARE PARAMETER CODING SECTION


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

040246                                  BGNHRD
(3)  040246  000015                                                     .WORD L10150-L$HARD/2
(3)  040250                                                         L$HARD::

040250                                  GPRMA   P1,0,0,160000,177776,YES
(4)  040250  000031                                                     .WORD   T$CODE
(4)  040252  040302                                                     .WORD   P1
(4)  040254  160000                                                     .WORD   T$LOLIM
(4)  040256  177776                                                     .WORD   T$HILIM
040260                                  GPRMA   P2,2,0,0,776,YES
(4)  040260  001031                                                     .WORD   T$CODE
(4)  040262  040314                                                     .WORD   P2
(4)  040264  000000                                                     .WORD   T$LOLIM
(4)  040266  000776                                                     .WORD   T$HILIM
040270                                  GPRMD   P3,4,0,7,0,4,YES
(4)  040270  002032                                                     .WORD   T$CODE
(4)  040272  040325                                                     .WORD   P3
(4)  040274  000007                                                     .WORD   7
(4)  040276  000000                                                     .WORD   T$LOLIM
(4)  040300  000004                                                     .WORD   T$HILIM


040302                                  ENDHRD
(2)                                                                     .EVEN
(3)  040302                                                         L10150:

040302  042101  051104  051505  P1:     .ASCIZ  /ADDRESS: /
        040310  035123  000040
040314  042526  052103  051117  P2:     .ASCIZ  /VECTOR: /
        040322  020072     000
040325     114  047517  041120  P3:     .ASCII  /LOOPBACK -/<CR><LF>
        040332  041501  020113  006455
        040340     012
040341     040  030040  036440          .ASCII  /  0 = INTERNAL, 1 = RS423, 2 = RS422/<CR><LF>
        040346  044440  052116  051105
        040354  040516  026114  030440
        040362  036440  051040  032123
        040370  031462  020054  020062
        040376  020075  051522  031064
        040404  006462     012
```

```
 8907  040407     040  031440  036440          .ASCIZ  /  3 - LOCAL MODEM LOOP, 4 - REMOTE MODEM LOOP/
       040414  046040  041517  046101
       040422  046440  042117  046505
       040430  046040  047517  026120
       040436  032040  036440  051040
       040444  046505  052117  020105
       040452  047515  042504  020115
       040460  047514  050117     000
 8908          040466                        .EVEN
 8909
 8910
 8911
```

```
                                        PATCH AREA

                                        .SBTTL PATCH AREA
                                        ;*********************** PATCH AREA ***********************************
                                        PATCH:
                                                .=.+40
                                                NOP
                                                NOP
                                                NOP
                                        ;*****************************************************************************


                                        ENDMOD

                                                LASTAD
                                                                                        .EVEN
                                                                                        .WORD   0
                                                                                        .WORD   0
                                        L$LAST::
                                        .END
```

```
ABC     032061            7595    7610#
ABORT   002316            3913#   5062*   5451    6491*   6538*   6684*   6730*
ACOUNT= 000045            4010#   8112
ADR   = 000020 G          3725#
ALL   = 000000            3807#
ALPHA   002602            4009#   4010    8111
APA   = 100000            3796#   4341    7317    8445
ASSEMB= 000010            3615
BITS    002320            3914#   4219*   4229    4235    4237
BIT0  = 000001 G          3725#   3753    3754    3821    4354    5494    5875    5913    5941    5969
BIT00 = 000001 G          3725#
BIT01 = 000002 G          3725#
BIT02 = 000004 G          3725#
BIT03 = 000010 G          3725#
BIT04 = 000020 G          3725#
BIT05 = 000040 G          3725#
BIT06 = 000100 G          3725#
BIT07 = 000200 G          3725#
BIT08 = 000400 G          3725#
BIT09 = 001000 G          3725#
BIT1  = 000002 G          3725#   3756    3822    5501
BIT10 = 002000 G          3725#   3766    3785    3786    3787    3789    3804    3841    4557
BIT11 = 004000 G          3725#   3767    3791    3805    3842
BIT12 = 010000 G          3725#   3768    3792    3808    3810    3812    3814
BIT13 = 020000 G          3725#   3769    3793    3794    3809    3810    3813    3814
BIT14 = 040000 G          3725#   3770    3795    3811    3812    3813    3814
BIT15 = 100000 G          3725#   3771    3796    3816    3844    3854
BIT2  = 000004 G          3725#   3757    3823
BIT3  = 000010 G          3725#   3758    3824    3833
BIT4  = 000020 G          3725#   3759    3825    3834
BIT5  = 000040 G          3725#   3760    3826    3827
BIT6  = 000100 G          3725#   3761    3829
BIT7  = 000200 G          3725#   3763
BIT8  = 000400 G          3725#   3764    3783    3784    3786    3787    3802    3839
BIT9  = 001000 G          3725#   3765    3784    3787    3788    3789    3803    3840
BOE   = 000400 G          3725#
BOP   = 100000            3854#   7264    7315    7404    7470    7515    7566    7632    7822    7870    8107    8216    8260
                          8306    8354    8400    8443    8488    8845
CCITT0= 000400            3783#   7316    7871    8217    8307    8444    8489
CCITT1= 000000            3782#   7265    7405    7471    7516    7633    7823    8109    8261    8355    8401    8841
CHLEN   032050            7584    7609#
COUNTE  002322            3915#   4446*   5408*
CPU     002324            3916#   4759    5167*   5169    8796    8813    8850    8866
CR    = 000015            3855#   8905    8906
CRCHI = 000266            3861#   7983
CRCL0 = 000332            3860#   7981
CRC16 = 001400            3784#   7925    7956    8632    8680    8732    8790
CSR0    002266            3877#   3886    4828    4840    4876    4927    5104*   5106    5199    5735    5762
CSR1    002276            3881#   4295    5106*   5107*
CSR2    002270            3878#   3887    3889    4828    5108*   5109*   5113    5737
CSR3    002300            3882#   5113*   5114*
CSR4    002272            3879#   3890    4829    4847    4878    4921    5115*   5116*   5119    5739
CSR5    002302            3883#   3892    4853    5119*   5121*
CSR6    002274            3880#   3891    4829    4859    4882    5122*   5123*   5125    5741    5990
CSR7    002304            3884#   4865    4884    5125*   5126*   5500*   5962*   5963    5966*   5967    5972*   5973    5975*
                          5983*   5989*
```

```
CTS    = 020000          3769#  4681   4896   6832
C$AU   = 000052          3615#
C$AUTO= 000061           3615#  5214
C$BRK  = 000022          3615#  4231   4479   8143
C$BSEG= 000004           3615#  7261   7289   7312   7341   7362
C$BSUB= 000002           3615#  5798   5828   5874   5904   5931   5960   5987   6021   6055   6104   6121   6362
                         6414   6486   6562   6616   6676   6917   6937   6958   6977   7002   7027   7086   7134
                         7182   7260   7311   7401   7428   7921   7952
C$CEFG= 000045           3615#
C$CLCK= 000062           3615#
C$CLEA= 000012           3615#  5236
C$CLOS= 000035           3615#
C$CLP1= 000006           3615#
C$CVEC= 000036           3615#  4510   4511   5073   5168   5211   5750   6196   6324   6325   6611   6612   6668
                         6669   6729   6799   6800   7057   7058   7128   7129   7176   7177   7225   7226
C$DCLN= 000044           3615#  5210   5746
C$DODU= 000051           3615#  5209   5745
C$DRPT= 000024           3615#
C$DU   = 000053          3615#  5696
C$EDIT= 000003           3615#  3657
C$ERDF= 000055           3615#  4236   4286   4487   4491   4498   4564   4571   4588   4629   5759   5822   5843
                         5897   5925   5953   5981   5993   6036   6047   6070   6078   6116   6143   6185   6192
                         6245   6252   6255   6306   6316   6319   6385   6398   6403   6408   6438   6448   6455
                         6461   6469   6479   6510   6523   6530   6536   6588   6597   6603   6607   6644   6653
                         6660   6664   6704   6713   6719   6725   6787   6793   6853   6873   6930   6950   6970
                         6990   6996   7015   7021   7040   7047   7115   7123   7163   7171   7211   7220   7305
                         7357   7424   7448   7544   7597   7844   7892   7948   7986   8034   8082   8133   8148
                         8169
C$ERMR= 000056           3615#
C$ERRO= 000060           3615#
C$ERSF= 000054           3615#
C$ERSO= 000057           3615#
C$ESCA= 000010           3615#  5800   5872   6023   6031   6043   6050   6057   6065   6074   6081   6106   6123
                         6132   6136   6165   6225   6232   6237   6242   6279   6364   6416   6488   6564   6618
                         6678   6759   6828   6919   6939   6960   6979   7004   7029   7088   7130   7136   7178
                         7184   7227   7263   7283   7286   7291   7314   7335   7338   7343   7358   7364   7374
                         7377   7403   7430   7469   7514   7537   7579   7590   7631   7650   7675   7723   7771
                         7821   7841   7869   7889   7923   7945   7954   7978   8010   8058   8106   8215   8259
                         8305   8353   8399   8442   8487   8533   8581   8630   8678   8728   8755   8762   8767
                         8788   8840
C$ESEG= 000005           3615#  7287   7307   7339   7360   7378
C$ESUB= 000003           3615#  5824   5845   5901   5929   5958   5985   5997   6052   6083   6118   6145   6412
                         6482   6539   6614   6672   6733   6934   6954   6974   6999   7024   7050   7132   7180
                         7229   7308   7379   7426   7450   7950   7988
C$ETST= 000001           3615#  5752   5847   5999   6086   6148   6198   6258   6327   6543   6736   6804   6875
                         7061   7231   7382   7452   7496   7548   7607   7656   7704   7752   7799   7847   7896
                         7990   8038   8086   8192   8241   8286   8333   8379   8424   8469   8514   8563   8611
                         8660   8705   8771   8822   8875
C$EXIT= 000032           3615#  6906   7084
C$GETB= 000026           3615#
C$GETW= 000027           3615#
C$GMAN= 000043           3615#
C$GPHR= 000042           3615#  5096
C$GPLO= 000030           3615#
C$GPRI= 000040           3615#
C$INIT= 000011           3615#  5178
```

```
C$INLP= 000020          3615#
C$MANI= 000050          3615#
C$MEM = 000031          3615#
C$MSG = 000023          3615#  4820  4830  4835  4842  4849  4855  4861  4867  4886  4891  4933  4941
                        4945
C$OPEN= 000034          3615#
C$PNTB= 000014          3615#  4239  4297  4630  4634  4638  4639  4640  4649  4652  4664  4667  4819
                        4826   4828  4829  4833  4834  4839  4840  4841  4846  4847  4848  4852  4853
                        4854   4858  4859  4860  4864  4865  4866  4873  4875  4876  4877  4878  4879
                        4880   4881  4882  4883  4884  4885  4889  4890  4897  4903  4909  4910  4911
                        4918   4919  4920  4921  4922  4926  4927  4928  4931  4938  4940  4944  5102
                        5131   6991  7016  7041  7042  7117  7165  7213  7215
C$PNTF= 000017          3615#  5694
C$PNTS= 000016          3615#
C$PNTX= 000015          3615#  4718  4765  5744  5762  5994  8815  8868
C$QIO = 000377          3615#
C$RDBU= 000007          3615#
C$REFG= 000047          3615#  5075  5077  5079  5081
C$RESE= 000033          3615#  5693  5831
C$REVI= 000003          3615#  3657
C$RFLA= 000021          3615#
C$RPT = 000025          3615#
C$SEFG= 000046          3615#
C$SPRI= 000041          3615#  4452  5053  6170  6194  6287  6322  6369  6422  6494  6572  6609  6628
                        6666   6688  6727  6765  6797  6910  7055  7096  7126  7144  7174  7192  7223
                        8750
C$SVEC= 000037          3615#  4443  4444  4449  4450  5162  5197  5724  6169  6285  6286  6368  6421
                        6493   6570  6571  6626  6627  6686  6687  6763  6764  6909  7094  7095  7142
                        7143   7190  7191  8748  8749
C$TPRI= 000013          3615#
DATA    002326          3918#  5446*  5449  5460*  6780
DDCMP   002650          4016#  4021   8743  8758
DDCMP1= 000006          4021#  8744   8753  8759
DDCMP2= 000015          4025#  5621   8753  8765
DDMSG   002656          4023#  4025
DFPTBL  002254 G        3700#
DIAGMC= 000000          3615
DM    = 001000          3765#  4681   4908  6849
DSCNG = 100000          3771#  4681
DSITEN= 000040          3760#  4445   4462  5156  5277  5330  5335  6944  6984  7009  7034  7105  7153
                        7201
DTR   = 000002          3756#  4681   4900  4902  5148  5153  6836  6857  6863  6924  6944  6965  7009
                        7140
ECOUNT  002474          3978#  4366*  5367  7943*  7975*  8753*
EF.CON= 000036 G        3725#  5081
EF.NEW= 000035 G        3725#  5079
EF.PWR= 000034 G        3725#
EF.RES= 000037 G        3725#  5077
EF.STA= 000040 G        3725#  5075
EMG0    013372          4982#  5843
EMG1    013462          4236   4983#  6448  6469  6523  8148
EMG10   013757          4992#  6192
EMG11   014031          4993#  6408
EMG12   014062          4994#  6245   6385  6438  6510  6588  6644  6704
EMG13   014106          4995#  6252   6316
EMG14   014167          4996#  6255
```

```
EMG15   014243            4997#   6306    6793
EMG16   014276            4998#   6319
EMG17   014345            4999#   6398    6603
EMG18   014405            5000#   6403    6461    6479    6536    6607    6664    6725
EMG19   014434            5001#   6455    6660
EMG2    013473            4487    4984#
EMG20   014465            5002#   6530    6719
EMG21   014514            5003#   6597    6653    6713
EMG22   014556            5004#   6853    6873
EMG23   014603            5005#   6930    6950    6970
EMG24   014661            5006#   6990    7015    7040    7115    7163    7211
EMG25   014725            4571    5007#
EMG26   014753            4588    5008#
EMG3    013540            4286    4985#
EMG30   014766            4491    5009#   8133
EMG31   015004            4498    5010#   8169
EMG32   015023            5011#   7424
EMG33   015046            5012#   7448    7544
EMG34   015074            5013#
EMG35   015135            5014#   7305    7357
EMG36   015174            5015#   7597
EMG37   015226            4564    5016#   7986
EMG38   015240            5017#   7844    7892    7948
EMG39   015267            5018#   8034    8082
EMG4    013554            4986#   5822    5897    5925    5953    5981    5993
EMG40   015321            4629    5019#   6996    7021    7047    7123    7171    7220
EMG5    013601            4987#   6036    6070
EMG6    013634            4988#   6047    6078
EMG7    013671            4989#   6116
EMG8    013707            4990#   6143
EMG9    013723            4991#   6185    6787
EMT0    020240            5759    5765#
END     016310            5083    5177#
ERR   = 100000            3816#   5360    8163
ERRG1   006652 G          4564    4629    4818#
ERRG10  007472 G          4863#   5981
ERRG11  007572 G          4286    4870#   5843
ERRG12  010214 G          4236    4888#
ERRG13  010272 G          4893#   6853
ERRG14  010760 G          4571    4935#
ERRG15  011044 G          4943#   6873
ERRG2   006700 G          4487    4491    4498    4823#   6143    6185    6192    6245    6252    6255    6306    6316    6319
                          6385    6398    6403    6408    6438    6448    6455    6461    6469    6479    6510    6523    6530
                          6536    6588    6597    6603    6607    6644    6653    6660    6664    6704    6713    6719    6725
                          6787    6793    6930    6950    6970    6990    7015    7040    7115    7163    7211
ERRG3   007014 G          4582    4832#
ERRG4   007072 G          4838#   5897
ERRG7   007172 G          4845#   5822    6036    6047    6070    6078    6116
ERRG8   007272 G          4851#   5925
ERRG9   007372 G          4857#   5953    5993
ERROR   002330            3919#   4431*   4500*   4625    5056*
EVL   = 000004 G          3725#
EXADD = 000020            3834#   4352
EXCON = 000010            3833#   4359
EXERR   002332            3920#   4485    4496    7281*   7299*   7333*   7351*   7372*   7420*   7444*   7488*   7532*   7588*
                          7648*   7696*   7744*   7791*   7839*   7887*   7942*   7973*   8030*   8078*   8232*   8276*   8324*
```

```
                        8370*   8416*   8460*   8505*   8554*   8602*   8651*   8696*   8752*   8809*   8862*
E$END = 002100          3615#
E$LOAD= 000035          3615#   3657
FINIT1  016312          5102    5179#
FINIT2  016405          5131    5180#
FIVE  = 050000          3812#
FLAG    002334          3921#   5058*   6190
FMDROP  020000          5694    5699#
FMG0    011070          4718    4947#
FMG1    011166          4828    4948#
FMG10   011574          4847    4878    4921    4957#
FMG11   011640          4853    4880    4958#
FMG12   011704          4859    4882    4959#
FMG13   011750          4865    4884    4960#
FMG14   012014          4890    4961#
FMG15   012071          4927    4962#
FMG16   012133          4928    4963#
FMG17   012144          4897    4964#
FMG18   012221          4903    4965#
FMG19   012270          4909    4966#
FMG2    011223          4829    4949#
FMG20   012335          4918    4967#
FMG21   012422          4910    4919    4968#
FMG22   012471          4931    4969#
FMG23   012536          4873    4970#
FMG24   012605          4940    4971#
FMG25   012652          4944    4972#
FMG26   012715          4973#   6991    7016    7041    7117    7165    7213
FMG27   013011          4765    4974#
FMG28   013100          4977#   8815    8868
FMG29   013221          4911    4979#   7042    7215
FMG3    011260          4819    4826    4833    4889    4938    4950#
FMG30   013314          4980#   5994
FMG4    011332          4839    4846    4852    4858    4864    4875    4920    4926    4951#
FMG5    011377          4841    4848    4854    4860    4866    4877    4879    4881    4883    4885    4922    4952#
FMG6    011410          4667    4953#
FMG7    011413          4840    4876    4954#
FMG8    011457          4834    4955#
FMG9    011522          4297    4956#
FMODEM  006030          4630    4671#
FMODE0  006115          4638    4672#
FMODE1  006144          4639    4673#
FMODE2  006233          4640    4674#
FMODE3  006257          4649    4675#
FMODE4  006266          4652    4676#
FMODE5  006275          4664    4677#
FMODE6  006325          4634    4678#
FMS.    004102          4239    4246#
FMT0    020276          5762    5766#
FMT1    020350          5744    5767#
FOUR  = 040000          3811#
FRSPAS  002312          3904#   5070*   5090*
FRSTIM  002310          3903#   5067    5069*
F$AU  = 000015          3615#
F$AUTO= 000020          3615#   5195    5214
F$BGN = 000040          3615#   3618    4818    4823    4832    4838    4845    4851    4857    4863    4870    4888    4893
```

```
                        4935  4943  5031  5051  5195  5231  5270  5325  5398  5440  5490  5550  5601
                        5648  5675  5691  5722  5752  5755  5797  5798  5800  5824  5828  5845  5847
                        5870  5872  5874  5901  5904  5929  5931  5958  5960  5985  5987  5997  5999
                        6019  6021  6023  6031  6043  6050  6052  6055  6057  6065  6074  6081  6083
                        6086  6102  6104  6106  6118  6121  6123  6132  6136  6145  6148  6162  6165
                        6198  6222  6225  6232  6237  6242  6258  6275  6279  6327  6360  6362  6364
                        6412  6414  6416  6482  6486  6488  6539  6543  6559  6562  6564  6614  6616
                        6618  6672  6676  6678  6733  6736  6756  6759  6804  6823  6828  6875  6903
                        6906  6917  6919  6934  6937  6939  6954  6958  696C  6974  6977  6979  6999
                        7002  7004  7024  7027  7029  7050  7061  7081  7084  7086  7088  7130  7132
                        7134  7136  7178  7180  7182  7184  7227  7229  7231  7258  7260  7261  7263
                        7283  7286  7289  7291  7308  7311  7312  7314  7335  7338  7341  7343  7358
                        7362  7364  7374  7377  7379  7382  7400  7401  7403  7426  7428  7430  7450
                        7452  7466  7469  7496  7511  7514  7537  7548  7564  7579  7590  7607  7628
                        7631  7650  7656  7672  7675  7704  7720  7723  7752  7768  7771  7799  7818
                        7821  7841  7847  7865  7869  7889  7896  7919  7921  7923  7945  7950  7952
                        7954  7978  7988  7990  8006  8010  8038  8054  8058  8086  8102  8106  8192
                        8211  8215  8241  8255  8259  8286  8301  8305  8333  8349  8353  8379  8395
                        8399  8424  8438  8442  8469  8483  8487  8514  8529  8533  8563  8577  8581
                        8611  8626  8630  8660  8674  8678  8705  8724  8728  8755  8762  8767  8771
                        8786  8788  8822  8838  8840  8875  8894  8923
F$CLEA= 000007           3615#  5231  5236
F$DU  = 000016           3615#  5691  5696
F$END = 000041           3615#  3618  4820  4830  4835  4842  4849  4855  4861  4867  4886  4891  4933
                        4941  4945  5178  5214  5236  5299  5375  5415  5462  5530  5575  5628  5652
                        5679  5696  5722  5752  5763  5797  5798  5800  5824  5828  5845  5847  5870
                        5872  5874  5901  5904  5929  5931  5958  5960  5985  5987  5997  5999  6019
                        6021  6023  6031  6043  6050  6052  6055  6057  6065  6074  6081  6083  6086
                        6102  6104  6106  6118  6121  6123  6132  6136  6145  6148  6162  6165  6198
                        6222  6225  6232  6237  6242  6258  6275  6279  6327  6360  6362  6364  6412
                        6414  6416  6482  6486  6488  6539  6543  6559  6562  6564  6614  6616  6618
                        6672  6676  6678  6733  6736  6756  6759  6804  6823  6828  6875  6903  6906
                        6917  6919  6934  6937  6939  6954  6958  6960  6974  6977  6979  6999  7002
                        7004  7024  7027  7029  7050  7061  7081  7084  7086  7088  7130  7132  7134
                        7136  7178  7180  7182  7184  7227  7229  7231  7258  7260  7263  7283  7286
                        7287  7291  7307  7308  7311  7314  7335  7338  7339  7343  7358  7360  7364
                        7374  7377  7378  7379  7382  7400  7401  7403  7426  7428  7430  7450  7452
                        7466  7469  7496  7511  7514  7537  7548  7564  7579  7590  7607  7628  7631
                        7650  7656  7672  7675  7704  7720  7723  7752  7768  7771  7799  7818  7821
                        784'  7847  7865  7869  7889  7896  7919  7921  7923  7945  7950  7952  7954
                        7978  7988  7990  8006  8010  8038  8054  8058  8086  8102  8106  8192  8211
                        8215  8241  8255  8259  8286  8301  8305  8333  8349  8353  8379  8395  8399
                        8424  8438  8442  8469  8483  8487  8514  8529  8533  8563  8577  8581  8611
                        8626  8630  8660  8674  8678  8705  8724  8728  8755  8762  8767  8771  8786
                        8788  8822  8838  8840  8875  8901  8923
F$HARD= 000004           3615#  8894  8901
F$HW  = 000013           3615#  3700  3707
F$INIT= 000006           3615#  5051  5178
F$JMP = 000050           3615#  6906  7084
F$MOD = 000000           3615#  3618  8923
F$MSG = 000011           3615#  4818  4820  4823  4830  4832  4835  4838  4842  4845  4849  4851  4855
                        4857  4861  4863  4867  4870  4886  4888  4891  4893  4933  4935  4941  4943
                        4945
F$PROT= 000021           3615#  5031  5037
F$PWR = 000017           3615#
F$RPT = 000012           3615#
```

```
F$SEG = 000003          3615#  7261  7287  7289  7307  7312  7339  7341  7360  7362  7378
F$SOFT= 000005          3615#
F$SRV = 000010          3615#  5270  5299  5325  5375  5398  5415  5440  5462  5490  5530  5550  5575
                        5601   5628  5648  5652  5675  5679  5755  5763
F$SUB = 000002          3615#  5798  5824  5828  5845  5874  5901  5904  5929  5931  5958  5960  5985
                        5987   5997  6021  6052  6055  6083  6104  6118  6121  6145  6362  6412  6414
                        6482   6486  6539  6562  6614  6616  6672  6676  6733  6917  6934  6937  6954
                        6958   6974  6977  6999  7002  7024  7027  7050  7086  7132  7134  7180  7182
                        7229   7260  7308  7311  7379  7401  7426  7428  7450  7921  7950  7952  7988
F$SW  = 000014          3615#
F$TEST= 000001          3615#  5722  5752  5797  5847  5870  5999  6019  6086  6102  6148  6162  6198
                        6222   6258  6275  6327  6360  6543  6559  6736  6756  6804  6823  6875  6903
                        7061   7081  7231  7258  7382  7400  7452  7466  7496  7511  7548  7564  7607
                        7628   7656  7672  7704  7720  7752  7768  7799  7818  7847  7865  7896  7919
                        7990   8006  8038  8054  8086  8102  8192  8211  8241  8255  8286  8301  8333
                        8349   8379  8395  8424  8438  8469  8483  8514  8529  8563  8577  8611  8626
                        8660   8674  8705  8724  8771  8786  8822  8838  8875
GETPRM  015570          5082   5092#  5097
G$CNTO= 000200          3615#
G$DELM= 000372          3615#  4805  6108
G$DISP= 000003          3615#
G$EXCP= 000400          3615#
G$HILI= 000002          3615#
G$LOLI= 000001          3615#
G$NO  = 000000          3615#
G$OFFS= 000400          3615#  8896  8897  8898
G$OFSI= 000376          3615#  8896  8897  8898
G$PRMA= 000001          3615#  8896  8897
G$PRMD= 000002          3615#  8898
G$PRML= 000000          3615#
G$RADA= 000140          3615#
G$RADB= 000000          3615#
G$RADD= 000040          3615#
G$RADL= 000120          3615#
G$RADO= 000020          3615#  8896  8897  8898
G$XFER= 000004          3615#
G$YES = 000010          3615#  8896  8897  8898
HEADER  002336          3922#  5512  5516*  5519*  5618  5620*  7268*  7293*  7320*  7345*  7366*  7407*  7434*
                        7473*  7519*  7581*  7635*  7681*  7729*  7777*  7826*  7874*  7929*  7960*  8016*  8064*
                        8219*  8263*  8311*  8357*  8403*  8447*  8492*  8540*  8587*  8637*  8683*  8730*
HELP  = 000000          3603#  3636  3659  3685  4068
HIGH    002340          3923#  4440  4549  5065*  8277*  8283*  8600*  8608*  8810*  8821*  8863*  8874*
HOE   = 100000 G        3725#
IBE   = 010000 G        3725#
IC    = 040000          3770#  4681  4902  6839
IDLE  = 004000          3791#  7432  7727  8538
IDU   = 000040 G        3725#
IER   = 020000 G        3725#
ILLGL   017744 G        5162   5675#
IPCR    002342          3924#  4352  4359  5520  5564  7276*  7296*  7328*  7348*  7369*  7415*  7439*  7481*
                        7527*  7584*  7643*  7689*  7691  7737*  7738  7784*  7785  7834*  7882*  7936*  7968*
                        8023*  8071*  8227*  8271*  8319*  8365*  8411*  8455*  8500*  8547*  8548  8594*  8595
                        8644*  8645  8690*  8800*  8804*  8853*  8857*
IPCSAR  002344          3925#  4341  4346  4348  4557  7265*  7266*  7275  7295  7316*  7317*  7327  7347
                        7368  7405*  7414  7431*  7432*  7438  7471*  7480  7516*  7517*  7526  7567*  7582
                        7633*  7642  7677*  7678*  7679*  7690  7725*  7726*  7727*  7739  7773*  7774*  7775*
```

```
                        7786    7823*   7824*   7833    7871*   7872*   7881    7925*   7926*   7927*   7937    7956*   7957*
                        7958*   7967    8012*   8013*   8014*   8025    8060*   8061*   8062*   8073    8108*   8109*   8217*
                        8226    8261*   8270    8307*   8308*   8309*   8318    8355*   8364    8401*   8410    8444*   8445*
                        8454    8489*   8490*   8499    8535*   8536*   8537*   8538*   8549    8583*   8584*   8585*   8596
                        8632*   8633*   8634*   8635*   8646    8680*   8681*   8691    8790*   8806    8841*   8859
IRDSR   002350          3927#   4553    4559    5352*   5355    5360    7422    7446    7539    7541    7594*   7595    7842
                        7890    7946    8032    8080    8155*   8158    8163    8165
IRXCSR  002346          3926#   5272*   5279    5288    5327*   5330    5341    5350    5353    5358    8154*   8156    8161
ISR     = 000100 G      3725#
IXE     = 004000 G      3725#
I$AU    = 000041        3615#
I$AUTO= 000041          3615#   5195#   5214#
I$CLN   = 000041        3615#   5231#   5236#
I$DU    = 000041        3615#   5691#   5696#
I$HRD   = 000041        8894#   8901#
I$INIT= 000041          3615#   5051#   5178#
I$MOD   = 000041        3615#   3618#   8923#
I$MSG   = 000041        3615#   4818#   4820#   4823#   4830#   4832#   4835#   4838#   4842#   4845#   4849#   4851#   4855#
                        4857#   4861#   4863#   4867#   4870#   4886#   4888#   4891#   4893#   4933#   4935#   4941#   4943#
                        4945#
I$PROT= 000040          3615#   5031#
I$PTAB= 000041          3615#
I$PWR   = 000041        3615#
I$RPT   = 000041        3615#
I$SEG   = 000041        3615#   5722    5797    5798    5828    5870    5874    5904    5931    5960    5987    6019    6021
                        6055    6102    6104    6121    6162    6222    6275    6360    6362    6414    6486    6559    6562
                        6616    6676    6756    6823    6903    6917    6937    6958    6977    7002    7027    7081    7086
                        7134    7182    7258    7260    7261#   7287#   7289#   7307#   7311    7312#   7339#   7341#   7360#
                        7362#   7378#   7400    7401    7428    7466    7511    7564    7628    7672    7720    7768    7818
                        7865    7919    7921    7952    8006    8054    8102    8211    8255    8301    8349    8395    8438
                        8483    8529    8577    8626    8674    8724    8786    8838
I$SETU= 000041          3615#
I$SRV   = 000041        3615#   5270#   5299#   5325#   5375#   5398#   5415#   5440#   5462#   5490#   5530#   5550#   5575#
                        5601#   5628#   5648#   5652#   5675#   5679#   5755#   5763#
I$SUB   = 000041        3615#   5722    5797    5798#   5824#   5828#   5845#   5870    5874#   5901#   5904#   5929#   5931#
                        5958#   5960#   5985#   5987#   5997#   6019    6021#   6052#   6055#   6083#   6102    6104#   6118#
                        6121#   6145#   6162    6222    6275    6360    6362#   6412#   6414#   6482#   6486#   6539#   6559
                        6562#   6614#   6616#   6672#   6676#   6733#   6756    6823    6903    6917#   6934#   6937#   6954#
                        6958#   6974#   6977#   6999#   7002#   7024#   7027#   7050#   7081    7086#   7132#   7134#   7180#
                        7182#   7229#   7258    7260#   7308#   7311#   7379#   7400    7401#   7426#   7428#   7450#   7466
                        7511    7564    7628    7672    7720    7768    7818    7865    7919    7921#   7950#   7952#   7988#
                        8006    8054    8102    8211    8255    8301    8349    8395    8438    8483    8529    8577    8626
                        8674    8724    8786    8838
I$TST   = 000041        3615#   5722#   5752#   5797#   5798    5800    5828    5847#   5870#   5872    5874    5904    5931
                        5960    5987    5999#   6019#   6021    6023    6031    6043    6050    6055    6057    6065    6074
                        6081    6086#   6102#   6104    6106    6121    6123    6132    6136    6148#   6162#   6165    6198#
                        6222#   6225    6232    6237    6242    6258#   6275#   6279    6327#   6360#   6362    6364    6414
                        6416    6486    6488    6543#   6559#   6562    6564    6616    6618    6676    6678    6736#   6756#
                        6759    6804#   6823#   6828    6875#   6903#   6906    6917    6919    6937    6939    6958    6960
                        6977    6979    7002    7004    7027    7029    7061#   7081#   7084    7086    7088    7130    7134
                        7136    7178    7182    7184    7227    7231#   7258#   7260    7263    7283    7286    7291    7311
                        7314    7335    7338    7343    7358    7364    7374    7377    7382#   7400#   7401    7403    7428
                        7430    7452#   7466#   7469    7496#   7511#   7514    7537    7548#   7564#   7579    7590    7607#
                        7628#   7631    7650    7656#   7672#   7675    7704#   7720#   7723    7752#   7768#   7771    7799#
                        7818#   7821    7841    7847#   7865#   7869    7889    7896#   7919#   7921    7923    7945    7952
                        7954    7978    7990#   8006#   8010    8038#   8054#   8058    8086#   8102#   8106    8192#   8211#
```

```
                        8215    8241#   8255#   8259    8286#   8301#   8305    8333#   8349#   8353    8379#   8395#   8399
                        8424#   8438#   8442    8469#   8483#   8487    8514#   8529#   8533    8563#   8577#   8581    8611#
                        8626#   8630    8660#   8674#   8678    8705*   8724#   8728    8755    8762    8767    8771#   8786#
                        8788    8822#   8838#   8840    8875#
J$JMP = 000167          3615#
LENGTH  002352          3928#   4334    7269*   7321*   7408*   7474*   7520*   7569*   7576*   7583    7593    7600*   7601
                        7636*   7682*   7730*   7778*   7827*   7875*   7930*   7961*   8017*   8065*   8110*   8220*   8264*
                        8312*   8358*   8404*   8448*   8493*   8541*   8588*   8638*   8684*   8798*   8803*   8852*   8856*
LF    = 000012          3856#   8905    8906
LL    = 000010          3758#   4681    [illegible]  4906    5148    6846    6857    6869    6924    6944    6965    7034    7188
LOCATE  020166 G        5724    5755#
LOE   = 040000 G        3725#
LOGDEV  002354          3929#   4718    5089*   5093*   5094    5096    5209    5694    5745
LOOP  = 020000          3794#   7517    7824    7872    8490
LOT   = 000010 G        3725#
L$ACP   002110 G        3657#
L$APT   002036 G        3657#
L$AUT   002070 G        3657#
L$AUTO  016500 G        3657    5195#
L$CCP   002106 G        3657#
L$CLEA  016564 G        3657    5231#
L$CO    002032 G        3657#
L$DEPO  002011 G        3657#
L$DESC  003702 G        3657    4060#
L$DESP  002076 G        3657#
L$DEVP  002060 G        3657#
L$DISP  002124 G        3657    3683#
L$DLY   002116 G        3657#   4805    6108
L$DTP   002040 G        3657#
L$DTYP  002034 G        3657#
L$DU    017750 G        3657    5691#
L$DUT   002072 G        3657#
L$DVTY  003674 G        3657    4055#
L$EF    002052 G        3657#
L$ENVI  002044 G        3657#
L$ETP   002102 G        3657#
L$EXP1  002046 G        3657#
L$EXP4  002064 G        3657#
L$EXP5  002066 G        3657#
L$HARD  040250 G        3657    8894#
L$HIME  002120 G        3657#
L$HPCP  002016 G        3657#
L$HPTP  002022 G        3657#
L$HW    002254 G        3657    3700#
L$ICP   002104 G        3657#
L$INIT  015372 G        3657    5051#
L$LADP  002026 G        3657#
L$LAST  040540 G        3657    8925#
L$LOAD  002100 G        3657#
L$LUN   002074 G        3657#
L$MREV  002050 G        3657#
L$NAME  002000 G        3657#
L$PRIO  002042 G        3657#
L$PROT  015364 G        3657    5031#
L$PRT   002112 G        3657#
L$REPP  002062 G        3657#
```

L$REV	002010	G	3657#						
L$SPC	002056	G	3657#						
L$SPCP	002020	G	3657#						
L$SPTP	002024	G	3657#						
L$STA	002030	G	3657#						
L$TEST	002114	G	3657#	4718	4765				
L$TIML	002014	G	3657#						
L$UNIT	002012	G	3657#	5094					
L10000	002262		3700	3707#					
L10001	006676		4820#						
L10002	007012		4830#						
L10003	007070		4835#						
L10004	007170		4842#						
L10005	007270		4849#						
L10006	007370		4855#						
L10007	007470		4861#						
L10010	007570		4867#						
L10011	010212		4886#						
L10012	010270		4891#						
L10013	010756		4933#						
L10014	011042		4941#						
L10015	011066		4945#						
L10017	016310		5178#						
L10020	016562		5214#						
L10021	016600		5236#						
L10022	016730		5299#						
L10023	017162		5375#						
L10024	017230		5415#						
L10025	017336		5462#						
L10026	017510		5530#						
L10027	017616		5575#						
L10030	017732		5628#						
L10031	017742		5652#						
L10032	017746		5679#						
L10033	017776		5696#						
L10034	020164		5752#						
L10035	020236		5763#						
L10036	020656		5800	5847#					
L10037	020564		5824#						
L10040	020654		5845#						
L10041	021406		5872	5999#					
L10042	020774		5901#						
L10043	021104		5929#						
L10044	021214		5958#						
L10045	021324		5985#						
L10046	021404		5997#						
L10047	021750		6023	6031	6043	6050	6057	6065	6074	6081	6086#
L10050	021576		6052#						
L10051	021746		6083#						
L10052	022202		6106	6123	6132	6136	6148#		
L10053	022050		6118#						
L10054	022200		6145#						
L10055	022360		6165	6198#					
L10056	022612		6225	6232	6237	6242	6258#		
L10057	023110		6279	6327#					
L10060	024116		6364	6416	6488	6543#			

L10061	023346	6412#											
L10062	023644	6482#											
L10063	024114	6539#											
L10064	025232	6564	6618	6678	6736#								
L10065	024414	6614#											
L10066	024724	6672#											
L10067	025230	6733#											
L10070	025476	6759	6804#										
L10071	025766	6828	6875#										
L10072	026676	6906	6919	6939	6960	6979	7004	7029	7061#				
L10073	026112	6934#											
L10074	026170	6954#											
L10075	026246	6974#											
L10076	026366	6999#											
L10077	026506	7024#											
L10100	026646	7050#											
L10101	030002	7084	7088	7130	7136	7178	7184	7227	7231#				
L10102	027200	7132#											
L10103	027470	7180#											
L10104	030000	7229#											
L10105	030712	7263	7283	7286	7291	7314	7335	7338	7343	7358	7364	7374	7377	7382#
L10106	030304	7308#											
L10107	030710	7379#											
L10110	031236	7403	7430	7452#									
L10111	031074	7426#											
L10112	031234	7450#											
L10113	031410	7469	7496#										
L10114	031620	7514	7537	7548#									
L10115	032046	7579	7590	7607#									
L10116	032236	7631	7650	7656#									
L10117	032422	7675	7704#										
L10120	032606	7723	7752#										
L10121	032772	7771	7799#										
L10122	033162	7821	7841	7847#									
L10123	033350	7869	7889	7896#									
L10124	033766	7923	7945	7954	7978	7990#							
L10125	033546	7950#											
L10126	033764	7988#											
L10127	034156	8010	8038#										
L10130	034346	8058	8086#										
L10131	034744	8106	8192#										
L10132	035120	8215	8241#										
L10133	035302	8259	8286#										
L10134	035472	8305	8333#										
L10135	035644	8353	8379#										
L10136	036020	8399	8424#										
L10137	036202	8442	8469#										
L10140	036364	8487	8514#										
L10141	036566	8533	8563#										
L10142	036770	8581	8611#										
L10143	037172	8630	8660#										
L10144	037350	8678	8705#										
L10145	037622	8728	8755	8762	8767	8771#							
L10146	040032	8788	8822#										
L10147	040244	8840	8875#										
L10150	040302	8894	8901#										

```
MAINT   002356          3930#  4453   7280#  7332#  7419#  7443#  7487#  7531#  7587#  7647#  7695#  7743#  7790#
                        7838#  7886#  7941#  7972#  8029#  8077#  8231#  8275#  8323#  8369#  8415#  8459#  8504#
                        8553#  8601#  8650#  8695#  8808#  8861#
MASK    004514          4369   4382#
MCFLAG  002360          3931#  4430#  4627   4630   4631   4633#  465A   4661#  5274#  5275   5332#  5333   5339
                        6282#  6567#  6622#  6682#  6762#  6921#  6928   6941#  6948   6962#  6968   6981#  6988
                        6994   7006#  7013   7019   7031#  7038   7045   7091#  7110   7121   7139#  7158   7169
                        7187#  7206   7218   8746#
MFPT  = 000007          3857#  5163
MM    = 000010          3824#  5142   5160   5814   6026   6060   6126   6228   6297   6375   6428   6500   6578
                        6634   6694   6776   7106   7154   7202
MMASK   006420          4643   4681#
MODE    002362          3932#  4338   4551   5365   7264#  7315#  7404#  7470#  7515#  7566#  7632#  7676#  7724#
                        7772#  7822#  7870#  7924#  7955#  8011#  8059#  8107#  8216#  8260#  8306#  8354#  8400#
                        8443#  8488#  8534#  8582#  8631#  8679#  8793#  8845#
MODEM   002444          3970#  4289#  4290#  4293#  4637   5341#  5342#  5345#
NESTPC  002364          3933#
NEWST   015552          5080   5088#  5095
NOERR = 003400          3787#  7567
NONE1 = 001000          3788#  7431
NONE2 = 003000          3789#
NXM     017734 G        5197   5648#
NXMFLG  002366          3934#  5061#  5198#  5207   5232   5650#  5725#  5742   5756   5760#
ONE   = 010000          3808#
OVER    002370          3935#  5064#  5293   6624#  6670#
O$APTS= 000000          3615#  3657
O$AU  = 000000          3615#  3657
O$BGNR= 000000          3615#  3657
O$BGNS= 000000          3615#  3657
O$DU  = 000001          3615#  3634#  3657
O$ERRT= 000000          3615#  3657
O$GNSW= 000000          3615#  3657
O$POIN= 000001          3615#  3634#  3657
O$SETU= 000000          3615#  3657   8925
PATCH   040466          8915#
PCR   = 002302          3892#  4279   4853   4880   5520#  5564#  5906#  5907   5910#  5911   5916#  5917   5920#
                        5927#  7483#  7691#  7738#  7785#  8548#  8595#  8645#  8799#
PCSAR = 002270          3887#  6226#  6294#  6772#  7103#  7151#  7199#  7275#  7295#  7327#  7347#  7368#  7414#
                        7438#  7480#  7526#  7582#  7642#  7690#  7739#  7786#  7833#  7881#  7937#  7967#  8025#
                        8073#  8226#  8270#  8318#  8364#  8410#  8454#  8499#  8549#  8596#  8646#  8691#  8732#
                        8806#  8859#
PNT   = 001000 G        3725#
PRI   = 002000 G        3725#
PRI00 = 000000 G        3725#  4452   6170   6287   6369   6422   6494   6572   6628   6688   6765   6910   7096
                        7144   7192   8750
PRI01 = 000040 G        3725#
PRI02 = 000100 G        3725#
PRI03 = 000140 G        3725#
PRI04 = 000200 G        3725#  4443   4444   4449   4450   6169   6285   6286   6368   6421   6493   6570   6571
                        6626   6627   6686   6687   6763   6764   6909   7094   7095   7142   7143   7190   7191
                        8748   8749
PRI05 = 000240 G        3725#
PRI06 = 000300 G        3725#
PRI07 = 000340 G        3725#  5053   5162   5197   5724   6194   6322   6609   6666   6727   6797   7055   7126
                        7174   7223
PROTO = 040000          3795#  7679   7726   7775   7927   7958   8014   8062   8537   8584   8633   8681   8732
```

```
                        8790
PSTACK  002372          3936#  5054#
P1      040302          8896   8903#
P2      040314          8897   8904#
P3      040325          8898   8905#
RABORT= 002000          3804#  5360   6528   6717   7422   7446   7541   8163
RCOUNT  002500          3980#  4438#  4567   4940   5356#  5367   5509#  5609#  8121#  8159#
RCVBUF  003274          4036#  4037   4373   4435   4575   7979   8118   8734   8742   8757
RCVEC   002262          3875#  4444   4450   4511   5133#  6286   6324   6571   6611   6627   6668   6687   6729
                        6763   6799   6909   7057   7094   7128   7142   7176   7190   7225   8749
RDATA   016732 G        4450   5325#  8749
RDATA2  017164 G        4444   5398#
RDATRY= 000200          3763#  5279   5350   5353   6233   6238   6241   6250   6314   6390   6517   8152   8156
RDSR  = 002270          3889#  4275   5297   5352   5407   5836   6392   6453   6528   8155
REG     002374          3937#  4221#  4222#  4228   4890
REDM  = 001000          3803#  6393   6601   7539   8165
RESET = 000001          3821#  4272   4509   5234   6188
RETURN= 000207          3853#
RFLAG   002376          3938#  4428#  4473   4494   5059#  5281#  5290#  5362#  5370#  5403#  5410#  6281#  6301
                        6310#  6312   6565#  6593   6620#  6649   6680#  6709   6761#  6791   6920#  6940#  6961#
                        6980#  7005#  7030#  7090#  7138#  7186#  8745#
RINT    016602 G        5270#  6286   6571   6627   6687   6763   6909   7094   7142   7190
RL    = 000001          3754#  5153
ROVER = 004000          3805#  5360   6453   6658   8163
RR    = 010000          3768#  4681   4896   6834
RSAVE   002400          3939#  5297#  6392#  6393   6601   6658   6717
RSIZE = 000400          4037#  4374
RSOM  = 000400          3802#
RSTARY= 002000          3766#  5288   5350   5358   6390   6401   6443   6459   6464   6476   6515   6533   6605
                        6662   6722   8152   8161
RTS   = 000004          3757#  4681   4894   4896   5145   6829   6857   6860   6924   6944   6965   6984   7092
RXACT = 004000          3767#  6233   6238   6243   6250   6314   6381   6406   6434   6506   6584   6640   6700
RXCSR = 002266          3986#  4273   4289   4455#  4460#  4894   4900   4906   4915   5272   5277#  5286#  5327
                        5335#  5372#  5400   5412#  5834   5878#  5879   5882#  5889#  5890   5893#  5894   5899#
                        6227#  6233   6238   6241   6243   6248#  6250   6295#  6309#  6314   6377#  6381   6390
                        6401   6406   6430#  6434   6443   6459   6464   6474#  6476   6502#  6506   6515   6517
                        6533   6580#  6584   6605   6636#  6640   6662   6696#  6700   6722   6774#  6830#  6832
                        6834   6837#  6839   6842#  6847#  6849   6857#  6861   6864   6866#  6867   6869#  6870
                        6924#  6944#  6965#  6984#  7009#  7034#  7105#  7153#  7201#  8124#  8152   8154
RXENA = 000020          3759#  5138   5159   6227   6248   6295   6309   6377   6430   6474   6502   6580   6636
                        6696   6774   7105   7153   7201
RXINI   002402          3940#  5138#  5145#  5148#  5153#  5155   8124
RXINIT  002404          3941#  4445#  4460   4462#  5155#  5156#
RXITEN= 000100          3761#  5156   5159   5372   5412   6295   6580   6636   6696   6774   6924   6984   7009
                        7034   7105   7153   7201
RXMINI  002406          3942#  4455   5159#
SAVE    002410          3943#
SAVTIM  002412          3944#  5176#  7302   7354
SECADR= 010000          3792#  4346   7266   7317   8308
SEVEN = 070000          3814#
SF    = 000001          3753#  4681   4915   6841   6857   6866
SFR   = 000400          3764#
SIX   = 060000          3813#
SQ    = 000040          3826#  4917   6844
SSYNCH= 020000          3793#  7774   8634   8732
STARES  002314          3905#  4716   4763   5086#  5091#  5829
```

```
STARST  015546          5076    5078    5085#
START   002414          3945#   5442    5445#   5492    5506#   5551    5556#   5559#   5603    5606#   6283#   6366#   6419#
                        6490#   6568#   6623#   6683#   6773#   7104#   7152#   7200#   7267#   7292#   7319#   7344#   7365#
                        7406#   7433#   7472#   7518#   7580#   7634#   7680#   7728#   7776#   7825#   7873#   7928#   7959#
                        8015#   8063#   8218#   8262#   8310#   8356#   8402#   8446#   8491#   8539#   8586#   8636#   8682#
                        8729#   8791#   8842#   8847#
SUBRPC  002416          3946#   4217#   4218#   4242#   4284#   4285#   4287#   4465#   4466#   4501#   4507#   4562#   4563#
                        4569#   4570#   4584#   4585#   4590#   4623#   4624#   4819    4824    4826    4833    4871    4873
                        4889    4936    4938    5055#
SVCGBL= 000000          3615#   3626#   3657    3683    3700    4055    4060    4818    4823    4832    4838    4845    4851
                        4857    4863    4870    4888    4893    4935    4943    5031    5051    5195    5231    5270    5325
                        5398    5440    5490    5550    5601    5648    5675    5691    5755    8894    8925#
SVCINS= 000001          3615#   3623#   3657    3683    3700    4055    4060    4231    4236    4239    4286    4297    4443
                        4444    4449    4450    4452    4479    4487    4491    4498    4510    4511    4564    4571    4588
                        4629    4630    4634    4638    4639    4640    4649    4652    4664    4667    4718    4765    4805
                        4819    4820    4826    4828    4829    4830    4833    4834    4835    4839    4840    4841    4842
                        4846    4847    4848    4849    4852    4853    4854    4855    4858    4859    4860    4861    4864
                        4865    4866    4867    4873    4875    4876    4877    4878    4879    4880    4881    4882    4883
                        4884    4885    4886    4889    4890    4891    4897    4903    4909    4910    4911    4918    4919
                        4920    4921    4922    4926    4927    4928    4931    4933    4938    4940    4941    4944    4945
                        5053    5073    5075    5076    5077    5078    5079    5080    5081    5082    5096    5097    5102
                        5131    5162    5168    5178    5197    5209    5210    5211    5214    5236    5299    5375    5415
                        5462    5530    5575    5628    5652    5679    5693    5694    5696    5724    5744    5745    5746
                        5750    5752    5759    5762    5763    5798    5800    5822    5824    5828    5831    5843    5845
                        5847    5872    5874    5897    5901    5904    5925    5929    5931    5953    5958    5960    5981
                        5985    5987    5993    5994    5997    5999    6021    6023    6031    6036    6043    6047    6050
                        6052    6055    6057    6065    6070    6074    6078    6081    6083    6086    6104    6106    6108
                        6116    6118    6121    6123    6132    6136    6143    6145    6148    6165    6169    6170    6185
                        6192    6194    6196    6198    6225    6232    6237    6242    6245    6252    6255    6258    6279
                        6285    6286    6287    6306    6316    6319    6322    6324    6325    6327    6362    6364    6368
                        6369    6385    6398    6403    6408    6412    6414    6416    6421    6422    6438    6448    6455
                        6461    6469    6479    6482    6486    6488    6493    6494    6510    6523    6530    6536    6539
                        6543    6562    6564    6570    6571    6572    6588    6597    6603    6607    6609    6611    6612
                        6614    6616    6618    6626    6627    6628    6644    6653    6660    6664    6666    6668    6669
                        6672    6676    6678    6686    6687    6688    6704    6713    6719    6725    6727    6729    6733
                        6736    6759    6763    6764    6765    6787    6793    6797    6799    6800    6804    6828    6853
                        6873    6875    6906    6909    6910    6917    6919    6930    6934    6937    6939    6950    6954
                        6958    6960    6970    6974    6977    6979    6990    6991    6996    6999    7002    7004    7015
                        7016    7021    7024    7027    7029    7040    7041    7042    7047    7050    7055    7057    7058
                        7061    7084    7086    7088    7094    7095    7096    7115    7117    7123    7126    7128    7129
                        7130    7132    7134    7136    7142    7143    7144    7163    7165    7171    7174    7176    7177
                        7178    7180    7182    7184    7190    7191    7192    7211    7213    7215    7220    7223    7225
                        7226    7227    7229    7231    7260    7261    7263    7283    7286    7287    7289    7291    7305
                        7307    7308    7311    7312    7314    7335    7338    7339    7341    7343    7357    7358    7360
                        7362    7364    7374    7377    7378    7379    7382    7401    7403    7424    7426    7428    7430
                        7448    7450    7452    7469    7496    7514    7537    7544    7548    7579    7590    7597    7607
                        7631    7650    7656    7675    7704    7723    7752    7771    7799    7821    7841    7844    7847
                        7869    7889    7892    7896    7921    7923    7945    7948    7950    7952    7954    7978    7986
                        7988    7990    8010    8034    8038    8058    8082    8086    8106    8133    8143    8148    8169
                        8192    8215    8241    8259    8286    8305    8333    8353    8379    8399    8424    8442    8469
                        8487    8514    8533    8563    8581    8611    8630    8660    8678    8705    8728    8748    8749
                        8750    8755    8762    8767    8771    8788    8815    8822    8840    8868    8875    8894    8896
                        8897    8898    8901    8925
SVCSUB= 000001          3615#   3625#   5798    5828    5874    5904    5931    5960    5987    6021    6055    6104    6121
                        6362    6414    6486    6562    6616    6676    6917    6937    6958    6977    7002    7027    7086
                        7134    7182    7260    7311    7401    7428    7921    7952
```

 CROSS REFERENCE TABLE -- USER SYMBOLS

```
SVCTAG= 000001           3615#   3627#   3707    4820    4830    4835    4842    4849    4855    4861    4867    4886    4891
                         4933    4941    4945    5178    5214    5236    5299    5375    5415    5462    5530    5575    5628
                         5652    5679    5696    5752    5763    5824    5845    5847    5901    5929    5958    5985    5997
                         5999    6052    6083    6086    6118    6145    6148    6198    6258    6327    6412    6482    6539
                         6543    6614    6672    6733    6736    6804    6875    6934    6954    6974    6999    7024    7050
                         7061    7132    7180    7229    7231    7287    7307    7308    7339    7360    7378    7379    7382
                         7426    7450    7452    7496    7548    7607    7656    7704    7752    7799    7847    7896    7950
                         7988    7990    8038    8086    8192    8241    8286    8333    8379    8424    8469    8514    8563
                         8611    8660    8705    8771    8822    8875    8901
SVCTST= 000001           3615#   3624#   5722    5797    5870    6019    6102    6162    6222    6275    6360    6559    6756
                         6823    6903    7081    7258    7400    7466    7511    7564    7628    7672    7720    7768    7818
                         7865    7919    8006    8054    8102    8211    8255    8301    8349    8395    8438    8483    8529
                         #577    8626    8674    8724    8786    8838
SW00  = 000001           3746#
SW01  = 000002           3745#
SW02  = 000004           3744#
SW03  = 000010           3743#
SW04  = 000020           3742#
SW05  = 000040           3741#
SW06  = 000100           3740#
SW07  = 000200           3739#
SW08  = 000400           3738#
SW09  = 001000           3737#
SW10  = 002000           3736#
SW11  = 004000           3735#
SW12  = 010000           3734#
SW13  = 020000           3733#
SW14  = 040000           3732#
SW15  = 100000           3731#
SYN   = 000226           3852#   8732
S$LSYM= 010000           3615#   3707#   4820#   4830#   4835#   4842#   4849#   4855#   4861#   4867#   4886#   4891#   4933#
                         4941#   4945#   5178#   5214#   5236#   5299#   5375#   5415#   5462#   5530#   5575#   5628#   5652#
                         5679#   5696#   5752#   5763#   5824#   5845#   5847#   5901#   5929#   5958#   5985#   5997#   5999#
                         6052#   6083#   6086#   6118#   6145#   6148#   6198#   6258#   6327#   6412#   6482#   6539#   6543#
                         6614#   6672#   6733#   6736#   6804#   6875#   6934#   6954#   6974#   6999#   7024#   7050#   7061#
                         7132#   7180#   7229#   7231#   7261#   7289#   7308#   7312#   7341#   7362#   7379#   7382#   7426#
                         7450#   7452#   7496#   7548#   7607#   7656#   7704#   7752#   7799#   7847#   7896#   7950#   7988#
                         7990#   8038#   8086#   8192#   8241#   8286#   8333#   8379#   8424#   8469#   8514#   8563#   8611#
                         8660#   8705#   8771#   8822#   8875#   8901#
TBE   = 000004           3823#   4237    4879    6030    6042    6046    6064    6077    6112    6115    6131    6135    6231
                         6236    8138
TDSR  = 002274           3891#   4281    4471    5444*   5453*   5456*   5459*   5504*   5515*   5522*   5526*   5554*   5560*
                         5566*   5570*   5605*   5612*   5613*   5617*   5802*   5840    5934*   5935    5938*   5939    5944*
                         5945    5947*   5955*   5988*   6029*   6040*   6063*   6107*   6114    6130*   6134*   6139    6230*
                         6235*   6240*   8127*   8131    8174    8177*   8179*   8183*
TEMP    002420           3947#
TEND    002422           3948#   5526    7271*   7323*   7410*   7476*   7522*   7572*   7638*   7684*   7732*   7780*   7829*
                         7877*   7932*   7963*   8019*   8067*   8222*   8266*   8314*   8360*   8406*   8450*   8495*   8543*
                         8590*   8640*   8686*
TEOM  = 001000           3840#   5456    5570    5612    5617    7271    7323    7476    7522    7572    7638    7684    7732
                         7780    7932    7963    8019    8067    8183    8222    8266    8314    8360    8406    8450    8495
                         8543    8590    8640    8686
TERR  = 100000           3844#
TFLAG   002424           3949#   4429*   5060*   5441*   6166*   6181    6187*   6280*   6365*   6418*   6489*   6566*   6621*
                         6681*   6760*   6785    7089*   7137*   7185*
TGA   = 004000           3842#   7522    8495
```

H1


```
THREE  = 030000          3810#
TIMEO    002426          3950#  4432*  4483*  7303   7355
TIMER    002430          3951#  4467   5171*  5174*  5176   7298*  7302*  7350*  7354*  8122
TM     = 000040          3827#  4291   4293   4681   5343   5345
TOGGLE   002432          3952#  5063*  5282   5284   5285*  7092*  7140*  7188*
TSOM   = 000400          3839#  5444   5515   5554   5560   5605   5612   6029   6063   6130   6230   6235   7270
                         7322   7409   7475   7521   7571   7683   7731   7779   7828   7876   7931   7962   8018
                         8066   8127   8174   8177   8221   8265   8313   8359   8449   8494   8542   8589   8639
                         8685
TSTART   002434          3953#  5494   5500   5501*  5504   7270*  7322*  7409*  7475*  7521*  7571*  7637*  7683*
                         7731*  7779*  7828*  7876*  7931*  7962*  8018*  8066*  8221*  8265*  8313*  8359*  8405*
                         8449*  8494*  8542*  8589*  8639*  8685*
TURN     002306          3896#  4477   4714   4761   5137*  5140   5146   5151   6024   6058   6124
TWO    = 020000          3809#
TXABO  = 002000          3841#  5453   7410   7829   7877
TXACT  = 000002          3822#  6032   6044   6066   6075
TXCSR  = 002272          3890#  4272*  4277   4291   4456*  4461*  4490*  4509*  5234*  5343   5527*  5571*  5624*
                         5803   5806*  5807   5810*  5811   5814*  5815   5818*  5819   5838   6026*  6028*  6030
                         6032   6034   6041*  6042   6044   6060*  6062*  6064   6066   6068   6075   6112   6126*
                         6129*  6131   6135   6177*  6188*  6228*  6231   6236   6297*  6375*  6428*  6500*  6578*
                         6634*  6694*  6776*  6844   7106*  7154*  7202*  8125*  8138
TXENA  = 000020          3825#  4490   5139   5160   5814   6028   6035   6041   6062   6069   6129   6177   6228
                         6297   6375   6428   6500   6578   6634   6694   6776   7106   7154   7202
TXIE   = 000100          3829#  5158   5160   5527   5571   5624   6177   6297   6375   6428   6500   6578   6634
                         6694   6776   7106   7154   7202
TXINI    002436          3954#  5139*  5142*  5157   8125
TXINIT   002440          3955#  4461   5157*  5158*
TXMINI   002442          3956#  4456   5160*
T$ARGC = 000001          3657#  4239#  4297#  4630#  4634#  4638#  4639#  4640#  4649#  4652#  4664#  4667#  4718#
                         4765#  4819#  4826#  4828#  4829#  4833#  4834#  4839#  4840#  4841#  4846#  4847#  4848#
                         4852#  4853#  4854#  4858#  4859#  4860#  4864#  4865#  4866#  4873#  4875#  4876#  4877#
                         4878#  4879#  4880#  4881#  4882#  4883#  4884#  4885#  4889#  4890#  4897#  4903#  4909#
                         4910#  4911#  4918#  4919#  4920#  4921#  4922#  4926#  4927#  4928#  4931#  4938#  4940#
                         4944#  5102#  5131#  5694#  5744#  5762#  5994#  6991#  7016#  7041#  7042#  7117#  7165#
                         7213#  7215#  8815#  8868#
T$CODE = 002032          8896#  8897#  8898#
T$ERRN = 000132          3615#  4236#  4286#  4487#  4491#  4498#  4564#  4571#  4588#  4629#  5759#  5822#  5843#
                         5897#  5925#  5953#  5981#  5993#  6036#  6047#  6070#  6078#  6116#  6143#  6185#  6192#
                         6245#  6252#  6255#  6306#  6316#  6319#  6385#  6398#  6403#  6408#  6438#  6448#  6455#
                         6461#  6469#  6479#  6510#  6523#  6530#  6536#  6588#  6597#  6603#  6607#  6644#  6653#
                         6660#  6664#  6704#  6713#  6719#  6725#  6787#  6793#  6853#  6873#  6930#  6950#  6970#
                         6990#  6996#  7015#  7021#  7040#  7047#  7115#  7123#  7163#  7171#  7211#  7220#  7305#
                         7357#  7424#  7448#  7544#  7597#  7844#  7892#  7948#  7986#  8034#  8082#  8133#  8148#
                         8169#
T$EXCP = 000000          8896#  8897#  8898#
T$F_AG = 000040          5800#  5872#  6023#  6031#  6043#  6050#  6057#  6065#  6074#  6081#  6106#  6123#  6132#
                         6136#  6165#  6225#  6232#  6237#  6242#  6279#  6364#  6416#  6488#  6564#  6618#  6678#
                         6759#  6828#  6906#  6919#  6939#  6960#  6979#  7004#  7029#  7084#  7088#  7130#  7136#
                         7178#  7184#  7227#  7263#  7283#  7286#  7291#  7314#  7335#  7338#  7343#  7358#  7364#
                         7374#  7377#  7403#  7430#  7469#  7514#  7537#  7579#  7590#  7631#  7650#  7675#  7723#
                         7771#  7821#  7841#  7869#  7889#  7923#  7945#  7954#  7978#  8010#  8058#  8106#  8215#
                         8259#  8305#  8353#  8399#  8442#  8487#  8533#  8581#  8630#  8678#  8728#  8755#  8762#
                         8767#  8788#  8840#
T$GMAN = 000000          3615#
T$HILI = 000004          8896#  8897#  8898#
T$LAST = 000001          3615#  8925#
```

```
T$LOLI= 000000   8896#  8897#  8898#
T$LSYM= 010000   3615#  3707   4820   4830   4835   4842   4849   4855   4861   4867   4886   4891   4933
                 4941   4945   5178   5214   5236   5299   5375   5415   5462   5530   5575   5628   5652
                 5679   5696   5752   5763   5824   5845   5847   5901   5929   5958   5985   5997   5999
                 6052   6083   6086   6118   6145   6148   6198   6258   6327   6412   6482   6539   6543
                 6614   6672   6733   6736   6804   6875   6934   6954   6974   6999   7024   7050   7061
                 7132   7180   7229   7231   7308   7379   7382   7426   7450   7452   7496   7548   7607
                 7656   7704   7752   7799   7847   7896   7950   7988   7990   8038   8086   8192   8241
                 8286   8333   8379   8424   8469   8514   8563   8611   8660   8705   8771   8822   8875
                 8901
T$LTNO= 000053   8925#
T$NEST= 177777   3615#  3618#  3700#  3707#  4818#  4820#  4823#  4830#  4832#  4835#  4838#  4842#  4845#
                 4849#  4851#  4855#  4857#  4861#  4863#  4867#  4870#  4886#  4888#  4891#  4893#  4933#
                 4935#  4941#  4943#  4945#  5031#  5037#  5051#  5178#  5195#  5214#  5231#  5236#  5270#
                 5299#  5325#  5375#  5398#  5415#  5440#  5462#  5490#  5530#  5550#  5575#  5601#  5628#
                 5648#  5652#  5675#  5679#  5691#  5696#  5722#  5752#  5755#  5763#  5797#  5798#  5824#
                 5828#  5845#  5847#  5870#  5874#  5901#  5904#  5929#  5931#  5958#  5960#  5985#  5987#
                 5997#  5999#  6019#  6021#  6052#  6055#  6083#  6086#  6102#  6104#  6118#  6121#  6145#
                 6148#  6162#  6198#  6222#  6258#  6275#  6327#  6360#  6362#  6412#  6414#  6482#  6486#
                 6539#  6543#  6559#  6562#  6614#  6616#  6672#  6676#  6733#  6736#  6756#  6804#  6823#
                 6875#  6903#  6917#  6934#  6937#  6954#  6958#  6974#  6977#  6999#  7002#  7024#  7027#
                 7050#  7061#  7081#  7086#  7132#  7134#  7180#  7182#  7229#  7231#  7258#  7260#  7261#
                 7287#  7289#  7307#  7308#  7311#  7312#  7339#  7341#  7360#  7362#  7378#  7379#  7382#
                 7400#  7401#  7426#  7428#  7450#  7452#  7466#  7496#  7511#  7548#  7564#  7607#  7628#
                 7656#  7672#  7704#  7720#  7752#  7768#  7799#  7818#  7847#  7865#  7896#  7919#  7921#
                 7950#  7952#  7988#  7990#  8006#  8038#  8054#  8086#  8102#  8192#  8211#  8241#  8255#
                 8286#  8301#  8333#  8349#  8379#  8395#  8424#  8438#  8469#  8483#  8514#  8529#  8563#
                 8577#  8611#  8626#  8660#  8674#  8705#  8724#  8771#  8786#  8822#  8838#  8875#  8894#
                 8901#  8923#
T$NS0 = 000000   3618#  8923
T$NS1 = 000004   3700#  3707   4818#  4820   4823#  4830   4832#  4835   4838#  4842   4845#  4849   4851#
                 4855   4857#  4861   4863#  4867   4870#  4886   4888#  4891   4893#  4933   4935#  4941
                 4943#  4945   5031#  5037   5051#  5178   5195#  5214   5231#  5236   5270#  5299   5325#
                 5375   5398#  5415   5440#  5462   5490#  5530   5550#  5575   5601#  5628   5648#  5652
                 5675#  5679   5691#  5696   5722#  5752   5755#  5763   5797#  5847   5870#  5999   6019#
                 6086   6102#  6148   6162#  6198   6222#  6258   6275#  6327   6360#  6543   6559#  6736
                 6756#  6804   6823#  6875   6903#  7061   7081#  7231   7258#  7382   7400#  7452   7466#
                 7496   7511#  7548   7564#  7607   7628#  7656   7672#  7704   7720#  7752   7768#  7799
                 7818#  7847   7865#  7896   7919#  7990   8006#  8038   8054#  8086   8102#  8192   8211#
                 8241   8255#  8286   8301#  8333   8349#  8379   8395#  8424   8438#  8469   8483#  8514
                 8529#  8563   8577#  8611   8626#  8660   8674#  8705   8724#  8771   8786#  8822   8838#
                 8875   8894#  8901
T$NS2 = 000002   5798#  5824   5828#  5845   5874#  5901   5904#  5929   5931#  5958   5960#  5985   5987#
                 5997   6021#  6052   6055#  6083   6104#  6118   6121#  6145   6362#  6412   6414#  6482
                 6486#  6539   6562#  6614   6616#  6672   6676#  6733   6917#  6934   6937#  6954   6958#
                 6974   6977#  6999   7002#  7024   7027#  7050   7086#  7132   7134#  7180   7182#  7229
                 7260#  7308   7311#  7379   7401#  7426   7428#  7450   7921#  7950   7952#  7988
T$NS3 = 000003   7261#  7287   7289#  7307   7312#  7339   7341#  7360   7362#  7378
T$PTNU= 000000   3615#
T$SAVL= 177777   3615#
T$SEGL= 177777   3615#  7261#  7287#  7289#  7307#  7312#  7339#  7341#  7360#  7362#  7378#
T$SEKO= 010002   7261#  7287   7289#  7307   7312#  7339   7341#  7360   7362#  7378
T$SUBN= 000000   3615#  5722#  5797#  5798#  5828#  5870#  5874#  5904#  5931#  5960#  5987#  6019#  6021#
                 6055#  6102#  6104#  6121#  6162#  6222#  6275#  6360#  6362#  6414#  6486#  6559#  6562#
                 6615#  6676#  6756#  6823#  6903#  6917#  6937#  6958#  6977#  7002#  7027#  7081#  7086#
                 7134#  7182#  7258#  7260#  7311#  7400#  7401#  7428#  7466#  7511#  7564#  7628#  7672#
```

```
                    7720#  7768#  7818#  7865#  7919#  7921#  7952#  8006#  8054#  8102#  8211#  8255#  8301#
                    8349#  8395#  8438#  8483#  8529#  8577#  8626#  8674#  8724#  8786#  8838#
                    3615#
T$TAGL= 177777
T$TAGN= 010151      3615#  3700#  4818#  4823#  4832#  4838#  4845#  4851#  4857#  4863#  4870#  4888#  4893#
                    4935#  4943#  5031#  5051#  5195#  5231#  5270#  5325#  5398#  5440#  5490#  5550#  5601#
                    5648#  5675#  5691#  5722#  5755#  5797#  5798#  5828#  5870#  5874#  5904#  5931#  5960#
                    5987#  6019#  6021#  6055#  6102#  6104#  6121#  6162#  6222#  6275#  6360#  6362#  6414#
                    6486#  6559#  6562#  6616#  6676#  6756#  6823#  6903#  6917#  6937#  6958#  6977#  7002#
                    7027#  7081#  7086#  7134#  7182#  7258#  7260#  7311#  7400#  7401#  7428#  7466#  7511#
                    7564#  7628#  7672#  7720#  7768#  7818#  7865#  7919#  7921#  7952#  8006#  8054#  8102#
                    8211#  8255#  8301#  8349#  8395#  8438#  8483#  8529#  8577#  8626#  8674#  8724#  8786#
                    8838#  8894#
T$TEMP= 000000      3683#  3707#  4820#  4830#  4835#  4842#  4849#  4855#  4861#  4867#  4886#  4891#  4933#
                    4941#  4945#  5037#  5178#  5214#  5236#  5299#  5375#  5415#  5462#  5530#  5575#  5628#
                    5652#  5679#  5696#  5752#  5763#  5800#  5824#  5845#  5847#  5872#  5901#  5929#  5958#
                    5985#  5997#  5999#  6023#  6031#  6043#  6050#  6052#  6057#  6065#  6074#  6081#  6083#
                    6086#  6106#  6118#  6123#  6132#  6136#  6145#  6148#  6165#  6198#  6225#  6232#  6237#
                    6242#  6258#  6279#  6327#  6364#  6412#  6416#  6482#  6488#  6539#  6543#  6564#  6614#
                    6618#  6672#  6678#  6733#  6736#  6759#  6804#  6828#  6875#  6906#  6919#  6934#  6939#
                    6954#  6960#  6974#  6979#  6999#  7004#  7024#  7029#  7050#  7061#  7084#  7088#  7130#
                    7132#  7136#  7178#  7180#  7184#  7227#  7229#  7231#  7263#  7283#  7286#  7287#  7291#
                    7307#  7308#  7314#  7335#  7338#  7339#  7343#  7358#  7360#  7364#  7374#  7377#  7378#
                    7379#  7382#  7403#  7426#  7430#  7450#  7452#  7469#  7496#  7514#  7537#  7548#  7579#
                    7590#  7607#  7631#  7650#  7656#  7675#  7704#  7723#  7752#  7771#  7799#  7821#  7841#
                    7847#  7869#  7889#  7896#  7923#  7945#  7950#  7954#  7978#  7988#  7990#  8010#  8038#
                    8058#  8086#  8106#  8192#  8215#  8241#  8259#  8286#  8305#  8333#  8353#  8379#  8399#
                    8424#  8442#  8469#  8487#  8514#  8533#  8563#  8581#  8611#  8630#  8660#  8678#  8705#
                    8728#  8755#  8762#  8767#  8771#  8788#  8822#  8840#  8875#  8896#  8897#  8898#  8901#
                    8923#
T$TEST= 000053       3615#  5722#  5797#  5798   5828   5870#  5874   5904   5931   5960   5987   6019#  6021
                     6055   6102#  6104   6121   6162#  6222#  6275#  6360#  6362   6414   6486   6559#  6562
                     6616   6676   6756#  6823#  6903#  6917   6937   6958   6977   7002   7027   7081#  7086
                     7134   7182   7258#  7260   7311   7400#  7401   7428   7466#  7511#  7564#  7628#  7672#
                     7720#  7768#  7818#  7865#  7919#  7921   7952   8006#  8054#  8102#  8211#  8255#  8301#
                     8349#  8395#  8438#  8483#  8529#  8577#  8626#  8674#  8724#  8786#  8838#  8925
T$TSTM= 177777       3615#  4231   4236   4239   4286   4297   4443   4444   4449   4450   4452   4479   4487
                     4491   4498   4510   4511   4564   4571   4588   4629   4630   4634   4638   4639   4640
                     4649   4652   4664   4667   4718   4765   4819   4820   4826   4828   4829   4830   4833
                     4834   4835   4839   4840   4841   4842   4846   4847   4848   4849   4852   4853   4854
                     4855   4858   4859   4860   4861   4864   4865   4866   4867   4873   4875   4876   4877
                     4878   4879   4880   4881   4882   4883   4884   4885   4886   4889   4890   4891   4897
                     4903   4909   4910   4911   4918   4919   4920   4921   4922   4926   4927   4928   4931
                     4933   4938   4940   4941   4944   4945   5053   5073   5075   5077   5079   5081   5096
                     5102   5131   5162   5168   5178   5197   5209   5210   5211   5214   5236   5693   5694
                     5696   5724   5744   5745   5746   5750   5752   5759   5762   5798   5800   5822   5824
                     5828   5831   5843   5845   5847   5872   5874   5897   5901   5904   5925   5929   5931
                     5953   5958   5960   5981   5985   5987   5993   5994   5997   5999   6021   6023   6031
                     6036   6043   6047   6050   6052   6055   6057   6065   6070   6074   6078   6081   6083
                     6086   6104   6106   6116   6118   6121   6123   6132   6136   6143   6145   6148   6165
                     6169   6170   6185   6192   6194   6196   6198   6225   6232   6237   6242   6245   6252
                     6255   6258   6279   6285   6286   6287   6306   6316   6319   6322   6324   6325   6327
                     6362   6364   6368   6369   6385   6398   6403   6408   6412   6414   6416   6421   6422
                     6438   6448   6455   6462   6469   6479   6482   6486   6488   6493   6494   6510   6523
                     6530   6536   6539   6543   6562   6564   6570   6571   6572   6588   6597   6603   6607
                     6609   6611   6612   6614   6616   6618   6626   6627   6628   6644   6653   6660   6664
                     6666   6668   6669   6672   6676   6678   6686   6687   6688   6704   6713   6719   6725
```

```
                    6727  6729  6733  6736  6759  6763  6764  6765  6787  6793  6797  6799  6800
                    6804  6828  6853  6873  6875  6906  6909  6910  6917  6919  6930  6934  6937
                    6939  6950  6954  6958  6960  6970  6974  6977  6979  6990  6991  6996  6999
                    7002  7004  7015  7016  7021  7024  7027  7029  7040  7041  7042  7047  7050
                    7055  7057  7058  7061  7084  7086  7088  7094  7095  7096  7115  7117  7123
                    7126  7128  7129  7130  7132  7134  7136  7142  7143  7144  7163  7165  7171
                    7174  7176  7177  7178  7180  7182  7184  7190  7191  7192  7211  7213  7215
                    7220  7223  7225  7226  7227  7229  7231  7260  7261  7263  7283  7286  7287
                    7289  7291  7305  7307  7308  7311  7312  7314  7335  7338  7339  7341  7343
                    7357  7358  7360  7362  7364  7374  7377  7378  7379  7382  7401  7403  7424
                    7426  7428  7430  7448  7450  7452  7469  7496  7514  7537  7544  7548  7579
                    7590  7597  7607  7631  7650  7656  7675  7704  7723  7752  7771  7799  7821
                    7841  7844  7847  7869  7889  7892  7896  7921  7923  7945  7948  7950  7952
                    7954  7978  7986  7988  7990  8010  8034  8038  8058  8082  8086  8106  8133
                    8143  8148  8169  8192  8215  8241  8259  8286  8305  8333  8353  8379  8399
                    8424  8442  8469  8487  8514  8533  8563  8581  8611  8630  8660  8678  8705
                    8728  8748  8749  8750  8755  8762  8767  8771  8788  8815  8822  8840  8868
                    8875
T$TSTS= 000001       3615#  5722#  5797#  5870#  6019#  6102#  6162#  6222#  6275#  6360#  6559#  6756#  6823#
                    6903#  7081#  7258#  7400#  7466#  7511#  7564#  7628#  7672#  7720#  7768#  7818#  7865#
                    7919#  8006#  8054#  8102#  8211#  8255#  8301#  8349#  8395#  8438#  8483#  8529#  8577#
                    8626#  8674#  8724#  8786#  8838#
T$$AUT= 010020       5195#  5214
T$$CLE= 010021       5231#  5236
T$$DU = 010033       5691#  5696
T$$HAR= 010150       8894#  8901
T$$HW = 010000       3700#  3707
T$$INI= 010017       5051#  5178
T$$MSG= 010015       4818#  4820  4823#  4830  4832#  4835  4838#  4842  4845#  4849  4851#  4855  4857#
                    4861  4863#  4867  4870#  4886  4888#  4891  4893#  4933  4935#  4941  4943#  4945
T$$PRO= 010016       5031#
T$$SEG= 010002       7261#  7287#  7289#  7307#  7312#  7339#  7341#  7360#  7362#  7378#
T$$SRV= 010035       5270#  5299  5325#  5375  5398#  5415  5440#  5462  5490#  5530  5550#  5575  5601#
                    5628  5648#  5652  5675#  5679  5755#  5763
T$$SUB= 010126       5798#  5824  5828#  5845  5874#  5901  5904#  5929  5931#  5958  5960#  5985  5987#
                    5997  6021#  6052  6055#  6083  6104#  6118  6121#  6145  6362#  6412  6414#  6482
                    6486#  6539  6562#  6614  6616#  6672  6676#  6733  6917#  6934  6937#  6954  6958#
                    6974  6977#  6999  7002#  7024  7027#  7050  7086#  7132  7134#  7180  7182#  7229
                    7260#  7308  7311#  7379  7401#  7426  7428#  7450  7921#  7950  7952#  7988
T$$TES= 010147       5722#  5752  5797#  5800  5847  5870#  5872  5999  6019#  6023  6031  6043  6050
                    6057  6065  6074  6081  6086  6102#  6106  6123  6132  6136  6148  6162#  6165
                    6198  6222#  6225  6232  6237  6242  6258  6275#  6279  6327  6360#  6364  6416
                    6488  6543  6559#  6564  6618  6678  6736  6756#  6759  6804  6823#  6828  6875
                    6903#  6906  6919  6939  6960  6979  7004  7029  7061  7081#  7084  7088  7130
                    7136  7178  7184  7227  7231  7258#  7263  7283  7286  7291  7314  7335  7338
                    7343  7358  7364  7374  7377  7382  7400#  7403  7430  7452  7466#  7469  7496
                    7511#  7514  7537  7548  7564#  7579  7590  7607  7628#  7631  7650  7656  7672#
                    7675  7704  7720#  7723  7752  7768#  7771  7799  7818#  7821  7841  7847  7865#
                    7869  7889  7896  7919#  7923  7945  7954  7978  7990  8006#  8010  8038  8054#
                    8058  8086  8102#  8106  8192  8211#  8215  8241  8255#  8259  8286  8301#  8305
                    8333  8349#  8353  8379  8395#  8399  8424  8438#  8442  8469  8483#  8487  8514
                    8529#  8533  8563  8577#  8581  8611  8626#  8630  8660  8674#  8678  8705  8724#
                    8728  8755  8762  8767  8771  8786#  8788  8822  8838#  8840  8875
T1      020030 G     3683  5722#
T10     024120 G     3683  6559#
T10.1   024120       6562#
```

```
T10.2   024416          6616#
T10.3   024726          6676#
T11     025234 G        3683    6756#
T12     025500 G        3683    6823#
T13     025770 G        3683    6903#
T13.1   026036          6917#
T13.2   026114          6937#
T13.3   026172          6958#
T13.4   026250          6977#
T13.5   026370          7002#
T13.6   026510          7027#
T14     026700 G        3683    7081#
T14.1   026712          7086#
T14.2   027202          7134#
T14.3   027472          7182#
T15     030004 G        3683    7258#
T15.1   030004          7260#
T15.2   030306          7311#
T16     030714 G        3683    7400#
T16.1   030714          7401#
T16.2   031076          7428#
T17     031240 G        3683    7466#
T18     031412 G        3683    7511#
T19     031622 G        3683    7564#
T2      020434 G        3683    5797#
T2.1    020434          5798#
T2.2    020566          5828#
T20     032072 G        3683    7628#
T21     032240 G        3683    7672#
T22     032424 G        3683    7720#
T23     032610 G        3683    7768#
T24     032774 G        3683    7818#
T25     033164 G        3683    7865#
T26     033352 G        3683    7919#
T26.1   033352          7921#
T26.2   033550          7952#
T27     033770 G        3683    8006#
T28     034160 G        3683    8054#
T29     034350 G        3683    8102#
T3      020660 G        3683    5870#
T3.1    020670          5874#
T3.2    020776          5904#
T3.3    021106          5931#
T3.4    021216          5960#
T3.5    021326          5987#
T30     034746 G        3683    8211#
T31     035122 G        3683    8255#
T32     035304 G        3683    8301#
T33     035474 G        3683    8349#
T34     035646 G        3683    8395#
T35     036022 G        3683    8438#
T36     036204 G        3683    8483#
T37     036366 G        3683    8529#
T38     036570 G        3683    8577#
T39     036772 G        3683    8626#
T4      021410 G        3683    6019#
```

```
T4.1     021410          6021#
T4.2     021600          6055#
T40      037174 G        3683    8674#
T41      037352 G        3683    8724#
T42      037624 G        3683    8786#
T43      040034 G        3683    8838#
T5       021752 G        3683    6102#
T5.1     021752          6104#
T5.2     022052          6121#
T6       022204 G        3683    6162#
T7       022362 G        3683    6222#
T8       022614 G        3683    6275#
T9       023112 G        3683    6360#
T9.1     023112          6362#
T9.2     023350          6414#
T9.3     023646          6486#
UAM   =  000200 G        3725#
VRCE  =  002400          3786#   7677    8060    8583
VRCO  =  002000          3785#   7725    7773    8012    8536
XCOUNT   002472          3977#   4337    4356*   4362*   4364*   4366    4437    4446    4567    4576    7273*   7325*   7412*
                         7436*   7478*   7524*   7574*   7640*   7686*   7734*   7782*   7831*   7879*   7934*   7965*   7980
                         8021*   8069*   8112*   8120    8224*   8268*   8316*   8362*   8408*   8452*   8497*   8545*   8592*
                         8642*   8688*   8795*   8849*
XDATA    017340 G        4449    5490#
XDATA2   017512 G        4443    5550#
XDOCMP   017620 G        5601#   8748
XINT     017232 G        5440#   6169    6285    6368    6421    6493    6570    6626    6686    6764    7095    7143    7191
XMITD    002476          3979#   4433*   4940    5508*   5523*   5562    5567*   5608*   5614*   8176*   8180*
XMTBUF   002674          4031#   4336    4436    4574    7300*   7352*   7371*   8119
XMTVEC   002264          3876#   4443    4449    4510    5134*   5135*   6169    6196    6285    6325    6368    6421    6493
                         6570    6612    6626    6669    6686    6764    6800    7058    7095    7129    7143    7177    7191
                         7226    8748
XTYPE    002470          3976#   4335    7272*   7324*   7411*   7435*   7477*   7523*   7573*   7639*   7685*   7733*   7781*
                         7830*   7878*   7933*   7964*   8020*   8068*   8111*   8223*   8267*   8315*   8361*   8407*   8451*
                         8496*   8544*   8591*   8641*   8687*   8794*   8848*
X$ALWA=  000000          3615#
X$FALS=  000040          3615#
X$OFFS=  000400          3615#
X$TRUE=  000020          3615#
$BUFRS   004316          4333#   7279    7331    7418    7442    7486    7530    7575    7646    7694    7742    7789    7837
                         7885    7940    7970    8028    8076    8116    8230    8274    8322    8368    8414    8458    8503
                         8552    8599    8649    8694    8807    8860
$CCITT   002502          3993#   7272    7324    7411    7435    7477    7523    7573    7639    7685    7733    7781    7830
                         7878    7933    7964    8020    8063    8223    8267    8315    8361    8407    8451    8496    8544
                         8591    8641    8687    8794    8848
$CHECK   005246          4546#   7285    7337    7376    7492    7536    7652    7700    7748    7795    8187    8236    8281
                         8328    8374    8420    8464    8509    8558    8606    8655    8700    8819    8872
$CHK1    005404          4577#   4582    8761    8766
$DATA    004526          4426#   7282    7301    7334    7353    7373    7421    7445    7489    7533    7589    7649    7697
                         7745    7792    7840    7888    7944    7977    8031    8079    8233    8278    8325    8371    8417
                         8461    8506    8555    8603    8652    8697    8811    8864
$DATA1   005004          4454    4459#   8754
$DLAY    006604          4801#   5832    6189    6249    6311    6519    6831    6838    6843    6848    6858    6927    6947
                         6967    6987    7012    7037
$GO      005026          4457    4464#
$LSTIN=  000001          3621#
```

```
$LSTTA= 000001          3622#
$MODEM  005452          4622#   8238    8330    8376    8422    8466    8511    8560    8657    8702
$RESET  004136          4271#   5799    5871    6022    6056    6073    6105    6122    6164    6224    6278    6321    6363
                        6415    6487    6563    6617    6677    6758    6796    6827    6918    6938    6959    6978    7003
                        7028    7054    7087    7125    7135    7173    7183    7222    7262    7290    7313    7342    7363
                        7402    7429    7468    7513    7578    7630    7674    7722    7770    7820    7868    7922    7953
                        8009    8057    8105    8214    8258    8304    8352    8398    8441    8486    8532    8580    8629
                        8677    8727    8787    8839
$SPEED  006522          4758#   8103    8212    8256    8302    8350    8396    8439    8484    8530    8578    8627    8675
                        8725
$TURN   006444          4713#   6824    6904    7082
$WAIT   003724          4216#   6030    6042    6064    6131    6135    6231    6236    6241
.       = 040540        3609#   3970#   4010    4011#   4021    4025    4027#   4031#   4036#   4037    4060#   4247#   4383#
                        4805    5020#   5700#   5800    5872    6023    6031    6043    6050    6057    6065    6074    6081
                        6106    6108    6123    6132    6136    6165    6225    6232    6237    6242    6279    6364    6416
                        6488    6564    6618    6678    6759    6828    6906    6919    6939    6960    6979    7004    7029
                        7084    7088    7130    7136    7178    7184    7227    7263    7283    7286    7291    7314    7335
                        7338    7343    7358    7364    7374    7377    7403    7430    7469    7514    7537    7579    7590
                        7631    7650    7675    7723    7771    7821    7841    7869    7889    7923    7945    7954    7978
                        8010    8058    8106    8215    8259    8305    8353    8399    8442    8487    8533    8581    8630
                        8678    8728    8755    8762    8767    8788    8840    8908#   8916#
```

```
BCOMPL      150#  36150#  5076    5078    5080
BERROR      190#  36150#
BGNAU       230#  36150#
BGNAUT      310#  36150#  5195
BGNCLN      390#  36150#  5231
BGNDU       470#  36150#  5691
BGNHRD      550#  36150#  8894
BGNHW       660#  36150#  3700
BGNINI      770#  36150#  5051
BGNMOD      850#  36150#  3618
BGNMSG      980#  36150#  4818    4823    4832    4838    4845    4851    4857    4863    4870    4888    4893    4935    4943
BGNPRO     1060#  36150#  5031
BGNPTA     1140#  36150#
BGNRPT     1440#  36150#
BGNSEG     1520#  36150#  7261    7289    7312    7341    7362
BGNSET     1610#  36150#
BGNSFT     1820#  36150#
BGNSRV     1930#  36150#  5270    5325    5398    5440    5490    5550    5601    5648    5675    5755
BGNSUB     2010#  36150#  5798    5828    5874    5904    5931    5960    5987    6021    6055    6104    6121    6362    6414
           6486   6562    6616    6676    6917    6937    6958    6977    7002    7027    7086    7134    7182    7260    7311
           7401   7426    7921    7952
BGNSW      2250#  36150#
BGNTST     2360#  36150#  5722    5797    5870    6019    6102    6162    6222    6275    6360    6559    6756    6823    6903
           7081   7258    7400    7466    7511    7564    7628    7672    7720    7768    7818    7865    7919    8006    8054
           8102   8211    8255    8301    8349    8395    8438    8483    8529    8577    8626    8674    8724    8786    8838
BNCOMP     2660#  36150#  5082    5097
BNERRO     2700#  36150#
BREAK      2740#  36150#  4231    4479    8143
BRESET     2780#  36150#  5693    5831
CALL      40960#  5799    5871    6022    6056    6073    6105    6122    6164    6224    6278    6321    6363    6415    6487
           6563   6617    6677    6758    6796    6824    6827    6904    6918    6938    6959    6978    7003    7028    7054
           7082   7087    7125    7135    7173    7183    7222    7262    7279    7282    7285    7290    7301    7313    7331
           7334   7337    7342    7353    7363    7373    7376    7402    7418    7421    7429    7442    7445    7468    7486
           7489   7492    7513    7530    7533    7536    7575    7578    7589    7630    7646    7649    7652    7674    7694
           7697   7700    7722    7742    7745    7748    7770    7789    7792    7795    7820    7837    7840    7868    7885
           7888   7922    7940    7944    7953    7970    7977    8009    8028    8031    8057    8076    8079    8103    8105
           8116   8187    8212    8214    8230    8233    8236    8238    8256    8258    8274    8278    8281    8302    8304
           8322   8325    8328    8330    8350    8352    8368    8371    8374    8376    8396    8398    8414    8417    8420
           8422   8439    8441    8458    8461    8464    8466    8484    8486    8503    8506    8509    8511    8530    8532
           8552   8355    8558    8560    8578    8580    8599    8603    8606    8627    8629    8649    8652    8655    8657
           8675   8677    8694    8697    8700    8702    8725    8727    8754    8761    8766    8787    8807    8811    8819
           8839   8860    8864    8872
CKLOOP     2820#  36150#
CLOCK      2860#  36150#
CLOSE      2920#  36150#
CLRVEC     2960#  36150#  4510    4511    5073    5168    5211    5750    6196    6324    6325    6611    6612    6668    6669
           6729   6799    6800    7057    7058    7128    7129    7176    7177    7225    7226
COMMEN     3010#  36150#
DELAY      3220#  36150#  4805    6108
DESCRI     3170#  36150#  4060
DEVTYP     3410#  36150#  4055
DISPAT     3460#  36150#  3683
DISPLA     3600#  36150#
DOCLN      3760#  36150#  5210    5746
DODU       3800#  36150#  5209    5745
DORPT      3850#  36150#
```

```
ENDAU     3890  36150
ENDAUT    4010  36150  5214
ENDCLN    4130  36150  5236
ENDCOM    4250  36150
ENDDU     4410  36150  5696
ENDHRD    4530  36150  8901
ENDHW     4650  36150  3707
ENDINI    4750  36150  5178
ENDMOD    4870  36150  8923
ENDMSG    5000  36150  4820  4830  4835  4842  4849  4855  4861  4867  4886  4891  4933  4941  4945
ENDPRO    5120  36150  5037
ENDPTA    5200  36150
ENDRPT    5290  36150
ENDSEG    5410  36150  7287  7307  7339  7360  7378
ENDSET    5550  36150
ENDSFT    5680  36150
ENDSRV    5800  36150  5299  5375  5415  5462  5530  5575  5628  5652  5679  5763
ENDSUB    5960  36150  5824  5845  5901  5929  5958  5985  5997  6052  6083  6118  6145  6412  6482
          6539  6614   6672  6733  6934  6954  6974  6999  7024  7050  7132  7180  7229  7308  7379
          7426  7450   7950  7988
ENDSW     6140  36150
ENDTST    6240  36150  5752  5847  5999  6086  6148  6198  6258  6327  6543  6736  6804  6875  7061
          7231  7382   7452  7496  7548  7607  7656  7704  7752  7799  7847  7896  7990  8038  8086
          8102  8241   8286  8333  8379  8424  8469  8514  8563  8611  8660  8705  8771  8822  8875
EQUALS    6420  36150  3725
ERROF     7140  36150  4236  4286  4487  4491  4498  4564  4571  4588  4629  5759  5822  5843  5897
          5925  5953   5981  5993  6036  6047  6070  6078  6116  6143  6185  6192  6245  6252  6255
          6306  6316   6319  6385  6398  6403  6408  6438  6448  6455  6461  6469  6479  6510  6523
          6530  6536   6588  6597  6603  6607  6644  6653  6660  6664  6704  6713  6719  6725  6787
          6793  6853   6873  6930  6950  6970  6990  6996  7015  7021  7040  7047  7115  7123  7163
          7171  7211   7220  7305  7357  7424  7448  7544  7597  7844  7892  7948  7986  8034  8082
          8133  8148   8169
ERRHRD    7180  36150
ERROR     7220  36150
ERRSF     7260  36150
ERRSOF    7300  36150
ERRTBL    7340  36150
ESCAPE    7440  36150  5800  5872  6023  6031  6043  6050  6057  6065  6074  6081  6106  6123  6132
          6136  6165   6225  6232  6237  6242  6279  6364  6416  6488  6564  6618  6678  6739  6828
          6919  6939   6960  6979  7004  7029  7088  7130  7136  7178  7184  7227  7263  7283  7286
          7291  7314   7335  7338  7343  7358  7364  7374  7377  7403  7430  7469  7514  7537  7579
          7590  7631   7650  7675  7723  7771  7821  7841  7869  7889  7923  7945  7954  7978  8010
          8058  8106   8215  8259  8305  8353  8399  8442  8487  8533  8581  8630  8678  8728  8755
          8762  8767   8788  8840
EXIT      7710  36150  6906  7084
FEQUAL    8100  36150
GETBYT    8240  36150
GETPRI    8340  36150
GETWOR    8290  36150
GMANIA    8390  36150
GMANID    8480  36150
GMANIL    8590  36150
GPHARD    8680  36150  5096
GPRMA     8740  36150  8896  8897
GPRMD     9030  36150  8898
GPRML     9340  36150
```

```
HEADER   9540#  36150#  3657
INLOOP   9620#  36150#
IOSETU   9660#  36150#
IOSTAR   9740#  36150#
KT11     9820#  36150#
LASTAD  11470#  36150#  8925
MANUAL  11620#  36150#
MEMORY  11660#  36150#
M$BYTE  20000#  36150#  36570#
M$CHEC  21180#  36150#  69060#  70840#
M$CNTO  21820#  36150#  88960#  88970#  88980#
M$COUN  20660#  36150#  42390#  42970#  46300#  46340#  46380#  46390#  46400#  46490#  46520#  46640#  46670#  47180#  47650#
        48190#  48260#  48280#  48290#  48330#  48340#  48390#  48400#  48410#  48460#  48470#  48480#  48520#  48530#  48540#
        48580#  48590#  48600#  48640#  48650#  48660#  48730#  48750#  48760#  48770#  48780#  48790#  48800#  48810#  48820#
        48830#  48840#  48850#  48890#  48900#  48970#  49030#  49090#  49100#  49110#  49180#  49190#  49200#  49210#  49220#
        49260#  49270#  49280#  49310#  49380#  49400#  49440#  51020#  51310#  56940#  57440#  57620#  59940#  69910#  70160#
        70410#  70420#  71170#  71650#  72130#  72150#  88150#  88680#
M$DATA  18670#  36150#  36570#  40550#  40600#
M$DECR  20290#  36150#  37070#  48200#  48300#  48350#  48420#  48490#  48550#  48610#  48670#  48860#  48910#  49330#  49410#
        49450#  50370#  51780#  52140#  52360#  52990#  53750#  54150#  54620#  55300#  55750#  56280#  56520#  56790#  56960#
        57520#  57630#  58240#  58450#  58470#  59010#  59290#  59580#  59850#  59970#  59990#  60520#  60830#  60860#  61180#
        61450#  61480#  61980#  62580#  63270#  64120#  64820#  65390#  65430#  66140#  66720#  67330#  67360#  68040#  68750#
        69340#  69540#  69740#  69990#  70240#  70500#  70610#  71320#  71800#  72290#  72310#  72870#  73070#  73080#  73390#
        73600#  73780#  73790#  73820#  74260#  74500#  74520#  74960#  75480#  76070#  76560#  77040#  77520#  77990#  78470#
        78960#  79500#  79880#  79900#  80380#  80860#  81920#  82410#  82860#  83330#  83790#  84240#  84690#  85140#  85630#
        86110#  86600#  87050#  87710#  88220#  88750#  89010#  89230#
M$DEFA  21700#  36150#  88960#  88970#  88980#
M$ENDE  20740#  36150#  37070#  48200#  48300#  48350#  48420#  48490#  48550#  48610#  48670#  48860#  48910#  49330#  49410#
        49450#  51780#  52140#  52360#  52990#  53750#  54150#  54620#  55300#  55750#  56280#  56520#  56790#  56960#  57520#
        57630#  58240#  58450#  58470#  59010#  59290#  59580#  59850#  59970#  59990#  60520#  60830#  60860#  61180#  61450#
        61480#  61980#  62580#  63270#  64120#  64820#  65390#  65430#  66140#  66720#  67330#  67360#  68040#  68750#  69340#
        69540#  69740#  69990#  70240#  70500#  70610#  71320#  71800#  72290#  72310#  72870#  73070#  73080#  73390#  73600#
        73780#  73790#  73820#  74260#  74500#  74520#  74960#  75480#  76070#  76560#  77040#  77520#  77990#  78470#  78960#
        79500#  79880#  79900#  80380#  80860#  81920#  82410#  82860#  83330#  83790#  84240#  84690#  85140#  85630#  86110#
        86600#  87050#  87710#  88220#  88750#  89010#  89230#
M$ERRI  16490#  36150#  42360#  42860#  44870#  44910#  44980#  45640#  45710#  45880#  46290#  57590#  58220#  58430#  58970#
        59250#  59530#  59810#  59930#  60360#  60470#  60700#  60780#  61160#  61430#  61850#  61920#  62450#  62520#  62550#
        63060#  63160#  63190#  63850#  63980#  64030#  64080#  64380#  64480#  64550#  64610#  64 0#  64790#  65100#  65230#
        65300#  65360#  65880#  65970#  66030#  66070#  66440#  66530#  66600#  66640#  67040#  67130#  67190#  67250#  67870#
        67930#  68530#  68730#  69300#  69500#  69700#  69900#  69960#  70150#  70210#  70400#  70470#  71150#  71230#  71630#
        71710#  72110#  72200#  73050#  73570#  74240#  74480#  75440#  75970#  78440#  78920#  79480#  79860#  80340#  80820#
        81330#  81480#  81690#
M$ESCA  20060#  36150#  58000#  58720#  60230#  60310#  60430#  60500#  60570#  60650#  60740#  60810#  61060#  61230#  61320#
        61360#  61650#  62250#  62320#  62370#  62420#  62790#  63640#  64160#  64880#  65640#  66180#  66780#  67590#  68280#
        69190#  69390#  69600#  69790#  70040#  70290#  70880#  71300#  71360#  71780#  71840#  72270#  72630#  72830#  72860#
        72910#  73140#  73350#  73380#  73430#  73580#  73640#  73740#  73770#  74030#  74300#  74690#  75140#  75370#  75790#
        75900#  76310#  76500#  76750#  77230#  77710#  78210#  78410#  78690#  78890#  79230#  79450#  79540#  79780#  80100#
        80580#  81060#  82150#  82590#  83050#  83530#  83990#  84420#  84870#  85330#  85810#  86300#  86780#  87280#  87550#
        87620#  87670#  87880#  88400#
M$ESCS  20100#  36150#  58000#  58720#  60230#  60310#  60430#  60500#  60570#  60650#  60740#  60810#  61060#  61230#  61320#
        61360#  61650#  62250#  62320#  62370#  62420#  62790#  63640#  64160#  64880#  65640#  66180#  66780#  67590#  68280#
        69190#  69390#  69600#  69790#  70040#  70290#  70880#  71300#  71360#  71780#  71840#  72270#  72630#  72830#  72860#
        72910#  73140#  73350#  73380#  73430#  73580#  73640#  73740#  73770#  74030#  74300#  74690#  75140#  75370#  75790#
        75900#  76310#  76500#  76750#  77230#  77710#  78210#  78410#  78690#  78890#  79230#  79450#  79540#  79780#  80100#
        80580#  81060#  82150#  82590#  83050#  83530#  83990#  84420#  84870#  85330#  85810#  86300#  86780#  87280#  87550#
        87620#  87670#  87880#  88400#
```

E2

SEQ 224

M$EXCP 2101# 3615# 8896# 8897# 8898#
M$EXIT 2014# 3615# 6906# 7084#
M$EXSE 2022# 3615# 6906# 7084#
M$EXTJ 2018# 3615# 6906# 7084#
I$GEN 2038# 3615# 3657# 3683# 3700# 3707# 4055# 4060# 4818# 4820# 4823# 4830# 4832# 4835# 4838#
4842# 4845# 4849# 4851# 4855# 4857# 4861# 4863# 4867# 4870# 4886# 4888# 4891# 4893# 4933#
4935# 4941# 4943# 4945# 5031# 5051# 5178# 5195# 5214# 5231# 5236# 5270# 5299# 5325# 5375#
5398# 5415# 5440# 5462# 5490# 5530# 5550# 5575# 5601# 5628# 5648# 5652# 5675# 5679# 5691#
5696# 5722# 5752# 5755# 5763# 5797# 5798# 5824# 5828# 5845# 5847# 5870# 5874# 5901# 5904#
5929# 5931# 5958# 5960# 5985# 5987# 5997# 5999# 6019# 6021# 6052# 6055# 6083# 6086# 6102#
6104# 6118# 6121# 6145# 6148# 6162# 6191# 6222# 6258# 6275# 6327# 6360# 6362# 6412# 6414#
6482# 6486# 6539# 6543# 6559# 6562# 6614# 6616# 6672# 6676# 6733# 6736# 6756# 6804# 6823#
6875# 6903# 6917# 6934# 6937# 6954# 6958# 6974# 6977# 6999# 7002# 7024# 7027# 7050# 7061#
7081# 7086# 7132# 7134# 7180# 7182# 7229# 7231# 7258# 7260# 7287# 7307# 7308# 7311# 7339#
7360# 7378# 7379# 7382# 7400# 7401# 7426# 7428# 7450# 7452# 7466# 7496# 7511# 7548# 7564#
7607# 7628# 7656# 7672# 7704# 7720# 7752# 7768# 7799# 7818# 7847# 7865# 7896# 7919# 7921#
7950# 7952# 7988# 7990# 8006# 8038# 8054# 8086# 8102# 8192# 8211# 8241# 8255# 8286# 8301#
8333# 8349# 8379# 8395# 8424# 8438# 8469# 8483# 8514# 8529# 8563# 8577# 8611# 8626# 8660#
8674# 8705# 8724# 8771# 8786# 8822# 8838# 8875# 8894# 8901# 8925#
M$GENB 1938# 3615#
M$GETS 2035# 3615# 3707# 4820# 4830# 4835# 4842# 4849# 4855# 4861# 4867# 4886# 4891# 4933# 4941#
4945# 5037# 5178# 5214# 5236# 5299# 5375# 5415# 5462# 5530# 5575# 5628# 5652# 5679# 5696#
5752# 5763# 5824# 5845# 5847# 5901# 5929# 5958# 5985# 5997# 5999# 6052# 6083# 6086# 6118#
6145# 6148# 6198# 6258# 6327# 6412# 6482# 6539# 6543# 6614# 6672# 6733# 6736# 6804# 6875#
6934# 6954# 6974# 6999# 7024# 7050# 7061# 7132# 7180# 7229# 7231# 7287# 7307# 7308# 7339#
7360# 7378# 7379# 7382# 7426# 7450# 7452# 7496# 7548# 7607# 7656# 7704# 7752# 7799# 7847#
7896# 7950# 7988# 7990# 8038# 8086# 8192# 8241# 8286# 8333# 8379# 8424# 8469# 8514# 8563#
8611# 8660# 8705# 8771# 8822# 8875# 8901# 8923#
M$GETT 1877# 3615# 5800# 5872# 6023# 6031# 6043# 6050# 6057# 6065# 6074# 6081# 6106# 6123# 6132#
6136# 6165# 6225# 6232# 6237# 6242# 6279# 6364# 6416# 6488# 6564# 6618# 6678# 6759# 6828#
6906# 6919# 6939# 6960# 6979# 7004# 7029# 7084# 7088# 7130# 7136# 7178# 7184# 7227# 7263#
7283# 7286# 7291# 7314# 7335# 7338# 7343# 7358# 7364# 7374# 7377# 7403# 7430# 7469# 7514#
7537# 7579# 7590# 7631# 7650# 7675# 7723# 7771# 7821# 7841# 7869# 7889# 7923# 7945# 7954#
7978# 8010# 8058# 8106# 8215# 8259# 8305# 8353# 8399# 8442# 8487# 8533# 8581# 8630# 8678#
8728# 8755# 8762# 8767# 8788# 8840#
M$GNGB 1902# 3615# 3618# 3657# 3683# 3700# 4055# 4060# 4818# 4823# 4832# 4838# 4845# 4851# 4857#
4863# 4870# 4888# 4893# 4935# 4943# 5031# 5051# 5195# 5231# 5270# 5325# 5398# 5440# 5490#
5550# 5601# 5648# 5675# 5691# 5755# 8894# 8925#
M$GNIN 2049# 3615# 3657# 3683# 3700# 4055# 4060# 4231# 4236# 4239# 4286# 4297# 4443# 4444# 4449#
4450# 4452# 4479# 4487# 4491# 4498# 4510# 4511# 4564# 4571# 4588# 4629# 4630# 4634# 4638#
4639# 4640# 4649# 4652# 4664# 4667# 4718# 4765# 4805# 4819# 4820# 4826# 4828# 4829# 4830#
4833# 4834# 4835# 4839# 4840# 4841# 4842# 4846# 4847# 4848# 4849# 4852# 4853# 4854# 4855#
4858# 4859# 4860# 4861# 4864# 4865# 4866# 4867# 4873# 4875# 4876# 4877# 4878# 4879# 4880#
4881# 4882# 4883# 4884# 4885# 4886# 4889# 4890# 4891# 4897# 4903# 4909# 4910# 4911# 4918#
4919# 4920# 4921# 4922# 4926# 4927# 4928# 4931# 4933# 4938# 4940# 4941# 4944# 4945# 5053#
5073# 5075# 5076# 5077# 5078# 5079# 5080# 5081# 5082# 5096# 5097# 5102# 5131# 5162# 5168#
5178# 5197# 5209# 5210# 5211# 5214# 5236# 5299# 5375# 5415# 5462# 5530# 5575# 5628# 5652#
5679# 5693# 5694# 5696# 5724# 5744# 5745# 5746# 5750# 5752# 5759# 5762# 5763# 5798# 5800#
5822# 5824# 5828# 5831# 5843# 5845# 5847# 5872# 5874# 5897# 5901# 5904# 5925# 5929# 5931#
5953# 5958# 5960# 5981# 5985# 5987# 5993# 5994# 5997# 5999# 6021# 6023# 6031# 6036# 6043#
6047# 6050# 6052# 6055# 6057# 6065# 6070# 6074# 6078# 6081# 6083# 6086# 6104# 6106# 6108#
6116# 6118# 6121# 6123# 6132# 6136# 6143# 6145# 6148# 6165# 6169# 6170# 6185# 6192# 6194#
6196# 6198# 6225# 6232# 6237# 6242# 6245# 6252# 6255# 6258# 6279# 6285# 6286# 6287# 6306#
6316# 6319# 6322# 6324# 6325# 6327# 6362# 6364# 6368# 6369# 6385# 6398# 6403# 6408# 6412#
6414# 6416# 6421# 6422# 6438# 6448# 6455# 6461# 6469# 6479# 6482# 6486# 6488# 6493# 6494#
6510# 6523# 6530# 6536# 6539# 6543# 6562# 6564# 6570# 6571# 6572# 6588# 6597# 6603# 6607#

```
                6609#  6611#  6612#  6614#  6616#  6618#  6626#  6627#  6628#  6644#  6653#  6660#  6664#  6666#  6668#
                6669#  6672#  6676#  6678#  6686#  6687#  6688#  6704#  6713#  6719#  6725#  6727#  6729#  6733#  6736#
                6759#  6763#  6764#  6765#  6787#  6793#  6797#  6799#  6800#  6804#  6828#  6853#  6873#  6875#  6906#
                6909#  6910#  6917#  6919#  6930#  6934#  6937#  6939#  6950#  6954#  6958#  6960#  6970#  6974#  6977#
                6979#  6990#  6991#  6996#  6999#  7002#  7004#  7015#  7016#  7021#  7024#  7027#  7029#  7040#  7041#
                7042#  7047#  7050#  7055#  7057#  7058#  7061#  7084#  7086#  7088#  7094#  7095#  7096#  7115#  7117#
                7123#  7126#  7128#  7129#  7130#  7132#  7134#  7136#  7142#  7143#  7144#  7163#  7165#  7171#  7174#
                7176#  7177#  7178#  7180#  7182#  7184#  7190#  7191#  7192#  7211#  7213#  7215#  7220#  7223#  7225#
                7226#  7227#  7229#  7231#  7260#  7261#  7263#  7283#  7286#  7287#  7289#  7291#  7305#  7307#  7308#
                7311#  7312#  7314#  7335#  7338#  7339#  7341#  7343#  7357#  7358#  7360#  7362#  7364#  7374#  7377#
                7378#  7379#  7382#  7401#  7403#  7424#  7426#  7428#  7430#  7448#  7450#  7452#  7469#  7496#  7514#
                7537#  7544#  7548#  7579#  7590#  7597#  7607#  7631#  7650#  7656#  7675#  7704#  7723#  7752#  7771#
                7799#  7821#  7841#  7844#  7847#  7869#  7889#  7892#  7896#  7921#  7923#  7945#  7948#  7950#  7952#
                7954#  7978#  7986#  7988#  7990#  8010#  8034#  8038#  8058#  8082#  8086#  8106#  8133#  8143#  8148#
                8169#  8192#  8215#  8241#  8259#  8286#  8305#  8333#  8353#  8379#  8399#  8424#  8442#  8469#  8487#
                8514#  8533#  8563#  8581#  8611#  8630#  8660#  8678#  8705#  8728#  8748#  8749#  8750#  8755#  8762#
                8767#  8771#  8788#  8815#  8822#  8840#  8868#  8875#  8894#  8896#  8897#  8898#  8901#  8925#
M$GNLS          1913#  3615#  7287#  7307#  7339#  7360#  7378#
M$GNSU          1898#  3615#  5798#  5828#  5874#  5904#  5931#  5960#  5987#  6021#  6055#  6104#  6121#  6362#  6414#
                6486#  6562#  6616#  6676#  6917#  6937#  6958#  6977#  7002#  7027#  7086#  7134#  7182#  7260#  7311#
                7401#  7428#  7921#  7952#
M$GNTA          1890#  3615#  3707#  4820#  4830#  4835#  4842#  4849#  4855#  4861#  4867#  4886#  4891#  4933#  4941#
                4945#  5178#  5214#  5236#  5299#  5375#  5415#  5462#  5530#  5575#  5628#  5652#  5679#  5696#  5752#
                5763#  5824#  5845#  5847#  5901#  5929#  5958#  5985#  5997#  5999#  6052#  6083#  6086#  6118#  6145#
                6148#  6198#  6258#  6327#  6412#  6482#  6539#  6543#  6614#  6672#  6733#  6736#  6804#  6875#  6934#
                6954#  6974#  6999#  7024#  7050#  7061#  7132#  7180#  7229#  7231#  7308#  7379#  7382#  7426#  7450#
                7452#  7496#  7548#  7607#  7656#  7704#  7752#  7799#  7847#  7896#  7950#  7988#  7990#  8038#  8086#
                8192#  8241#  8286#  8333#  8379#  8424#  8469#  8514#  8563#  8611#  8660#  8705#  8771#  8822#  8875#
                8901#
M$GNTE          1894#  3615#  5722#  5797#  5870#  6019#  6102#  6162#  6222#  6275#  6360#  6559#  6756#  6823#  6903#
                7081#  7258#  7400#  7466#  7511#  7564#  7628#  7672#  7720#  7768#  7818#  7865#  7919#  8006#  8054#
                8102#  8211#  8255#  8301#  8349#  8395#  8438#  8483#  8529#  8577#  8626#  8674#  8724#  8786#  8838#
M$HAPT          1739#  3615#  3657#
M$HNAP          1824#  3615#  3657#
M$INCR          2026#  3615#  3618#  3700#  4231#  4236#  4239#  4286#  4297#  4443#  4444#  4449#  4450#  4452#  4479#
                4487#  4491#  4498#  4510#  4511#  4564#  4571#  4588#  4629#  4630#  4634#  4638#  4639#  4640#  4649#
                4652#  4664#  4667#  4718#  4765#  4818#  4819#  4820#  4823#  4826#  4828#  4829#  4830#  4832#  4833#
                4834#  4835#  4838#  4839#  4840#  4841#  4842#  4845#  4846#  4847#  4848#  4849#  4851#  4852#  4853.
                4854#  4855#  4857#  4858#  4859#  4860#  4861#  4863#  4864#  4865#  4866#  4867#  4870#  4873#  4875#
                4876#  4877#  4878#  4879#  4880#  4881#  4882#  4883#  4884#  4885#  4886#  4888#  4889#  4890#  4891#
                4893#  4897#  4903#  4909#  4910#  4911#  4918#  4919#  4920#  4921#  4922#  4926#  4927#  4928#  4931#
                4933#  4935#  4938#  4940#  4941#  4943#  4944#  4945#  5031#  5051#  5053#  5073#  5075#  5077#  5079#
                5081#  5096#  5102#  5131#  5162#  5168#  5178#  5195#  5197#  5209#  5210#  5211#  5214#  5231#  5236#
                5270#  5325#  5398#  5440#  5490#  5550#  5601#  5648#  5675#  5691#  5693#  5694#  5696#  5722#  5724#
                5744#  5745#  5746#  5750#  5752#  5755#  5759#  5762#  5797#  5798#  5800#  5822#  5824#  5828#  5831#
                5843#  5845#  5847#  5870#  5872#  5874#  5897#  5901#  5904#  5925#  5929#  5931#  5953#  5958#  5960#
                5981#  5985#  5987#  5993#  5994#  5997#  5999#  6019#  6021#  6023#  6031#  6036#  6043#  6047#  6050#
                6052#  6055#  6057#  6065#  6070#  6074#  6078#  6081#  6083#  6086#  6102#  6104#  6106#  6116#  6118#
                6121#  6123#  6132#  6136#  6143#  6145#  6148#  6162#  6165#  6169#  6170#  6185#  6192#  6194#  6196#
                6198#  6222#  6225#  6232#  6237#  6242#  6245#  6252#  6255#  6258#  6275#  6279#  6285#  6286#  6287#
                6306#  6316#  6319#  6322#  6324#  6325#  6327#  6360#  6362#  6364#  6368#  6369#  6385#  6398#  6403#
                6408#  6412#  6414#  6416#  6421#  6422#  6438#  6448#  6455#  6461#  6469#  6479#  6482#  6486#  6488#
                6493#  6494#  6510#  6523#  6530#  6536#  6539#  6543#  6559#  6562#  6564#  6570#  6571#  6572#  6588#
                6597#  6603#  6607#  6609#  6611#  6612#  6614#  6616#  6618#  6626#  6627#  6628#  6644#  6653#  6660#
                6664#  6666#  6668#  6669#  6672#  6676#  6678#  6686#  6687#  6688#  6704#  6713#  6719#  6725#  6727#
                6729#  6733#  6736#  6756#  6759#  6763#  6764#  6765#  6787#  6793#  6797#  6799#  6800#  6804#  6823#
```

```
            6828#  6853#  6873#  6875#  6903#  6906#  6909#  6910#  6917#  6919#  6930#  6934#  6937#  6939#  6950#
            6954#  6958#  6960#  6970#  6974#  6977#  6979#  6990#  6991#  6996#  6999#  7002#  7004#  7015#  7016#
            7021#  7024#  7027#  7029#  7040#  7041#  7042#  7047#  7050#  7055#  7057#  7058#  7061#  7081#  7084#
            7086#  7088#  7094#  7095#  7096#  7115#  7117#  7123#  7126#  7128#  7129#  7130#  7132#  7134#  7136#
            7142#  7143#  7144#  7163#  7165#  7171#  7174#  7176#  7177#  7178#  7180#  7182#  7184#  7190#  7191#
            7192#  7211#  7213#  7215#  7220#  7223#  7225#  7226#  7227#  7229#  7231#  7258#  7260#  7261#  7263#
            7283#  7286#  7287#  7289#  7291#  7305#  7307#  7308#  7311#  7312#  7314#  7335#  7338#  7339#  7341#
            7343#  7357#  7358#  7360#  7362#  7364#  7374#  7377#  7378#  7379#  7382#  7400#  7401#  7403#  7424#
            7426#  7428#  7430#  7448#  7450#  7452#  7466#  7469#  7496#  7511#  7514#  7537#  7544#  7548#  7564#
            7579#  7590#  7597#  7607#  7628#  7631#  7650#  7656#  7672#  7675#  7704#  7720#  7723#  7752#  7768#
            7771#  7799#  7818#  7821#  7841#  7844#  7847#  7865#  7869#  7889#  7892#  7896#  7919#  7921#  7923#
            7945#  7948#  7950#  7952#  7954#  7978#  7986#  7988#  7990#  8006#  8010#  8034#  8038#  8054#  8058#
            8082#  8086#  8102#  8106#  8133#  8143#  8148#  8169#  8192#  8211#  8215#  8241#  8255#  8259#  8286#
            8301#  8305#  8333#  8349#  8353#  8379#  8395#  8399#  8424#  8438#  8442#  8469#  8483#  8487#  8514#
            8529#  8533#  8563#  8577#  8581#  8611#  8626#  8630#  8660#  8674#  8678#  8705#  8724#  8728#  8748#
            8749#  8750#  8755#  8762#  8767#  8771#  8786#  8788#  8815#  8822#  8838#  8840#  8868#  8875#  8894#
M$IOSE      1700#  3615#
M$LDRO      1942#  3615#  4452#  4510#  4511#  5053#  5073#  5075#  5077#  5079#  5081#  5096#  5168#  5209#  5211#
            5745#  5750#  6170#  6194#  6196#  6287#  6322#  6324#  6325#  6369#  6422#  6494#  6572#  6609#  6611#
            6612#  6628#  6666#  6668#  6669#  6688#  6727#  6729#  6765#  6797#  6799#  6800#  6910#  7055#  7057#
            7058#  7096#  7126#  7128#  7129#  7144#  7174#  7176#  7177#  7192#  7223#  7225#  7226#  8750#
M$MASK      1671#  3615#
M$MCHI        4#  3615#
M$MCLO      1624#  3615#
M$MSK1      1677#  3615#
M$POP       1881#  3615#  3707#  4820#  4830#  4835#  4842#  4849#  4855#  4861#  4867#  4886#  4891#  4933#  4941#
            4945#  5037#  5178#  5214#  5236#  5299#  5375#  5415#  5462#  5530#  5575#  5628#  5652#  5679#  5696#
            5752#  5763#  5824#  5845#  5847#  5901#  5929#  5958#  5985#  5997#  5999#  6052#  6083#  6086#  6118#
            6145#  6148#  6198#  6258#  6327#  6412#  6482#  6539#  6543#  6614#  6672#  6733#  6736#  6804#  6875#
            6934#  6954#  6974#  6999#  7024#  7050#  7061#  7132#  7180#  7229#  7231#  7287#  7307#  7308#  7339#
            7360#  7378#  7379#  7382#  7426#  7450#  7452#  7496#  7548#  7607#  7656#  7704#  7752#  7799#  7847#
            7896#  7950#  7988#  7990#  8038#  8086#  8192#  8241#  8286#  8333#  8379#  8424#  8469#  8514#  8563#
            8611#  8660#  8705#  8771#  8822#  8875#  8901#  8923#
M$PRIN      1636#  3615#  4239#  4297#  4630#  4634#  4638#  4639#  4640#  4649#  4652#  4664#  4667#  4718#  4765#
            4819#  4826#  4828#  4829#  4833#  4834#  4839#  4840#  4841#  4846#  4847#  4848#  4852#  4853#  4854#
            4858#  4859#  4860#  4864#  4865#  4866#  4873#  4875#  4876#  4877#  4878#  4879#  4880#  4881#  4882#
            4883#  4884#  4885#  4889#  4890#  4897#  4903#  4909#  4910#  4911#  4918#  4919#  4920#  4921#  4922#
            4926#  4927#  4928#  4931#  4938#  4940#  4944#  5102#  5131#  5694#  5744#  5762#  5994#  6991#  7016#
            7041#  7042#  7117#  7165#  7213#  7215#  8815#  8868#
M$PUSH      1631#  3615#  3618#  3700#  4818#  4823#  4832#  4838#  4845#  4851#  4857#  4863#  4870#  4888#  4893#
            4935#  4943#  5031#  5051#  5195#  5231#  5270#  5325#  5398#  5440#  5490#  5550#  5601#  5648#  5675#
            5691#  5722#  5755#  5797#  5798#  5828#  5870#  5874#  5904#  5931#  5960#  5987#  6019#  6021#  6055#
            6102#  6104#  6121#  6162#  6222#  6275#  6360#  6362#  6414#  6486#  6559#  6562#  6616#  6676#  6756#
            6823#  6903#  6917#  6937#  6958#  6977#  7002#  7027#  7081#  7086#  7134#  7182#  7258#  7260#  7261#
            7289#  7311#  7312#  7341#  7362#  7400#  7401#  7428#  7466#  7511#  7564#  7628#  7672#  7720#  7768#
            7818#  7865#  7919#  7921#  7952#  8006#  8054#  8102#  8211#  8255#  8301#  8349#  8395#  8438#  8483#
            8529#  8577#  8626#  8674#  8724#  8786#  8838#  8894#
M$PUT       1972#  3615#  4239#  4297#  4443#  4444#  4449#  4450#  4630#  4634#  4638#  4639#  4640#  4649#  4652#
            4664#  4667#  4718#  4765#  4819#  4826#  4828#  4829#  4833#  4834#  4839#  4840#  4841#  4846#  4847#
            4848#  4852#  4853#  4854#  4858#  4859#  4860#  4864#  4865#  4866#  4873#  4875#  4876#  4877#  4878#
            4879#  4880#  4881#  4882#  4883#  4884#  4885#  4889#  4890#  4897#  4903#  4909#  4910#  4911#  4918#
            4919#  4920#  4921#  4922#  4926#  4927#  4928#  4931#  4938#  4940#  4944#  5102#  5131#  5162#  5197#
            5694#  5724#  5744#  5762#  5994#  6169#  6285#  6286#  6368#  6421#  6493#  6570#  6571#  6626#  6627#
            6686#  6687#  6763#  6764#  6909#  6991#  7016#  7041#  7042#  7094#  7095#  7117#  7142#  7143#  7165#
            7190#  7191#  7213#  7215#  8748#  8749#  8815#  8868#
M$PUT1      1981#  3615#  4239#  4297#  4443#  4444#  4449#  4450#  4630#  4634#  4638#  4639#  4640#  4649#  4652#
```

```
                4664#  4667#  4716#  4765#  4819#  4826#  4828#  4829#  4833#  4834#  4839#  4840#  4841#  4846#  4847#
                4848#  4852#  4853#  4854#  4858#  4859#  4860#  4864#  4865#  4866#  4873#  4875#  4876#  4877#  4878#
                4879#  4880#  4881#  4882#  4883#  4884#  4885#  4889#  4890#  4897#  4903#  4909#  4910#  4911#  4918#
                4919#  4920#  4921#  4922#  4926#  4927#  4928#  4931#  4938#  4940#  4944#  5102#  5131#  5162#  5197#
                5694#  5724#  5744#  5762#  5994#  6169#  6285#  6286#  6368#  6421#  6493#  6570#  6571#  6626#  6627#
                6686#  6687#  6763#  6764#  6909#  6991#  7016#  7041#  7042#  7094#  7095#  7117#  7142#  7143#  7165#
                7190#  7191#  7213#  7215#  8748#  8749#  8815#  8868#
M$RADI          2077#  3615#  8896#  8897#  8898#
M$RBRO          1952#  3615#
M$RNRO          1962#  3615#  5096#
M$SETS          2032#  3615#  3618#  3700#  4818#  4823#  4832#  4838#  4845#  4851#  4857#  4863#  4870#  4888#  4893#
                4935#  4943#  5031#  5051#  5195#  5231#  5270#  5325#  5398#  5440#  5490#  5550#  5601#  5648#  5675#
                5691#  5722#  5755#  5797#  5798#  5828#  5870#  5874#  5904#  5931#  5960#  5987#  6019#  6021#  6055#
                6102#  6104#  6121#  6162#  6222#  6275#  6360#  6362#  6414#  6486#  6559#  6562#  6616#  6676#  6756#
                6823#  6903#  6917#  6937#  6958#  6977#  7002#  7027#  7081#  7086#  7134#  7182#  7258#  7260#  7261#
                7289#  7311#  7312#  7341#  7362#  7400#  7401#  7428#  7466#  7511#  7564#  7628#  7672#  7720#  7768#
                7818#  7865#  7919#  7921#  7952#  8006#  8054#  8102#  8211#  8255#  8301#  8349#  8395#  8438#  8483#
                8529#  8577#  8626#  8674#  8724#  8786#  8838#  8894#
M$STAR          1733#  3615#
M$SVC           1933#  3615#  4231#  4236   4239#  4286   4297#  4443#  4444#  4449#  4450#  4452#  4479#  4487   4491
                4498   4510#  4511#  4564   4571   4588   4629   4630#  4634#  4638#  4639#  4640#  4649#  4652#  4664#
                4667#  4718#  4765#  4819#  4820#  4826#  4828#  4829#  4830#  4833#  4834#  4835#  4839#  4840#  4841#
                4842#  4846#  4847#  4848#  4849#  4852#  4853#  4854#  4855#  4858#  4859#  4860#  4861#  4864#  4865#
                4866#  4867#  4873#  4875#  4876#  4877#  4878#  4879#  4880#  4881#  4882#  4883#  4884#  4885#  4886#
                4889#  4890#  4891#  4897#  4903#  4909#  4910#  4911#  4918#  4919#  4920#  4921#  4922#  4926#  4927#
                4929#  4931#  4933#  4938#  4940#  4941#  4944#  4945#  5053#  5073#  5075#  5077#  5079#  5081#  5096#
                5102#  5131#  5162#  5168#  5178#  5197#  5209#  5210#  5211#  5214#  5236#  5693#  5694#  5696#  5724#
                5744#  5745#  5746#  5750#  5752#  5759   5762#  5798#  5800#  5822   5824#  5828#  5831#  5843   5845#
                5847#  5872#  5874#  5897   5901#  5904#  5925   5929#  5931#  5953   5958#  5960#  5981   5985#  5987#
                5993   5994#  5997#  5999#  6021#  6023#  6031#  6036   6043#  6047   6050#  6052#  6055#  6057#  6065#
                6070   6074#  6078   6081#  6083#  6086#  6104#  6106#  6116   6118#  6121#  6123#  6132#  6136#  6143
                6145#  6148#  6165#  6169#  6170#  6185   6192   6194#  6196#  6198#  6225#  6232#  6237#  6242#  6245
                6252   6255   6258#  6279#  6285#  6286#  6287#  6306   6316   6319   6322#  6324#  6325#  6327#  6362#
                6364#  6368#  6369#  6385   6398   6403   6408   6412#  6414#  6416#  6421#  6422#  6438   6448   6455
                6461   6469   6479   6482#  6486#  6488#  6493#  6494#  6510   6523   6530   6536   6539#  6543#  6562#
                6564#  6570#  6571#  6572#  6588   6597   6603   6607   6609#  6611#  6612#  6614#  6616#  6618#  6626#
                6627#  6628#  6644   6653   6660   6664   6666#  6668#  6669#  6672#  6676#  6678#  6686#  6687#  6688#
                6704   6713   6719   6725   6727#  6729#  6733#  6736#  6759#  6763#  6764#  6765#  6787   6793   6797#
                6799#  6800#  6804#  6828#  6853   6873   6875#  6906#  6909#  6910#  6917#  6919#  6930   6934#  6937#
                6939#  6950   6954#  6958#  6960#  6970   6974#  6977#  6979#  6990   6991#  6996   6999#  7002#  7004#
                7015   7016#  7021   7024#  7027#  7029#  7040   7041#  7042#  7047   7050#  7055#  7057#  7058#  7061#
                7084#  7086#  7088#  7094#  7095#  7096#  7115   7117#  7123   7126#  7128#  7129#  7130#  7132#  7134#
                7136#  7142#  7143#  7144#  7163   7165#  7171   7174#  7176#  7177#  7178#  7180#  7182#  7184#  7190#
                7191#  7192#  7211   7213#  7215#  7220   7223#  7225#  7226#  7227#  7229#  7231#  7260#  7261#  7263#
                7283#  7286#  7287#  7289#  7291#  7305   7307#  7308#  7311#  7312#  7314#  7335#  7338#  7339#  7341#
                7343#  7357   7358#  7360#  7362#  7364#  7374#  7377#  7378#  7379#  7382#  7401#  7403#  7424   7426#
                7428#  7430#  7448   7450#  7452#  7469#  7496#  7514#  7537#  7544   7548#  7579#  7590#  7597   7607#
                7631#  7650#  7656#  7675#  7704#  7723#  7752#  7771#  7799#  7821#  7841#  7844   7847#  7869#  7889#
                7892   7896#  7921#  7923#  7945#  7948   7950#  7952#  7954#  7978#  7986   7988#  7990#  8010#  8034
                8038#  8058#  8082   8086#  8106#  8133   8143#  8148   8169   8192#  8215#  8241#  8259#  8286#  8305#
                8333#  8353#  8379#  8399#  8424#  8442#  8469#  8487#  8514#  8533#  8563#  8581#  8611#  8630#  8660#
                8678#  8705#  8728#  8748#  8749#  8750#  8755#  8762#  8767#  8771#  8788#  8815#  8822#  8840#  8868#
                8875#
M$TLAB          1929#  3615#  4231#  4236#  4239#  4286#  4297#  4443#  4444#  4449#  4450#  4452#  4479#  4487#  4491#
                4498#  4510#  4511#  4564#  4571#  4588#  4629#  4630#  4634#  4638#  4639#  4640#  4649#  4652#  4664#
                4667#  4718#  4765#  4819#  4820#  4826#  4828#  4829#  4830#  4833#  4834#  4835#  4839#  4840#  4841#
```

4842# 4846# 4847# 4848# 4849# 4852# 4853# 4854# 4855# 4858# 4859# 4860# 4861# 4864# 4865#
4866# 4867# 4873# 4875# 4876# 4877# 4878# 4879# 4880# 4881# 4882# 4883# 4884# 4885# 4886#
4889# 4890# 4891# 4897# 4903# 4909# 4910# 4911# 4918# 4919# 4920# 4921# 4922# 4926# 4927#
4928# 4931# 4933# 4938# 4940# 4941# 4944# 4945# 5053# 5073# 5075# 5077# 5079# 5081# 5096#
5102# 5131# 5162# 5168# 5178# 5197# 5209# 5210# 5211# 5214# 5236# 5693# 5694# 5696# 5724#
5744# 5745# 5746# 5750# 5752# 5759# 5762# 5798# 5800# 5822# 5824# 5828# 5831# 5843# 5845#
5847# 5872# 5874# 5897# 5901# 5904# 5925# 5929# 5931# 5953# 5958# 5960# 5981# 5985# 5987#
5993# 5994# 5997# 5999# 6021# 6023# 6031# 6036# 6043# 6047# 6050# 6052# 6055# 6057# 6065#
6070# 6074# 6078# 6081# 6083# 6086# 6104# 6106# 6116# 6118# 6121# 6123# 6132# 6136# 6143#
6145# 6148# 6165# 6169# 6170# 6185# 6192# 6194# 6196# 6198# 6225# 6232# 6237# 6242# 6245#
6252# 6255# 6258# 6279# 6285# 6286# 6287# 6306# 6316# 6319# 6322# 6324# 6325# 6327# 6362#
6364# 6368# 6369# 6385# 6398# 6403# 6408# 6412# 6414# 6416# 6421# 6422# 6438# 6448# 6455#
6461# 6469# 6479# 6482# 6486# 6488# 6493# 6494# 6510# 6523# 6530# 6536# 6539# 6543# 6562#
6564# 6570# 6571# 6572# 6588# 6597# 6603# 6607# 6609# 6611# 6612# 6614# 6616# 6618# 6626#
6627# 6628# 6644# 6653# 6660# 6664# 6666# 6668# 6669# 6672# 6676# 6678# 6686# 6687# 6688#
6704# 6713# 6719# 6725# 6727# 6729# 6733# 6736# 6759# 6763# 6764# 6765# 6787# 6793# 6797#
6799# 6800# 6804# 6828# 6853# 6873# 6875# 6906# 6909# 6910# 6917# 6919# 6930# 6934# 6937#
6939# 6950# 6954# 6958# 6960# 6970# 6974# 6977# 6979# 6990# 6991# 6996# 6999# 7002# 7004#
7015# 7016# 7021# 7024# 7027# 7029# 7040# 7041# 7042# 7047# 7050# 7055# 7057# 7058# 7061#
7084# 7086# 7088# 7094# 7095# 7096# 7115# 7117# 7123# 7126# 7128# 7129# 7130# 7132# 7134#
7136# 7142# 7143# 7144# 7163# 7165# 7171# 7174# 7176# 7177# 7178# 7180# 7182# 7184# 7190#
7191# 7192# 7211# 7213# 7215# 7220# 7223# 7225# 7226# 7227# 7229# 7231# 7260# 7261# 7263#
7283# 7286# 7287# 7289# 7291# 7305# 7307# 7308# 7311# 7312# 7314# 7335# 7338# 7339# 7341#
7343# 7357# 7358# 7360# 7362# 7364# 7374# 7377# 7378# 7379# 7382# 7401# 7403# 7424# 7426#
7428# 7430# 7448# 7450# 7452# 7469# 7496# 7514# 7537# 7544# 7548# 7579# 7590# 7597# 7607#
7631# 7650# 7656# 7675# 7704# 7723# 7752# 7771# 7799# 7821# 7841# 7844# 7847# 7869# 7889#
7892# 7896# 7921# 7923# 7945# 7948# 7950# 7952# 7954# 7978# 7986# 7988# 7990# 8010# 8034#
8038# 8058# 8082# 8086# 8106# 8133# 8143# 8148# 8169# 8192# 8215# 8241# 8259# 8286# 8305#
8333# 8353# 8379# 8399# 8424# 8442# 8469# 8487# 8514# 8533# 8563# 8581# 8611# 8630# 8660#
8678# 8705# 8728# 8748# 8749# 8750# 8755# 8762# 8767# 8771# 8788# 8815# 8822# 8840# 8868#
8875#

M$TSTL 1921# 3615# 4231# 4236# 4239# 4286# 4297# 4443# 4444# 4449# 4450# 4452# 4479# 4487# 4491#
4498# 4510# 4511# 4564# 4571# 4588# 4629# 4630# 4634# 4638# 4639# 4640# 4649# 4652# 4664#
4667# 4718# 4765# 4819# 4820# 4826# 4828# 4829# 4830# 4833# 4834# 4835# 4839# 4840# 4841#
4842# 4846# 4847# 4848# 4849# 4852# 4853# 4854# 4855# 4858# 4859# 4860# 4861# 4864# 4865#
4866# 4867# 4873# 4875# 4876# 4877# 4878# 4879# 4880# 4881# 4882# 4883# 4884# 4885# 4886#
4889# 4890# 4891# 4897# 4903# 4909# 4910# 4911# 4918# 4919# 4920# 4921# 4922# 4926# 4927#
4928# 4931# 4933# 4938# 4940# 4941# 4944# 4945# 5053# 5073# 5075# 5077# 5079# 5081# 5096#
5102# 5131# 5162# 5163# 5178# 5197# 5209# 5210# 5211# 5214# 5236# 5693# 5694# 5696# 5724#
5744# 5745# 5746# 5750# 5752# 5759# 5762# 5798# 5800# 5822# 5824# 5828# 5831# 5843# 5845#
5847# 5872# 5874# 5897# 5901# 5904# 5925# 5929# 5931# 5953# 5958# 5960# 5981# 5985# 5987#
5993# 5994# 5997# 5999# 6021# 6023# 6031# 6036# 6043# 6047# 6050# 6052# 6055# 6057# 6065#
6070# 6074# 6078# 6081# 6083# 6086# 6104# 6106# 6116# 6118# 6121# 6123# 6132# 6136# 6143#
6145# 6148# 6165# 6169# 6170# 6185# 6192# 6194# 6196# 6198# 6225# 6232# 6237# 6242# 6245#
6252# 6255# 6258# 6279# 6285# 6286# 6287# 6306# 6316# 6319# 6322# 6324# 6325# 6327# 6362#
6364# 6368# 6369# 6385# 6398# 6403# 6408# 6412# 6414# 6416# 6421# 6422# 6438# 6448# 6455#
6461# 6469# 6479# 6482# 6486# 6488# 6493# 6494# 6510# 6523# 6530# 6536# 6539# 6543# 6562#
6564# 6570# 6571# 6572# 6588# 6597# 6603# 6607# 6609# 6611# 6612# 6614# 6616# 6618# 6626#
6627# 6628# 6644# 6653# 6660# 6664# 6666# 6668# 6669# 6672# 6676# 6678# 6686# 6687# 6688#
6704# 6713# 6719# 6725# 6727# 6729# 6733# 6736# 6759# 6763# 6764# 6765# 6787# 6793# 6797#
6799# 6800# 6804# 6828# 6853# 6873# 6875# 6906# 6909# 6910# 6917# 6919# 6930# 6934# 6937#
6939# 6950# 6954# 6958# 6960# 6970# 6974# 6977# 6979# 6990# 6991# 6996# 6999# 7002# 7004#
7015# 7016# 7021# 7024# 7027# 7029# 7040# 7041# 7042# 7047# 7050# 7055# 7057# 7058# 7061#
7084# 7086# 7088# 7094# 7095# 7096# 7115# 7117# 7123# 7126# 7128# 7129# 7130# 7132# 7134#
7136# 7142# 7143# 7144# 7163# 7165# 7171# 7174# 7176# 7177# 7178# 7180# 7182# 7184# 7190#
7191# 7192# 7211# 7213# 7215# 7220# 7223# 7225# 7226# 7227# 7229# 7231# 7260# 7261# 7263#

J2


```
            7283#  7286#  7287#  7289#  7291#  7305#  7307#  7308#  7311#  7312#  7314#  7335#  7338#  7339#  7341#
            7343#  7357#  7358#  7360#  7362#  7364#  7374#  7377#  7378#  7379#  7382#  7401#  7403#  7424#  7426#
            7428#  7430#  7448#  7450#  7452#  7469#  7496#  7514#  7537#  7544#  7548#  7579#  7590#  7597#  7607#
            7631#  7650#  7656#  7675#  7704#  7723#  7752#  7771#  7799#  7821#  7841#  7844#  7847#  7869#  7889#
            7892#  7896#  7921#  7923#  7945#  7948#  7950#  7952#  7954#  7978#  7986#  7988#  7990#  8010#  8034#
            8038#  8058#  8082#  8086#  8106#  8133#  8143#  8148#  8169#  8192#  8215#  8241#  8259#  8286#  8305#
            8333#  8353#  8379#  8399#  8424#  8442#  8469#  8487#  8514#  8533#  8563#  8581#  8611#  8630#  8660#
            8678#  8705#  8728#  8748#  8749#  8750#  8755#  8762#  8767#  8771#  8788#  8815#  8822#  8840#  8868#
            8875#
M$WORD      1994#  3615#  3657#  3683#  4236#  4286#  4487#  4491#  4498#  4564#  4571#  4588#  4629#  5759#  5822#
            5843#  5897#  5925#  5953#  5981#  5993#  6036#  6047#  6070#  6078#  6116#  6143#  6185#  6192#  6245#
            6252#  6255#  6306#  6316#  6319#  6385#  6398#  6403#  6408#  6438#  6448#  6455#  6461#  6469#  6479#
            6510#  6523#  6530#  6536#  6588#  6597#  6603#  6607#  6644#  6653#  6660#  6664#  6704#  6713#  6719#
            6725#  6787#  6793#  6853#  6873#  6906#  6930#  6950#  6970#  6990#  6996#  7015#  7021#  7040#  7047#
            7084#  7115#  7123#  7163#  7171#  7211#  7220#  7305#  7357#  7424#  7448#  7544#  7597#  7844#  7892#
            7948#  7986#  8034#  8082#  8133#  8148#  8169#  8896#  8897#  8898#  8925
M$XFER      1682#  3615#
OPEN        1171#  3615#
POINTE      1176#  3615#  3634
POP         4119#  4241   5347
PRINTB      1239#  3615#  4239   4297   4630   4634   4638   4639   4640   4649   4652   4664   4667   4819   4826
            4828   4829   4833   4834   4839   4840   4841   4846   4847   4848   4852   4853   4854   4858   4859
            4860   4864   4865   4866   4873   4875   4876   4877   4878   4879   4880   4881   4882   4883   4884
            4885   4889   4890   4897   4903   4909   4910   4911   4918   4919   4920   4921   4922   4926   4927
            4928   4931   4938   4940   4944   5102   5131   6991   7016   7041   7042   7117   7165   7213   7215
PRINTF      1279#  3615#  5694
PRINTS      1319#  3615#
PRINTX      1359#  3615#  4718   4765   5744   5762   5994   8815   8868
PUSH        4109#  4224   5338
READBU      1399#  3615#
READEF      1403#  3615#  5075   5077   5079   5081
RFLAGS      1408#  3615#
SETPRI      1413#  3615#  4452   5053   6170   6194   6287   6322   6369   6422   6494   6572   6609   6628   6666
            6688   6727   6765   6797   6910   7055   7096   7126   7144   7174   7192   7223   8750
SETVEC      1418#  3615#  4443   4444   4449   4450   5162   5197   5724   6169   6285   6286   6368   6421   6493
            6570   6571   6626   6627   6686   6687   6763   6764   6909   7094   7095   7142   7143   7190   7191
            8748   8749
SLASH       1424#  3615#
STARS       1438#  3615#
SVC         1452#  3614#  3615
WAIT        4131#  6030   6042   6064   6131   6135   6231   6236   6241
XFER        1612#  3615#  6906#  7084#
XFERF       1616#  3615#
XFERT       1620#  3615#
$DELAY      4170#  5832   6189   6249   6311   6519   6831   6838   6843   6848   6858   6927   6947   6967   6987
            7012   7037
```

```
. ABS.  040540     000

 ERRORS DETECTED:  0

 CVDPVC,CVDPVC/CRF=SVC34R.MLB,CVDPVC.P11
 RUN-TIME: 43 53 5 SECONDS
 RUN-TIME RATIO: 131/101=1.2
 CORE USED:  20K  (39 PAGES)
```