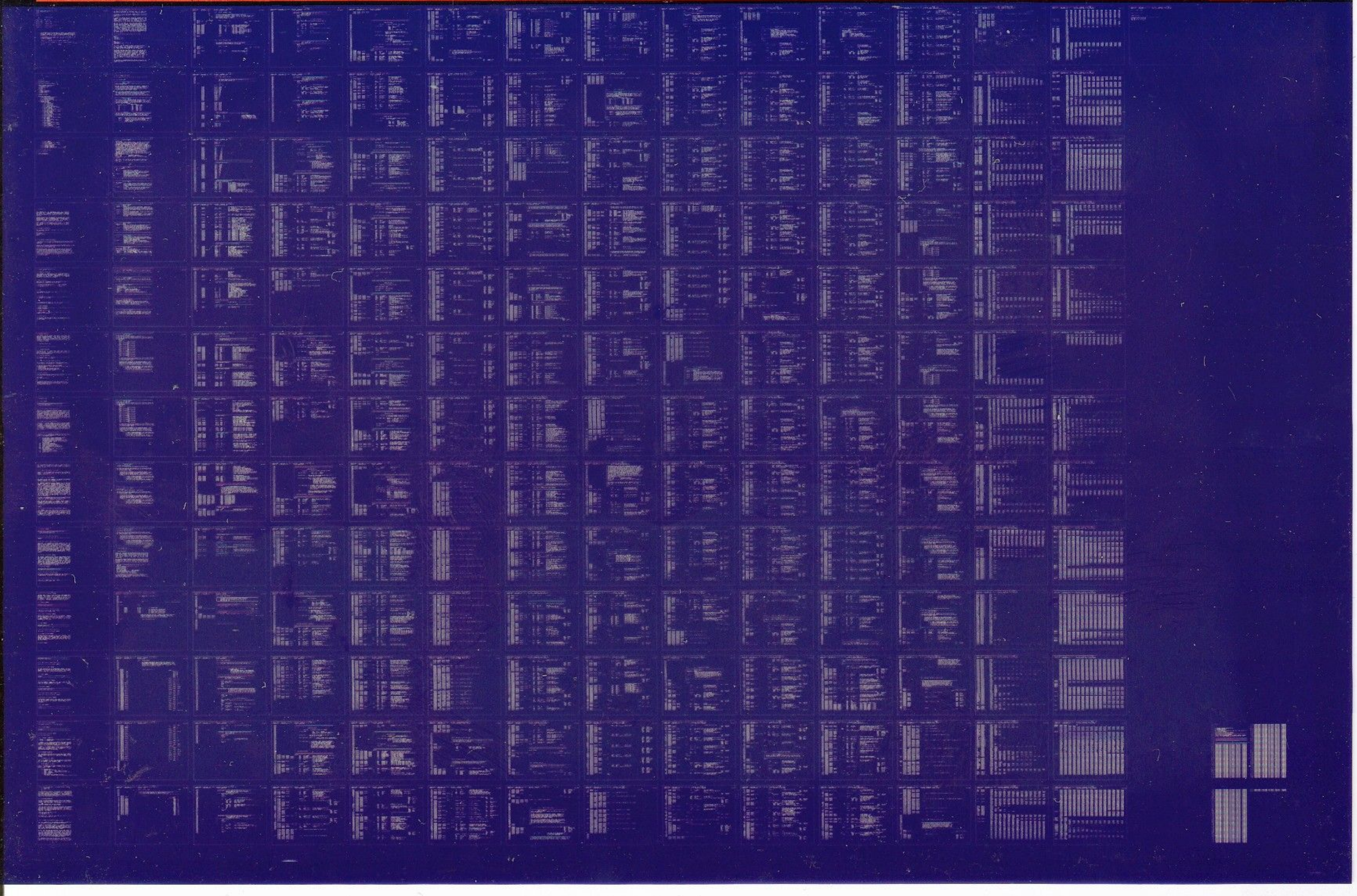
DMR11-DMP11 DMR11 FCTNL DIAG
CZDMIAO

AH-F832A-MC
FICHE 1 OF 1



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.NLIST
.TITLE CZDMIAO DMR-11 FUNCTIONAL TESTS                                  SEQ 0001
.SBTTL PROGRAM DOCUMENT
.LIST
.NLIST TOC

.REM @
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IDENTIFICATION

PRODUCT CODE: AC-F830A-MC

PRODUCT NAME: CZDMIAO DMR-11 FCTNL DIAG

PRODUCT DATE: FEBRUARY 1980

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: MIKE O'CONNOR

CONTENTS

1.0 INTRODUCTION

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

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

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

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE DMR-11 FUNCTIONAL DIAGNOSTIC TESTS:

PDP-11/04,05,10,20,30,34,35,40,45,50,60, OR 70
16K MEMORY
CONSOLE TERMINAL
DMR-11

3.0 PRELIMINARY PROGRAM REQUIREMENTS

IT IS ADVISED THAT THE STATIC DIAGNOSTICS BE RUN BEFORE THESE FUNCTIONAL DIAGNOSTICS. IT IS ASSUMED THAT THE PROCESSOR IS IN PROPER WORKING CONDITION.

ENSURE THAT THE SWITCH 1 AT LOCATION E-85 ON THE M8207 IS ON. IF THIS SWITCH IS OFF, THE MAINTENANCE BITS IN BSEL1 CAN'T BE USED AND CERTAIN TESTS WILL BE NOT BE CORRECTLY RUN.

WHEN CHOSING A CABLE TEST CONNECTION, ENSURE THAT THE SWITCH PACK E-39 ON THE M8203 IS PROPERLY SET UP FOR THE DESIRED INTERFACE. IF CHOSING TEST CONFIGURATION OPTIONS 1-4, IT IS NOT NECESSARY TO SELECT THE INTERFACE; HOWEVER THE BAUD RATE MUST BE CORRECT. FOR EXAMPLE IF IT IS DESIRED TO RUN CONFIGURATION 3 (H3255-EIA), IT IS NOT NECESSARY TO HAVE SWITCH 7 OF THE SWITCH PACK IN THE OFF POSITION. IT IS, HOWEVER, NECESSARY TO HAVE THE BAUD RATE SELETCTED TO BE WITHIN THE EIA RANGE.

4.0 GENERAL PROGRAM CONSIDERATIONS

4.1 DIAGNOSTIC SUPERVISOR

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

4.2 EXECUTION TIME

EXECUTION TIME IS DEPENDENT ON THE PROCESSOR SPEED AND THE DMR BAUD RATE. EXAMPLES OF EXECUTION TIME

11/70 WITH CACHE AND DMR AT 2.4K	4 AND 1/2 MINUTES
11/70 WITHOUT CACHE AND DMR AT 2.4K	5 AND 1/2 MINUTES
11/34 AND DMR AT 2.4K	10 MINUTES

4.3 XXDP+

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

4.4 ACT/SLIDE

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

4.5 APT

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

4.6 MEMORY MANAGEMENT

IF MEMORY MANAGEMENT IS AVAILABLE, IT IS USED BY CERTAIN TESTS IN THIS FUNCTIONAL DIAGNOSTIC.

4.7 MEMORY PARITY OPTION

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

4.8 ERROR LOGGING

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

5.0 PROGRAM LOAD MEDIA

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

6.0 OPERATING INSTRUCTIONS

6.1 LOADING AND STARTING PROCEDURES

6.1.1 LOADING PROCEDURES

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

6.1.2 STARTING PROCEDURES

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

6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION

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

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

6.2 INITIAL DIALOGUE

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

```
DRS LOADED
DIAG. RUN-TIME SERVICES

DR>
```

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

6.3 PROGRAM OPTIONS

6.3.1 START COMMAND

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

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

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

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

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

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

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

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

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

6.3.1.5 EFFECT OF START COMMAND

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

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

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

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

EXAMPLE:

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

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

6.3.2 RESTART COMMAND

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

6.3.2.1 TESTS, PASS, AND FLAGS SWITCHES

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

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

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

6.3.2.3 EFFECT OF RESTART COMMAND

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

6.3.3 CONTINUE COMMAND

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

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

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

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

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

6.3.3.3 EFFECT OF CONTINUE COMMAND

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

6.3.4 PROCEED COMMAND

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

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

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

6.3.4.2 EFFECT OF PROCEED COMMAND

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

6.3.5 ADD COMMAND

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

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

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

6.3.5.2 EFFECT OF ADD COMMAND

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

6.3.6 DROP COMMAND

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

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

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

6.3.6.2 EFFECT OF DROP COMMAND

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

6.3.7 PRINT COMMAND

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

6.3.7.1 EFFECT OF PRINT COMMAND

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

6.3.8 DISPLAY COMMAND

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

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

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

6.3.8.2 EFFECT OF DISPLAY COMMAND

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

6.3.9 FLAGS COMMAND

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

6.3.9.1 EFFECT OF FLAGS COMMAND

THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.

6.3.10 ZFLAGS COMMAND

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

6.3.10.1 EFFECT OF ZFLAGS COMMAND

ALL FLAGS ARE CLEARED.

6.3.11 CONTROL CHARACTERS

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

A CONTROL Z (Z) ENTERED DURING ONE OF THE THREE 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 3 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. CSR ADDRESS: (O) 160070?

THIS IS THE ADDRESS AT WHICH THE CSR REGISTERS (SELO) RESIDE ON THE UNIBUS. THE ALLOWABLE RANGE IS 160000-177776 (OCTAL), AND THE DEFAULT VALUE IS 160070.

2. VECTOR ADDRESS: (O) 300 ?

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

3. TEST CONFIGURATION -
   0 = INTERNAL (NO CONNECTOR)
   1 = H3254 - V.35 (NOTE: MODE 1-4 ALLOWS
   2 = H3254 - INTEGRAL PROGRAM INTERFACE SELECTION)
   3 = H3255 - RS232C/423
   4 = H3255 - RS422
   5 = CABLE AND SW PACK INTERFACE SELECTED
   (V.35-H3250, INTEGRAL-BC55A-10, RS232C-H325, RS423/422-H3251)

* SELECT THE FOLLOWING ONLY IF THE MODEM SUPPORTS LOOPBACK *
6 = LOCAL LOOP
7 = REMOTE LOOP
(0) 5 ?

THIS QUESTION WILL COVER ALL THE POSSIBLE TEST CONFIGURATIONS. THE DEFAULT IS FOR ACTUAL CABLE LOOPBACK (5). CONFIGURATION 0 WILL ENABLE LINE UNIT (TTL) LOOPBACK. IF THIS IS SELECTED NO CABLES OR CONNECTORS SHOULD BE CONNECTED. CONFIGURATIONS 1-4 WILL SELECT THE INTERFACE REGARDLESS OF THE SWITCH SETTING AS LONG AS THE PROPER BAUD RATE IS SELECTED (I.E. EIA - 2.4K-19.2K).

6.3.13 SOFTWARE PARAMETERS

THE ONLY SOFTWARE PARAMETER QUESTION ASKED BY THE DIAGNOSITC CONCERNS A SOFTWARE TIMEOUT VARIABLE THAT IS USED TO PREVENT SOFTWARE ''HUNG'' CONDITIONS. THIS VARIABLE IS A VALUE FORM 1-5.

SELECTABLE PROGRAM LOOP TIME-OUT VARIABLE
[REFER TO LISTING 6.3.13] (MAX=5; MIN=1) (0) 5 ?

THERE ARE TWO FACTORS THAT SHOULD BE CONSIDERED WHEN ANSWERING THIS QUESTION. THE FIRST IS PROCESSOR SPEED; THE FASTER THE PROCESSOR THE HIGHER THE VARIABLE SHOULD BE. THE SECOND IS BAUD RATE; THE SLOWER THE DMR BAUD RATE THE HIGHER THE VARAIBLE SHOULD BE. FOR EXAMPLE:

11/70 WITH CACHE AND DMR AT 1 MEG.: 4
11/34 AND DMR AT 56K: 2
11/40 AND DMR AT 2.4K: 3

THE DEFAULT IS 5. THIS JILL COVER THE WORST CASE (I.E. 11/70 WITH CACHE AND THE DMR AT 2.4K).

6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE

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

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

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

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

THE ROLE THAT TABLE NUMBER ONE PLAYED IN THE FIRST TRIP.

THE SERIES OF QUESTIONS IS REISSUED UNTIL AT LEAST ONE QUESTION HAS RECEIVED N EXPLICIT VALUES FROM THE OPERATOR.

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

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

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

THE FOLLOWING DIALOGUE WOULD ACCOMPLISH THIS GOAL:

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

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

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

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

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

7.0 DEVICE INFORMATION TABLES

SEE THE GLOBAL EQUATES SECTION FOR DEVICE CSR BIT DEFINITIONS

8.0 TEST DESCRIPTIONS

```
;*****************************************************************************
;*                TEST 1 - DMR-11
;* VERIFY THAT ADDRESSING THE 4 UNIBUS CSRs DOES NOT CAUSE A NON-
;* EXISTENT MEMORY TRAP.
;*
;* THE DMR IS AN NPR DEVICE RESIDING ON A UNIBUS.  COMMUNICATION
;* BETWEEN THE MAIN CPU AND THE DMR IS ACCOMPLISHED THROUGH A
;* SET OF FOUR 16-BIT UNIBUS CONTROL AND STATUS REGISTERS (CSRS).
;* THE FOUR REGISTERS ARE ASSIGNED ADDRESSES IN THE I/O PAGE
;* FLOATING ADDRESS SPACE: 76XXX0 - 76XXX6
;*
;* NOTE: THIS TEST IS REDUNDANT IN THAT STATIC LOGIC TESTS SHOULD
;* HAVE BEEN RUN BEFORE THESE FREE-RUNNING TESTS WERE STARTED, AND
;* THEY SHOULD HAVE DETECTED ANY CSR ADDRESSING PROBLEMS.
;* BUT JUST IN CASE THOSE STATIC TESTS AREN'T RUN, WE'LL BE SAFE.
;*****************************************************************************


;*****************************************************************************
;*                TEST 2 - DMR-11
;* ROM CRC/CCITT - CHECK ROM POSITION AND CALCULATE CRC/CCITT.  THE
;* LAST 4 BYTES CONTAIN INFORMATION ABOUT THE ROM TO CHECK.  THE 1ST
;* OF THESE BYTES CONTAINS THE ASCII VERSION NUMBER.  THE 2ND BYTE
;* CONTAINS THE ROM NUMBER.  THE 3RD AND 4TH BYTES CONTAIN A NEGATIVE
;* CRC/CCITT WORD FOR THE ROM.
;*                        CHIP ADDRESS RANGE
;*    LOCATION  CHIP NO.          BYTE     ADDRESS RANGE
;*      E03         0             LOW      0000 - 1777
;*      E02         1             HIGH     0000 - 1777
;*      E04         2             LOW      2000 - 3777
;*      E01         3             HIGH     2000 - 3777
;*      E05         4             LOW      4000 - 5777
;*      E14         5             HIGH     4000 - 5777
;*
;*************** IMPORTANT !!!!!!!!!! *********************************
;* FOR THIS TEST TO RUN CORRECTLY, ENSURE THAT SWITCH 1 AT LOCATION
;* E85 ON THE M8207 IS ON.  IF THIS SWITCH IS OFF, BSEL1 WILL BE
;* LOCKED OUT AND THE MAINTENANCE FEATURES WILL NOT BE ENABLED.
;*****************************************************************************
;*
;*      SUBTEST 1 - ON THE FIRST PASS PRINT THE VERSION # IN EACH ROM
;*      SUBTEST 2 - GENERATE THE CRC-CCITT IN EACH ROM AND COMPARE IT
;*                  IT AGAINST THE CRC BLASTED IN THE ROM
;*      SUBTEST 3 - COMPARE THE ROM # BLASTED IN THE ROM AGAINST THE
;*                  EXPECTED ROM #.
;*****************************************************************************
```

```
;*****************************************************************************
;*                TEST 3 - DMR-11
;* MASTER CLEAR
;* THIS TEST WILL ISSUE 2 MASTER CLEARS.  EACH CALL TO THE MASTER
;* CLEAR ROUTINE WILL ENSURE THAT THE RUN BIT WILL BE SET.  ALSO
;* THE MASTER CLEAR WILL CAUSE THE DIAGNOSTIC MICROTESTS TO BE
;* RUN WHEN THE MICRODIAGNOSTIC BIT (BIT 13 IN SEL0) IS CORRECTLY
;* SET OR CLEARED.  BECAUSE THE RUNNING OF MICROTESTS DEPENDS ON THE
;* EXCLUSIVE OR OF THE  HARDWARE SWITCH 10 ON E134 OF THE M8203 AND
;* THE MICRODIAGNOSTIC BIT, WE CAN'T KNOW WHETHER THE SETTING OR
;* CLEARING OF BIT 13 WILL RESULT IN THE RUNNING OF MICROTESTS.
;* THEREFORE THE MASTER CLEAR SUBROUTINE WILL TOGGLE (I.E  SET
;* BIT 13 ONLY ON EVERY OTHER MASTER CLEAR) THE SOFTWARE BIT.
;* THIS WILL ENSURE THAT REGARDLESS OF THE POSITION OF THE
;* HARDWARE SWITCH, MICROTESTS WILL BE RUN EVERY OTHER MASTER CLEAR.
;* WHEN RUNNING THIS TEST, WE EXPECT TO ADD THE RESULTS OF BSEL3
;* AFTER EACH MASTER CLEAR.
;* BSEL3 = 100           -  MICROTESTS DISABLED
;* BSEL3 = 200           -  MICROTESTS RUN SUCCESFULLY
;* IF THE RESULT OF THE 2 MASTER CLEARS IS NOT 300, AN ERROR IS
;* REPORTED.
;*
;* ADDITIONALLY THIS ROUTINE WILL REPORT WHENEVER THE RESULT OF
;* BSEL3 IS 0.  THIS WILL MEAN THAT THE DEVICE IS NOT A DMR
;* (I.E. DMC)
;*****************************************************************************



;*****************************************************************************
;*                TEST 4 - DMR-11
;*  BASE IN COMMANDS
;*
;*  SUBTEST 1  - ISSUE A BASE IN  -  DMR MODE.
;*               ENSURE THAT THE DMR MODE BIT (BIT 4) IS SET IN
;*               THE MICROCODE SCRATCH PAD 7 AND THAT THE DDCMP
;*               MESSAGE VARIABLES ARE PROPERLY INITIALIZED.
;*  SUBTEST 2  - ISSUE A BASE IN  -  DMC MODE.
;*               ENSURE THAT THE DMC MODE BIT (BIT 4) IS CLEAR IN
;*               THE MICROCODE SCRATCH PAD 7 AND THAT THE DDCMP
;*               MESSAGE VARIABLES ARE PROPERLY INITIALIZED.
;*
;*****************************************************************************


;*****************************************************************************
;*                TEST 5 - DMR-11
;* DMR COMMANDS
;*  SUBTEST 1  - ISSUE AN ENABLE EXTENDED ERROR COMMAND AND CHECK THAT
;*               THE EXT. ENABLE BIT IS SET IS SCRATCH PAD 13.  THEN
;*               DISABLE EXTENDED ERROR AND CHECK THAT THE ENABLE BIT
;*               IS CLEAR.
;*  SUBTEST 2  - SET REP/SEL TIMER VALUE AND SET THE DMR THRESHOLD
;*               VALUES.  CHECK THAT THE VALUES ARE CORRECT IN
;*               THE BASE TABLE AFTER HALTING THE DMR.
;*
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*                TEST 6 - DMR-11
;*  CONTROL IN COMMAND TEST -
;*  SUBTEST 1  - CONTROL IN, FULL DUPLEX, DDCMP MODE.  ENSURE THAT
;*               THE HALF-DUPLEX BIT IS CLEAR IN THE MODEM STATUS WORD,
;*               ALSO ENSURE THAT DDCMP MODE BIT IS SET IN SCRATCH PAD 7.
;*  SUBTEST 2  - CONTROL IN, HALF DUPLEX.  ENSURE THAT THE HALF DUPLEX
;*               BIT IS SET.
;*  SUBTEST 3  - CONTROL IN, MAINTENANCE MODE.  ENSURE THAT MAINT. MODE
;*               BIT IS SET IN SCRATCH PAD 7.
;*  SUBTEST 4  - CONTROL IN USING SELECTED LOOPBACK.  ISSUE A CONTROL IN
;*               USING THE USER SELECTED LOOPBACK.  IF THE LOOPBACK IS
;*               NOT CORRECT, DMR RUN MODE ACKNOWLEDGE WILL NOT BE
;*               RECEIVED.
;*
;*
;*****************************************************************************



;*****************************************************************************
;*                TEST 7 - DMR-11
;* MODEM WRITE COMMAND
;*  SUBTEST 1  - WRITE DATA PATTERNS INTO THE MODEM WRITE REGISTER.
;*               ENSURE THAT ON THE NEXT MODEM READ THAT THE
;*               MICROCODE RETURNS THE PATTERN WRITTEN INTO BSEL6.
;*  SUBTEST 2  - ATTEMPT TO WRITE BOTH THE HALF-DUPLEX BIT AND THE
;*               RTS HOLD BIT.  THE MICROCODE SHOULD NOT ALLOW THIS
;*               TO HAPPEN.  WHEN READING THE MODEM STATUS, ONLY
;*               THE HALF-DUPLEX SHOULD BE SET.
;*
;*****************************************************************************


;*****************************************************************************
;*                TEST 8 - DMR-11
;*  SUBTEST 1  - TRANSMIT A BUFFER THREE TIMES WIHOUT ASSIGNING A
;*               RECEIVE BUFFER.  BY ASSIGNING A NO BUFFER THRESHOLD
;*               OF THREE, ENSURE THAT A NO BUFFER ERROR IS RECEIVED
;*               AFTER THE THIRD THRANSMISSION.
;*  SUBTEST 2  - TRANSMIT A BUFFER WITHOUT A RECEIVE BUFFER.
;*               ASSIGN THE NAKS THRESHOLD OF 3 AND A NO BUFFER
;*               THRESHOLD OF 7.  CHECK THAT THE NAKS ERROR COUNT IS
;*               THREE AFTER SHUTDOWN.
;*****************************************************************************


;*****************************************************************************
;*                TEST 9 - DMR-11
;* NON-EXISTENT MEMORY (NXM) error check
;* Perform DMR commands using NXM addresses; verify that NXM error is
;* reported IN EACH OF THE FOLLOWING SUBTESTS:
;*  SUBTEST 1  -  BASE IN RESUME COMMAND - BASE TABLE ADDRESS IS NXM
;*  SUBTEST 2  -  BA/CC IN RECEIVE COMMAND - BA/CC IN ADDRESS IS NXM
;*  SUBTEST 3  -  BA/CC IN TRANSMIT COMMAND - BA/CC IN ADDRESS IS NXM
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*              TEST  10 - DMR-11
;* TIME OUT - FORCE A TIMEOUT AND VERIFY THAT THE ERROR IS REPORTED
;*
;*****************************************************************************



;*****************************************************************************
;*              TEST 11 - DMR-11
;*  MESSAGE TOO LONG - TRANSMIT A MESSAGE THAT IS TOO LONG FOR THE
;*  RECEIVE BUFFER AND VERIFY THAT THE 'TOO LONG'' ERROR IS RECEIVED.
;*
;*****************************************************************************


;*****************************************************************************
;*              TEST 12 - DMR-11
;*  PROCEDURE ERRORS -
;*  THE FOLLOWING SHOULD CAUSE THE DMR-11 TO HALT AND RESPOND WITH
;*  A PROCEDURE ERROR:
;*  SUBTEST 1  -  A SECOND BASE IN COMMAND
;*  SUBTEST 2  -  A CONTROL IN BEFORE A BASE IN
;*  SUBTEST 3  -  A BA/CC IN BEFORE A BASE IN
;*  SUBTEST 4  -  A BA/CC IN RCV WITH A BUFFER LENGTH OF 0
;*  SUBTEST 5  -  A BA/CC IN XMIT. WITH A BUFFER LENGTH OF 0
;*
;*****************************************************************************



;*****************************************************************************
;*              TEST 13 - DMR-11
;* FREE RUNNING FLAG MODE DATA TEST
;* TRANSMIT A MESSAGE AND VERIFY THE RECEIVED DATA IS CORRECT.
;* IN THIS TEST NO INTERRUPTS ARE USED AND THE LINE UNIT IS IN
;* INTERNAL (TTL) LOOPBACK.  THIS TEST IS THE FIRST TEST IN WHICH
;* THE DMR IS USED IN A DATA TRANSMISSION MODE.
;*****************************************************************************



;*****************************************************************************
;*              TEST  14 - DMR-11
;* IN THIS TEST - SEE IF WE HAVE MEMORY MANAGEMENT, IF SO SEE IF WE
;* HAVE THE MEMORY TO CHECK BITS 16 & 17 IN SEL6.  THIS WILL ALLOW
;* US TO TRANSFER DATA USING THOSE EXTENDED ADDRESSING BITS. AS IN
;* TEST 13 THE TEST IS NON-INTERRUPT AND INTERNAL (TTL) LOOPBACK IS
;* USED.
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*              TEST 15 - DMR-11
;* RESUME BASE IN - DMC MODE
;* **  WILL NOT RUN IF MODEM LOOPBACK IS SELECTED  **
;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
;* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
;* FOLLOWING MANNER:
;*       BASE IN
;*       CONTROL IN
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       1 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       1 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*
;*       ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
;*       THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
;*       THE RECEIVE/TRANSMIT TABLE.
;*
;*       THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
;*       SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
;*       SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
;*       ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
;*       HIERARCHY:
;*               A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
;*               B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
;*                  THAN 2K BYTES, USE THAT MEMORY
;*               C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
;*                  THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*                TEST 16 - DMR-11
;* RESUME BASE IN - DMR MODE
;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
;* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
;* FOLLOWING MANNER:
;*       BASE IN
;*       CONTROL IN
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       1 BA/CC IN RECEIVE
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*       1 BA/CC IN TRANSMIT
;*       HALT    -       BASE IN RESUME
;*
;*       ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
;*       THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
;*       THE RECEIVE/TRANSMIT TABLE.
;*
;*       THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
;*       SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
;*       SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
;*       ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
;*       HIERARCHY:
;*               A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
;*               B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
;*                  THAN 2K BYTES, USE THAT MEMORY
;*               C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
;*                  THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
;*
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*                TEST 17 - DMR-11
;* INTERRUPT DRIVEN EXERCISE
;* IN THIS TEST 64 BUFFERS WILL BE TRANSMITTED AND RECEIVED
;*
;* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
;* THE RECEIVE/TRANSMIT TABLE.
;*
;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
;*      64 RECEIVE AND 64 TRANSMIT BUFFERS.  THE ROUTINE WILL
;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
;*      HIERARCHY:
;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
;*                 THAN 2K BYTES, USE THAT MEMORY
;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
;*
;*****************************************************************************



;*****************************************************************************
;*                TEST  18 - DMR-11
;* LARGE MESSAGE
;* IN THIS MODE TRANSMIT AND RECEIVE 1 LARGE BUFFER
;*
;* THE BA/CC OUT RECEIVE AND TRANSMIT WILL BE ACCOUNTED FOR AND
;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
;* THE RECEIVE/TRANSMIT TABLE.
;*
;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
;*      ONE RECEIVE AND ONE TRANSMIT BUFFER.  THE ROUTINE WILL
;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
;*      HIERARCHY:
;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
;*                 THAN 2K BYTES, USE THAT MEMORY
;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
;*
;*****************************************************************************
```

```
;*****************************************************************************
;*              TEST 19 - DMR-11                                             SEQ 0022
;* MAINTENANCE MODE OPERATION
;*
;* THE BA/CC OUT RECEIVE AND TRANSMIT WILL BE ACCOUNTED FOR AND
;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
;* THE RECEIVE/TRANSMIT TABLE.
;*
;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
;*      ONE RECEIVE AND ONE TRANSMIT BUFFER.  THE ROUTINE WILL
;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
;*      HIERARCHY:
;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
;*                 THAN 2K BYTES, USE THAT MEMORY
;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
;*
;*****************************************************************************
```

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 "IRDY NOT SET" 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 :

```
  CZDMR DVC FTL ERR 00002 ON UNIT 00 TST 006 SUB 000 PC:  016210
  TIME OUT
  ERROR IN SUBROUTINE CALLED AT PC: 036174
  STATUS OF BUFFERS
  NUMBER OF BUFFERS: 7
  BUFFER SIZE: 2048
  IN  - RCV ASSIGNED:  7       XMIT ASSIGNED:  7
  OUT - RCV RETURNED:  0       XMIT RETURNED:  0
  DMR RUN ACKNOWLEDGMENT NOT RECEIVED
  (CHECK INTERFACE, BAUD AND TURNAROUND)
```

ALL THE MESSAGES IN THE DIAGNOSTIC USE BASIC MESSAGE CALLS. THEREFORE THE INHIBIT EXTENDED ERROR FLAG WILL HAVE NO EFFECT ON THE MESSAGE OUTPUT. THE INHIBIT BASIC MESSAGES WILL INHIBIT THE ERROR MESSAGES.

@

```
                                .TITLE CZDMIAO DMR-11 FUNCTIONAL TESTS
002000                                  .=2000



                                        .MCALL  SVC
002000                                  SVC                                     ; INITIALIZE SUPERVISOR MACROS

002000                          BGNMOD

000001                          $LSTIN=   1     ;   LIST INSTRUCTIONS
000001                          $LSTTAG=  1
000001                          SVCINS=   1     ;   LIST INSTRUCTIONS, SHIFTED RIGHT
000001                          SVCTST=   1     ;   LIST TEST TAGS, SHIFTED RIGHT
000001                          SVCSUB=   1     ;   LIST SUBTEST TAGS, SHIFTED RIGHT
000001                          SVCGBL=   1     ;   LIST GLOBAL TAGS, SHIFTED RIGHT
000001                          SVCTAG=   1     ;   LIST OTHER TAGS, SHIFTED RIGHT

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

002000                                    POINTER BGNSW,BGNDU,BGNSFT
```

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


002000                          HEADER CZDMI,A,0,600.,,0
(4) 002000                                                      L$NAME::
(4) 002000  103                                                         .ASCII /C/
(4) 002001  132                                                         .ASCII /Z/
(4) 002002  104                                                         .ASCII /D/
(4) 002003  115                                                         .ASCII /M/
(4) 002004  111                                                         .ASCII /I/
(6) 002005  000                                                         .BYTE   0
(6) 002006  000                                                         .BYTE   0
(5) 002007  000                                                         .BYTE   0
(5) 002010                                                      L$REV::
(4) 002010  101                                                         .ASCII  /A/
(5) 002011                                                      L$DEPO::
(4) 002011  060                                                         .ASCII  /0/
(5) 002012                                                      L$UNIT::
(4) 002012  000000                                                      .WORD   0
(5) 002014                                                      L$TIML::
(4) 002014  001130                                                      .WORD   600.
(5) 002016                                                      L$HPCP::
(4) 002016  036534                                                      .WORD   L$HARD
(5) 002020                                                      L$SPCP::
(4) 002020  037470                                                      .WORD   L$SOFT
(5) 002022                                                      L$HPTP::
(4) 002022  002174                                                      .WORD   L$HW
(5) 002024                                                      L$SPTP::
(4) 002024  002224                                                      .WORD   L$SW
(5) 002026                                                      L$LADP::
(4) 002026  037744                                                      .WORD   L$LAST
(5) 002030                                                      L$STA::
(4) 002030  000000                                                      .WORD   0
(5) 002032                                                      L$CO::
(4) 002032  000000                                                      .WORD   0
(5) 002034                                                      L$DTYP::
(4) 002034  000000                                                      .WORD   0
(5) 002036                                                      L$APT::
(4) 002036  000000                                                      .WORD   0
(5) 002040                                                      L$DTP::
(4) 002040  002124                                                      .WORD   L$DISPATCH
(5) 002042                                                      L$PRIO::
(4) 002042  000000                                                      .WORD   0
(5) 002044                                                      L$ENVI::
(4) 002044  000000                                                      .WORD   0
(5) 002046                                                      L$EXP1::
(4) 002046  000000                                                      .WORD   0
(5) 002050                                                      L$MREV::
(4) 002050  003                                                         .BYTE   C$REVISION
```

```
    (3)  002051     003
    (5)  002052
    (4)  002052  000000
    (5)  002054  000000
    (5)  002056
    (4)  002056  000000
    (5)  002060
    (4)  002060  010230
    (5)  002062
    (4)  002062  000000
    (5)  002064
    (4)  002064  000000
    (5)  002066
    (4)  002066  000000
    (5)  002070
    (4)  002070  000000
    (5)  002072
    (4)  002072  023522
    (5)  002074
    (4)  002074  000000
    (5)  002076
    (4)  002076  010236
    (5)  002100
    (4)  002100  104035
    (5)  002102
    (4)  002102  000000
    (5)  002104
    (4)  002104  020514
    (5)  002106
    (4)  002106  021770
    (5)  002110
    (4)  002110  021700
    (5)  002112
    (4)  002112  020506
    (5)  002114
    (4)  002114  000000
    (5)  002116
    (4)  002116  000000
    (5)  002120
    (4)  002120  000000
 2252
 2258
 2259
 2260
 2261
 2262                        .EVEN
 2263
 2264
 2265
 2266
 2267
 2268
```

```
                .BYTE   C$EDIT
L$EF::
                .WORD   0
                .WORD   0
L$SPC::
                .WORD   0
L$DEVP::
                .WORD   L$DVTYP
L$REPP::
                .WORD   0
L$EXP4::
                .WORD   0
L$EXP5::
                .WORD   0
L$AUT::
                .WORD   0
L$DUT::
                .WORD   L$DU
L$LUN::
                .WORD   0
L$DESP::
                .WORD   L$DESC
L$LOAD::
                EMT     E$LOAD
L$ETP::
                .WORD   0
L$ICP::
                .WORD   L$INIT
L$CCP::
                .WORD   L$CLEAN
L$ACP::
                .WORD   L$AUTO
L$PRT::
                .WORD   L$PROT
L$TEST::
                .WORD   0
L$DLY::
                .WORD   0
L$HIME::
                .WORD   0
```

```
2270                                .SBTTL  DISPATCH TABLE
2271
2272                                ;////////////////////////////////////////////////////////////////////////////////
2273                                ;/ THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
2274                                ;/ IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
2275                                ;////////////////////////////////////////////////////////////////////////////////
2276
2277  002122                                DISPATCH 19
 (4)  002122  000023                                                        .WORD   19
 (3)  002124                                                          L$DISPATCH::
 (6)  002124  023602                                                        .WORD   T1
 (6)  002126  024120                                                        .WORD   T2
 (6)  002130  025434                                                        .WORD   T3
 (6)  002132  025566                                                        .WORD   T4
 (6)  002134  026644                                                        .WORD   T5
 (6)  002136  030056                                                        .WORD   T6
 (6)  002140  030636                                                        .WORD   T7
 (6)  002142  031260                                                        .WORD   T8
 (6)  002144  031762                                                        .WORD   T9
 (6)  002146  032474                                                        .WORD   T10
 (6)  002150  032676                                                        .WORD   T11
 (6)  002152  033056                                                        .WORD   T12
 (6)  002154  033762                                                        .WORD   T13
 (6)  002156  034456                                                        .WORD   T14
 (6)  002160  036166                                                        .WORD   T15
 (6)  002162  036272                                                        .WORD   T16
 (6)  002164  036340                                                        .WORD   T17
 (6)  002166  036410                                                        .WORD   T18
 (6)  002170  036460                                                        .WORD   T19
2278
2285
2286
2287
2288
2289
```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE

                                ;////////////////////////////////////////////////////////////////////////////
                                ;/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                                ;/ THE TEST-DEVICE PARAMETERS.  **NOTE - MANY OF THE P-TABLE VALUES LISTED
                                ;/ BELOW ARE NOT USED IN THIS DIAGNOSTIC BUT ARE INCLUDED TO AGREE WITH
                                ;/ M8207 & M8203 DIAGNOSTIC P-TABLES.
                                ;////////////////////////////////////////////////////////////////////////////

002172                                  BGNHW   DFPTBL
(3) 002172  000013                                                              .WORD   L10000-L$HW/2
(3) 002174                                                                      L$HW::
(3) 002174                                                                      DFPTBL::

002174  000000                  .WORD       0      ;**NOT USED - MICROPROCESSOR TYPE
002176  160070                  .WORD  160070      ;DMR11 CSR UNIBUS ADDRESS DEFAULT
002200  000300                  .WORD     300      ;DMR11 INTERRUPT VECTOR DEFAULT
002202  000000                  .WORD       0      ;**NOT USED - PRIORITY LEVEL
002204  000000                  .WORD       0      ;**NOT USED - LINE UNIT
002206  000000                  .WORD     000      ;**NOT USED - SWITCH PACK #1 (REG 11)
002210  000000                  .WORD     000      ;**NOT USED - SWITCH PACK #2 (REG 15)
002212  000000                  .WORD     000      ;**NOT USED - SWITCH PACK #3 (REG 16)
002214  000005                  .WORD       5      ;CABLE TURNAROUND (DEFAULT = CABLE(5))
002216  000000                  .WORD       0      ;**NOT USED - BAUD RATE
002220  000000                  .WORD       0      ;**NOT USED - RUN SWITCH

002222                                  ENDHW
(3) 002222                                                                      L10000:


                                .SBTTL  DEFAULT SOFTWARE P-TABLE

                                ;////////////////////////////////////////////////////////////////////////////
                                ;/ THE SOFTWARE P-TABLE CONTAINS THE VALUE OF THE PROGRAM
                                ;/ PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;////////////////////////////////////////////////////////////////////////////

002222                                  BGNSW   SFPTBL
(3) 002222  000001                                                              .WORD   L10001-L$SW/2
(3) 002224                                                                      L$SW::
(3) 002224                                                                      SFPTBL::

002224  000005                  SPEED:  .WORD   5       ;PROCESSOR SPEED VARIABLE USED
                                                        ;TO ALTER THE WAIT VARIABLES.
002226                                  ENDSW
(3) 002226                                                                      L10001:
```

```
                                .SBTTL  GLOBAL EQUATES SECTION

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

002226                                  EQUALS
(1)                             ;
(1)                             ; BIT DIFINITIONS
(1)                             ;
(1)         100000              BIT15== 100000
(1)         040000              BIT14== 40000
(1)         020000              BIT13== 20000
(1)         010000              BIT12== 10000
(1)         004000              BIT11== 4000
(1)         002000              BIT10== 2000
(1)         001000              BIT09== 1000
(1)         000400              BIT08== 400
(1)         000200              BIT07== 200
(1)         000100              BIT06== 100
(1)         000040              BIT05== 40
(1)         000020              BIT04== 20
(1)         000010              BIT03== 10
(1)         000004              BIT02== 4
(1)         000002              BIT01== 2
(1)         000001              BIT00== 1
(1)                             ;
(1)         001000              BIT9==  BIT09
(1)         000400              BIT8==  BIT08
(1)         000200              BIT7==  BIT07
(1)         000100              BIT6==  BIT06
(1)         000040              BIT5==  BIT05
(1)         000020              BIT4==  BIT04
(1)         000010              BIT3==  BIT03
(1)         000004              BIT2==  BIT02
(1)         000002              BIT1==  BIT01
(1)         000001              BIT0==  BIT00
(1)                             ;
(1)                             ; EVENT FLAG DEFINITIONS
(1)                             ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
(1)                             ;
(1)         000040              EF.START==      32.                     ; START COMMAND WAS ISSUED
(1)         000037              EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
(1)         000036              EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
(1)         000035              EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
(1)         000034              EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
(1)                             ;
(1)                             ;
(1)                             ; PRIORITY LEVEL DEFINITIONS
(1)                             ;
(1)         000340              PRI07== 340
(1)         000300              PRI06== 300
(1)         000240              PRI05== 240
(1)         000200              PRI04== 200
(1)         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                  HOE==   100000
  2344                                  ;;*****************************************************************************
  2345
  2346                                  ;;*****************************************************************************
  2347                                  ;SWITCH REGISTER OPTIONS
  2348
  2349          100000                  SW15=   100000
  2350          040000                  SW14=   40000
  2351          020000                  SW13=   20000
  2352          010000                  SW12=   10000
  2353          004000                  SW11=   4000
  2354          002000                  SW10=   2000
  2355          001000                  SW09=   1000
  2356          000400                  SW08=   400
  2357          000200                  SW07=   200
  2358          000100                  SW06=   100
  2359          000040                  SW05=   40
  2360          000020                  SW04=   20
  2361          000010                  SW03=   10
  2362          000004                  SW02=   4
  2363          000002                  SW01=   2
  2364          000001                  SW00=   1
  2365
  2366                                  ;;*****************************************************************************
  2367                                  ;;CSR AND STAUS WORD DEFINITIONS
  2368                                  ;;SEL0 (CSR) - BSEL0/BSEL1
  2369          100000                  RUN=    BIT15           ;SET IF RUNNING
  2370          040000                  MCLR=   BIT14           ;MASTER CLEAR OF PROCESSOR AND LINE UNIT
  2371          020000                  MDIAG=  BIT13           ;CSR MAINTENANCE - ENABLE MICRODIAGNOSTICS
  2372          010000                  STLU=   BIT12           ;CSR MAINTENANCE - STEP LINE UNIT
  2373          004000                  LPLU=   BIT11           ;CSR MAINTENANCE - LINE UNIT LOOP
  2374          002000                  ROMO=   BIT10           ;CSR MAINTENANCE
  2375          001000                  ROMI=   BIT9            ;CSR MAINTENANCE
  2376          000400                  STUP=   BIT8            ;CSR MAINTENANCE - USED WITH LOOP LU
  2377                                                          ;WHEN ASSERTED, XMITTER SHIFTS; CLEAR, REC. SHIFTS
  2378          000200                  RDI=    BIT7            ;CSR - DMR11 READY RESPONSE
  2379          000100                  IESET=  BIT6            ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS
```

```
                                                        ;CPU WHEN RDI SET IN RESPONSE TO RQI BEING SET.
        000040                  RQI=    BIT5            ;CSR - REQUEST IN
        000020                  IECLR=  BIT4            ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS
                                                        ;CPU WHEN RDI CLEARS IN RESPONSE TO RQI BEING CLEAR.
                                                        ;(DMR RUN MODE ONLY)
        000004                  RCV=    BIT2            ;CSR -  IF 0, TRANSMIT   &   IF 1, RECEIVE

                                ;;SEL2 - BSEL2/BSEL3
        000200                  RDO=    BIT7            ;SEL2 - DMR11 SETS TO INDICATE DATA READY FOR OUTPUT
        000100                  IEO=    BIT6            ;SEL2 - SET TO ENABLE DMR11 TO INTERRUPT WHEN RDO

                                ;;SEL6 - BSEL6/BSEL7
        020000                  BASEUP= BIT13           ;SEL6 - CONTROL OUT - RESPONSE TO DMR MODE BASE
                                                        ;       TABLE UPDATE COMMAND.
        010000                  RES=    BIT12           ;SEL6 - BASE IN -- WHEN SET CAUSES
                                                        ;       RESUMPTION OF OPERATION
        010000                  CTS=    BIT12           ;SEL6 - CONTROL OUT - CTS FAILED
        004000                  SECN=   BIT11           ;SEL6 - CONTROL IN -- START TIME (3 SEC IF SET
                                                        ;       1 SEC IF CLEAR)
        002000                  HDX=    BIT10           ;SEL6 - HALF-DUPLEX  &  CLEAR FOR FULL-DUPLEX
        002000                  CD=     BIT10           ;SEL6 - CONTROL OUT - CD GLITCHED
        001000                  HALTC=  BIT9            ;SEL6 - EXTENDED CONTROL OUT - HALT COMPLETED
        000400                  MAINT=  BIT8            ;SEL6 - DDCMP MAINTENANCE DURING CONTROL IN
        000522                  DMR=    BIT8!122        ;SEL6 - BASE IN -- SET FOR DMR11 MODE
                                                        ;       122 IS THE DMR PASSWORD FOR BSEL6 AND
                                                        ;       BIT8 SETS THE DMR MODE BIT IN BSEL7
        000400                  NXM=    BIT8            ;SEL6 - CONTROL OUT - NON EXISTENT MEMORY
        000200                  STREC=  BIT7            ;SEL6 - CONTROL OUT - START RECEIVED
        000100                  DISCON= BIT6            ;SEL6 - CONTROL OUT - DISCONNECT
        000100                  DTR=    BIT6            ;SEL6 - MODEM WRITE - DATA TERMINAL READY
        000040                  DMRRUN= BIT5            ;SEL6 - CONTROL OUT - DMR RUN MODE
        000020                  TOLONG= BIT4            ;SEL6 - CONTROL OUT - MESSAGE TOO LONG
        000010                  MAINT1= BIT3            ;SEL6 - MODEM WRITE - LOCAL MODEM LOOPBACK
        000010                  MNTREC= BIT3            ;SEL6 - CONTROL OUT - MAINTENANCE MSG. RECEIVED
        000004                  NOBFR=  BIT2            ;SEL6 - CONTROL OUT - NO BUFFER
        000004                  MAINT2= BIT2            ;SEL6 - MODEM WRITE - REMOTE MODEM LOOPBACK
        000002                  TOUT=   BIT1            ;SEL6 - CONTROL OUT - TIME OUT
        000001                  NAKS=   BIT0            ;SEL6 - CONTROL OUT - NAKS THRESHOLD EXCEEDED


                                ;;*********************************************************************
                                ;;DDCMP COMMANDS - BITS 0 & 1 IN SEL0 AND SEL2

                                ;INPUT (SEL0)
        000000                  BACCT=  0               ;BUF ADDRESS AND CHARACTER COUNT TRANSMIT
        000001                  CNTRL=  1               ;CONTROL COMMAND (IN OR OUT)
        000002                  HLT=    2               ;HALT COMMAND
        000003                  BASEI=  3               ;BASE IN COMMAND
        000004                  BACCR=  4               ;BUF ADDRESS AND CHARACTER COUNT RECEIVE
        000005                  WMODEM= 5               ;WRITE MODEM STATUS REGISTER
        000006                  EXERR=  6               ;ENABLE EXTENDED ERROR NOTIFICATION
        000007                  DXERR=  7               ;DISABLE EXTENDED ERROR NOTIFICATION
        000010                  DDMC=   10              ;DESELECT DMC LINE MODE
        000011                  UPDATE= 11              ;REQUEST BASE TABLE UPDATE
        000012                  TIMER=  12              ;SET REP/SELECT TIMER VALUE
        000013                  THRESH= 13              ;SET THE FOLLOWING THRESHOLDS:
```

```
                                                    ;NAKS RECVD
                                                    ;NAKS SENT
                                                    ;REP/SEL
                                                    ;NO BUFFER
000014                      RRAM=   14              ;READ M8207 RAM (0-377)
000015                      INTER=  15              ;WRITE INTERFACE IN AX3-15
000017                      RMODEM= 17              ;READ MODEM STATUS (=NOP)

                            ;OUTPUT (SEL2)      NOTE: CNTRL IS USED FOR SEL2
000007                      CMD=    7               ; ** MASK USED TO CLEAR COMMAND BITS 0-2 **

                            ;;**************************************************************************
                            ;;BASE TABLE OFFSETS
                                                    ;NOTE: THE OFFSETS FOR BASE+3.-BASE+10 WERE
                                                    ;INTENTIONALLY NOT LABELLED, BECAUSE THOSE LOCATIONS
                                                    ;MUST NOT BE CHANGED IN ORDER TO BE DMC COMPATIBLE.
                                                    ;THE LABELS BELOW CORRESPOND WITH THOSE USED IN THE
                                                    ;DMR MICROCODE.
000042                      R-      42              ;#R - MESSAGE RECEIVED
000043                      N=      43              ;#N - MESSAGE TRANSMITTED
000044                      A=      44              ;#A - MESSAGE ACKNOWLEDGED
000045                      T=      45              ;#T - NEXT MESSAGE TO BE TRANSMITTED
000046                      X=      46              ;#X - LAST COMPLETED TRANSMISSION
000055                      PRETIM= 55              ;PROGRAMMABLE REP/SEL TIMER VALUE.
000060                      TH1L=   60              ;THRESHOLD LEVEL - NAKS RECEIVED .
000062                      TH2L=   62              ;THRESHOLD LEVEL - NAKS SENT.
000064                      TH3L=   64              ;THRESHOLD LEVEL - REP SENT.
000066                      TH4L=   66              ;THRESHOLD LEVEL - NO BUFFER AVAILABLE.
000072                      ISP7=   72              ;IMAGE OF SCRATCH PAD 7
000076                      ISP13=  76              ;IMAGE OF SCRATCH PAD 13

                            ;;**************************************************************************
                            ;;INSTRUCTION DEFINITIONS

000207                      RETURN=207              ;RETURN FROM SUB.     [=  JSR PC]


                            ;;**************************************************************************
                            ; MISC. EQUATES
000015                      CR=     15              ;ASCII CARRIAGE RETURN
000012                      LF=     12              ;ASCII LINE FEED
```

```
2480                                    .SBTTL  GLOBAL DATA SECTION
2481
2482                                    ;////////////////////////////////////////////////////////////////////////////
2483                                    ;/      THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
2484                                    ;/      IN MORE THAN ONE TEST.
2485                                    ;////////////////////////////////////////////////////////////////////////////
2486
2487
2488
2489                                    ;;**************************************************************************
2490                                    ;DMR11 VECTOR AND REGISTER INDIRECT POINTERS
2491
2492  002226  000000                    DMRVEC: .WORD   0               ;DMR11 RECEIVER INTERRUPT VECTOR
2493  002230  000000                    DMTVEC: .WORD   0               ;DMR11 TRANSMITTER INT. VECTOR
2494  002232  000000                    CSR:    .WORD   0               ;POINTER TO DMR11 CONTROL STATUS REGISTER
2495  002234  000000                    SEL2:   .WORD   0               ;POINTER TO DMR11 CONTROL OUT REGISTER (SEL 2)
2496  002236  000000                    SEL4:   .WORD   0               ;POINTER TO DMR11 PORT REGISTER (SEL 4)
2497  002240  000000                    SEL6:   .WORD   0               ;POINTER TO DMR11 PORT REGISTER (SEL 6)
2498          002232                    SEL0=   CSR                     ;CSR IS SEL0
2499          002232                    BSEL0=  CSR                     ;LOW BYTE OF CSR
2500  002242  000000                    BSEL1:  .WORD   0               ;POINTER TO DMR11 CSR HIGH BYTE
2501          002234                    BSEL2=  SEL2                    ;LOW BYTE OF SEL2
2502  002244  000000                    BSEL3:  .WORD   0               ;POINTER TO SEL2 HIGH BYTE
2503          002236                    BSEL4=  SEL4                    ;LOW BYTE OF SEL4
2504  002246  000000                    BSEL5:  .WORD   0               ;POINTER TO SEL4 HIGH BYTE
2505          002240                    BSEL6=  SEL6                    ;LOW BYTE OF SEL6
2506  002250  000000                    BSEL7:  .WORD   0               ;POINTER TO SEL6 HIGH BYTE
2507
2508                                    ;;**************************************************************************
2509                                    ;;OTHER HARDWARE PARAMETERS
2510
2511  002252  000000                    WTYPE:  .WORD   0               ;MICROPROCESSOR TYPE
2512  002254  000000                    DMTURN: .WORD   0               ;TURN AROUND TYPE (0-7)
2513  002256  000000                    MICRO:  .WORD   0               ;MICRODIAGNOSTICS (IF 1(YES) - ENABLED)
2514
2515                                    ;;**************************************************************************
2516                                    ;PROGRAM CONTROL PARAMETERS
2517
2518
2519
2520  002260  000000                    DMRFLG: .WORD   0               ;FLAG SET WHEN DMR MODE IS REQUESTED IN
2521                                                                    ;THE BASE IN COMMAND.  USED TO FLAG THAT
2522                                                                    ;A DMR MODE ACKNOWLEDGE IS EXPECTED.
2523  002262  000000                    INFACE: .WORD   0               ;FLAG TO ALLOW CHANGE OF INTERFACE TYPE
2524                                                                    ;BY WRITING AX3-15.  FLAG SET/CLEARED IN INIT.
2525  002264  000000                    FRSTIM: .WORD   0               ;FLAG=0 IF PROGRAM JUST LOADED
2526  002266  000000                    FRSPAS: .WORD   0               ;FLAG=0 IF FIRST PASS AFTER LOAD
2527  002270  000000                    STARES: .WORD   0               ;FLAG=0 IF 1ST TIME THRU AFTER STA OR RES
2528
2529                                                                    ;FOLLOWING PARAMETERS ARE USED IN THE
2530                                                                    ;INTERRUPT TESTS (TESTS 15-19):
2531  002272  000000                    START:  .WORD   0               ;FLAG SET WHEN A CONTROL IN HAS BEEN ISSUED.
2532  002274  000000                    RESUME: .WORD   0               ;FLAG SET WHEN A BASE IN WITH RESUME DESIRED.
2533  002276  000000                    DMCMDE: .WORD   0               ;FLAG SET WHEN A BASE IN WITH DMC MODE DESIRED
2534  002300  000000                    MNTMDE: .WORD   0               ;FLAG SET WHEN MAINTENANCE MODE IS DESIRED.
2535  002302  000000                    MMANAG: .WORD   0               ;FLAG RETURNED IN THE SUBROUTINE $BUFFS
```

```
2536                                                    ;MMANAG=1, MEMORY MANAGED BUFFERS USED
2537
2538  002304  000000          AX3:    .WORD   0         ;BIT PATTERN TO WRITE INTO AX3-15, WHEN
2539                                                    ;IT IS REQUESTED TO ALLOW INTERFACE
2540                                                    ;SELECTION. (TEST CONFIGURATION 1-4)
2541                                                    ;BIT0 = TEST BIT (MUST BE SET TO ALLOW SELECT)
2542                                                    ;BIT3 = INTEGRAL MODEM
2543                                                    ;BIT4 = V.35
2544                                                    ;BIT6 = EIA
2545                                                    ;BIT7 = RS422
2546  002306  000000          WMAINT: .WORD   0         ;FLAG SET WHEN IT IS NECESSARY TO WRITE
2547                                                    ;MODEM MAINTENANCE BITS (MAINTENANCE 1 & 2)
2548                                                    ;THIS FLAG IS SET OR CLEARED IN THE INIT CODE.
2549
2550
2551                                                    ;;**********************************************************************
2552                                                    ;PROGRAM VARIABLES
2553
2554                                                    ;WORD1-WORD3 VALUES DETERMINED IN INIT
                                                        ;CODE DEPENDING ON THE BAUD RATE.
2555  002310  000000          WAIT1:  .WORD   0         ;VALUE FOR TIMEOUT COUNTER
2556                                                    ;USED IN $WAIT SUBROUTINE
2557  002312  000000          WAIT2:  .WORD   0         ;VALUE FOR TIMEOUT COUNTER USED IN $MSCLR
2558                                                    ;AND $CLRQI SUBROUTINES.
2559  002314  000000          WAIT3:  .WORD   0         ;VALUE FOR TIMEOUT COUNTER USED IN $INOUT.
2560  002316  000000          WAIT4:  .WORD   0         ;WORD USED AS OUTER LOOP COUNTER IN $INOUT.
2561  002320  000000          BUFSIZ: .WORD   0         ;CALCULATED BUFFER SIZE IN BYTES.
2562  002322  000000          BUFNUM: .WORD   0         ;# OF RECEIVE & TRANSMIT BUFFERS.  THIS
2563                                                    ;VARIABLE IS USED IN THE SUBROUTINE $BUFFS
2564
2565  002324  000000          INRCV:  .WORD   0         ;COUNTER FOR # OF BA/CC IN RECEIVES.
2566  002326  000000          INXMIT: .WORD   0         ;COUNTER FOR # OF BA/CC IN TRANSMITS.
2567  002330  000000          OUTRCV: .WORD   0         ;COUNTER FOR # OF BA/CC OUT RECEIVES.
2568  002332  000000          OUTXMT: .WORD   0         ;COUNTER FOR # OF BA/CC OUT TRANSMITS.
2569
2570                                                    ;;**********************************************************************
2571                                                    ;* MISCELLANEOUS STORAGE
2572  002334  000000          TEMP:   .WORD   0         ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
2573  002336  000000          SAVE:   .WORD   0         ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
2574  002340  000000          FLAG:   .WORD   0         ;SCRATCH WORD USED FOR MISC. FLAG IN SUB.
2575  002342  000000          SFLAG:  .WORD   0         ;FLAG USED IN TEST 15 FOR LOOP CONTROL.
2576  002344  000000          SKIP:   .WORD   0         ;FLAG USED IN TEST 7 TO MARK WHETHER TO SKIP
2577                                                    ;A PORTION OF THE TEST.
2578
2579  002346  000000          INFLAG: .WORD   0         ;FLAG USED IN INISR TO FLAG WHEN ALL THE
2580                                                    ;BA/CC INS HAVE BEEN DONE.
2581
2582  002350  000000          OUTFLG: .WORD   0         ;FLAG USED IN OUTISR TO FLAG WHEN ALL THE
2583                                                    ;BA/CC OUTS HAVE BEEN DONE.
2584  002352  000000          RESFLG: .WORD   0         ;FLAG USED IN IN ISR TO FLAG THAT THE RESUME
2585                                                    ;COMMAND HAS JUST BEEN ISSUED.
2586  002354  000000          ERRFLG: .WORD   0         ;FLAG USED IN THE WAIT SUBROUTINES ($WAIT
2587                                                    ; & $CLRQI) TO RETURN ERROR CONDITON (SEC)
2588
2589
2590  002356  000000          LAST:   .WORD   0         ;WORD USED TO STORE LAST COMMAND PROCESSED IN
2591                                                    ;THE INPUT INTERRUPT ROUTINE.
```

```
 2592  002360  000000                  ERROR:  .WORD   0               ;ERROR STORAGE
 2593  002362  000000                  LOGDEV: .WORD   0               ;LOGICAL DEVICE NUMBER
 2594  002364  000000                  PSTACK: .WORD   0               ;CONTAINS BASE LEVEL PROGRAM SP
 2595  002366  000000                  SUBRPC: .WORD   0               ;PC OF SUBR CALL FOR ERROR REPORTS
 2596  002370  000000                  NESTPC: .WORD   0               ;FLAG TO NOTIFY WHEN A SUBR IS NESTED
 2597                                                                  ;IN ANOTHER SUBROUTINE (WHEN SET)
 2598  002372  000000                  CLRNO:  .WORD   0               ;THIS WORD IS INCREMENTED DURING EACH MASTER
 2599                                                                  ;CLEAR.  THIS WILL ALLOW EVERY OTHER MASTER
 2600                                                                  ;CLEAR TO RUN THE MICRO TESTS.
 2601
 2602                                                                  ;ROM CHECK VARAIBLES
 2603  002374  000000                  LOCRC:  .WORD   0               ;CRC STORAGE FOR LOW BYTE CHIP
 2604  002376  000000                  HICRC:  .WORD   0               ;CRC STORAGE FOR HIGH BYTE CHIP
 2605  002400  000000                  LOWORD: .WORD   0               ;TEMP. WORD CONTAINING 2 CONSECUTIVE LOW BYTES
 2606  002402  000000                  HIWORD: .WORD   0               ;TEMP. WORD CONTAINING 2 CONSECUTIVE HI BYTES
 2607  002404  000000                  ROMADR: .WORD   0               ;POINTER TO ROM ADDRESS.
 2608  002406  000000                  CHIPNO: .WORD   0               ;CHIP NUMBER BEING CHECKED.
 2609                                          .EVEN
 2610
 2611                                  ;;*************************************************************************
 2612                                  ;;*************************************************************************
 2613                                  ;;BUFFER AREA
 2614                                          ;               ** CCITT PSUEDO-RANDOM TEST PATTERN **
 2615                                          ; THE FOLLOWING 32 WORDS TRANSLATE INTO A 512 BIT PATTERN
 2616                                          ; THAT WAS GENERATED ACCORDING TO CCITT RECOMMENDATION V.52.  THIS
 2617                                          ; PATTERN WAS GENERATED BY A 9 BIT SHIFT REGISTER (INITIALIZED
 2618                                          ; AS 1S) WHOSE 5TH AND 9TH BITS ARE XORED.  THIS XOR RESULT IS SHIFTED
 2619                                          ; INTO THE 1ST BIT OF THE REGISTER AS THE REGISTER IS SHIFTED RIGHT.
 2620                                          ; THE 9TH BIT (OR BIT SHIFTED OUT) IS SHIFTED INTO THE BIT PATTERN.
 2621                                          ; NOTE: CCITT RECOMMENDED 511 BITS, I'VE EXTENDED THIS BY 1 BIT TO END
 2622                                          ; ON A WORD BOUNDARY.
 2623  002410                          $CCITT:
 2624  002410  177603  157427  031011          .WORD   177603,157427,031011
 2625  002416  047321  163715  105221          .WORD   047321,163715,105221
 2626  002424  143325  142304  040041          .WORD   143325,142304,040041
 2627  002432  014116  052606  172334          .WORD   014116,052606,172334
 2628  002440  105025  123754  111337          .WORD   105025,123754,111337
 2629  002446  111523  030030  145064          .WORD   111523,030030,145064
 2630  002454  137642  143531  063617          .WORD   137642,143531,063617
 2631  002462  135015  066730  026575          .WORD   135015,066730,026575
 2632  002470  052012  053627  070071          .WORD   052012,053627,070071
 2633  002476  151172  165044  031605          .WORD   151172,165044,031605
 2634  002504  166632  016741                  .WORD   166632,016741
 2635
 2636                                  ;;*************************************************************************
 2637                                  ;; TRANSMIT BUFFER (SMALL)
 2638
 2639  002510  000000                  TFLAG:  .WORD   0               ;FLAG FOR STATUS OF TRANSMIT BUFFER
 2640          000044                  TCOUNT= 36.                     ;CHARACTER COUNT OF TBUF
 2641  002512  041101  042103  043105  TBUF:   .ASCIZ  /ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789/
       002520  044107  045111  046113
       002526  047115  050117  051121
       002534  052123  053125  054127
       002542  055131  030460  031462
       002550  032464  033466  034470
       002556     000
```

```
        002560                  .EVEN


                        ;;********************************************************************
                        ;; RECEIVE BUFFER (SMALL)

002560  000000          RFLAG:  .WORD   0               ;FLAG FOR STATUS OF RECEIVE BUFFER
        000044          RCOUNT= 36.                     ;CHARACTER COUNT OF RBUF
002562  000046          RBUF:   .BLKB   38.             ;36. BYTE BUFFER + 2 BYTES USED
                                                        ;TO MARK THE END OF THE RECEIVE BUFFER
                                .EVEN

                        ;;********************************************************************
                        ;; BASE TABLE

002630  000400          BASE:   .BLKB   256.            ;MICROPROCESSOR MEMORY ALLOCATION

                        ;;********************************************************************
                        ;; TRANSMIT AND RECEIVE BUFFER POINTERS

003230  000200          XMTBUF: .BLKW   128.            ;POINTERS TO TRANSMIT BUFFERS (UP TO 64)
                                                        ;1 WORD FOR ADDRESS AND 1 WORD FOR CHAR. COUNT
003630  000200          RCVBUF: .BLKW   128.            ;POINTERS TO RECEIVE BUFFERS (UP TO 64).

                        ;;********************************************************************
                        ;; BUFFER AREA (LARGE)

004230  004000          BIGBUF: .BLKB   4000            ;MAX BUFFER (2K BYTES)
```

```
 2675                                           .SBTTL  GLOBAL TEXT SECTION
 2676
 2677                                           ;%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
 2678                                           ;%      THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
 2679                                           ;%      MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
 2680                                           ;%      MORE THAN ONE TEST.
 2681                                           ;%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
 2682
 2683
 2684                                           ;;*****************************************************************************
 2685                                           ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
 2686                                           ;;*****************************************************************************
 2687   010230                                          DEVTYP  <DMR11>
  (4)   010230                                                                          L$DVTYP::
  (3)   010230  046504  030522  000061                                                          .ASCIZ  /DMR11/
  (2)                                                                                           .EVEN
 2688
 2689                                           ;;*****************************************************************************
 2690                                           ;* TITLE OF PROGRAM
 2691                                           ;;*****************************************************************************
 2692   010236                                          DESCRIPT   <DMR-11 FUNCTIONAL TESTS>
  (4)   010236                                                                          L$DESC::
  (3)   C10236  046504  026522  030461                                                          .ASCIZ  /DMR-11 FUNCTION
  (3)   010244  043040  047125  052103
  (3)   010252  047511  040516  020114
  (3)   010260  042524  052123  000123
  (2)                                                                                           .EVEN
 2693
 2694
 2695
 2696                                           ;
 2697                                           ; FORMAT STATEMENTS USED IN PRINT CALLS
 2698                                           ;
 2699
 2706
 2707
 2708
 2709
 2710
```

```
                        .SBTTL  GLOBAL SUBROUTINES

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


                        ;;**************************************************************************
                        ;
                        ;       MACROS - THERE ARE 2 BASIC TYPES OF MACROS USED
                        ;                       1. NORMAL MACROS -
                        ;                       2. DMR11 FUNCTIONAL MACROS - THESE MACROS MAY
                        ;                          BE NOTHING MORE THAN A CALL TO A SUBROUTINE,
                        ;                          BUT THEY ARE DISTINCT DMR FUNCTIONS WHICH CAN
                        ;                          DISTINGUISHED BY THE IN-LINE MACRO NAME.
                        ;
                        ;;**************************************************************************

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

                        ;;**************************************************************************
                        ; WAIT $FLAG MACRO - THIS MACRO INTERPUTS THE $FLAG AS RDI, RQI OR RDO.
                        ;                    IF RDI OR RDO, THE SUBROUTINE CALLED WILL WAIT UNTIL
                        ;                    THE RESPECTIVE BIT IS SET.  IF RQI, THE SUBROUTINE
                        ;                    CALLED WILL CLEAR RQI AND WAIT UNTIL RDI IS CLEARED.
                        ;;**************************************************************************

                                .MACRO  WAIT    $FLAG
                                .NLIST
                                .LIST ME
                                .LIST
                                                        ;**** MACRO EXPANSION ****
                                .IF     B, $FLAG
                                .ERROR  FLAG    ;## MISSING FLAG FOR WAIT - EXPANSION ABORT ##
                                .MEXIT
                                .ENDC
                                .IF     IDN $FLAG,RQI
                                JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
                                .ENDC
                                .IF     IDN $FLAG,RDI
                                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
                                        .WORD   0       ;FLAG THAT WE'RE WAITING FOR RDI
                                .ENDC
                                .IF     IDN $FLAG,RDO
                                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
```

```
2768                                            .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
2769                                    .ENDC
2770                                                            ;****                   ****
2771                                    .NLIST ME
2772                                    .ENDM
2773
2774
2775                                ;;*************************************************************************
2776                                ; CLEAR MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2777                                ;               $MSCLR SUBROUTINE
2778                                ;;*************************************************************************
2779                                    .MACRO  CLEAR
2780                                    .NLIST
2781                                    .LIST ME
2782                                    .LIST
2783                                                            ;**** MACRO EXPANSION ****
2784                                    JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
2785                                                            ;****                   ****
2786                                    .NLIST ME
2787                                    .ENDM
2788
```

```
;;*******************************************************************
; BASEIN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;               $BASEIN SUBROUTINE (WITH DEFAULT ARGUMENTS
;               IF ARGUMENTS NOT GIVEN)
;;*******************************************************************
        .MACRO  BASEIN  $A,$B,$C
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        .IF     B       $A
        JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
                .WORD   LPLU    ;SET LINE UNIT LOOP
                .WORD   BASE    ;BASE TABLE ADDRESS
                .WORD   DMR     ;DMR-11 MODE
        .IFF
        JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
                .WORD   $A      ;MAINTENANCE MODE BITS TO SET IN BSEL1
                .WORD   $B      ;BASE TABLE ADDRESS
                .WORD   $C      ;MODE
        .ENDC
                                ;****                    ****
        .NLIST ME
        .ENDM




;;*******************************************************************
; CNTRIN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;               $CNTIN SUBROUTINE (WITH DEFAULT ARGUMENTS
;               IF ARGUMENTS NOT GIVEN)
;;*******************************************************************
        .MACRO  CNTRIN  $A
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        .IF     B       $A
        JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
                .WORD   0       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
        .IFF
        JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE
                .WORD   $A      ;SEL6 - (DUPLEX, MODE)
        .ENDC
                                ;****                    ****
        .NLIST ME
        .ENDM
```

```
;;*********************************************************************
; DMRIN MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;                $DMRIN SUBROUTINE
;;*********************************************************************
        .MACRO  DMRIN   $A,$B,$C
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        .IF     B       $A
        .ERROR  DMRIN; ## MISSING ARGUMENTS-EXPANSION ABORT ##
        .MEXIT
        .ENDC
        JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
                .WORD   $A      ;INPUT COMMAND
        .IF     B       $B
                .WORD   0       ;NO SEL4
        .IFF
                .WORD   $B      ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
        .ENDC
        .IF     B       $C
                .WORD   0       ;NO SEL6
        .IFF
                .WORD   $C      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
        .ENDC
                                ;****                    ****
        .NLIST ME
        .ENDM




;;*********************************************************************
; SHUTDN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;                $HALT SUBROUTINE
;;*********************************************************************
        .MACRO  SHUTDN
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                ;****                    ****
        .NLIST ME
        .ENDM
```

```
;;*******************************************************************************
; BACCIR MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;                 $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
;                 IF ARGUMENTS NOT GIVEN)
;;*******************************************************************************
        .MACRO  BACCIR  $A,$B
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        .IF     B       $A
        JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
                .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
                .WORD   RBUF    ;RECEIVE BUFFER
                .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
        .IFF
        JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
                .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
                .WORD   $A      ;BUFFER ADDRESS BITS 0-15
                .WORD   $B      ;BA BITS 16/17 AND CHAR. COUNT
        .ENDC
                                ;****                    ****
        .NLIST ME
        .ENDM


;;*******************************************************************************
; BACCIT MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
;                 $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
;                 IF ARGUMENTS NOT GIVEN)
;;*******************************************************************************
        .MACRO  BACCIT  $A,$B
        .NLIST
        .LIST ME
        .LIST
                                ;**** MACRO EXPANSION ****
        .IF     B       $A
        JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
                .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
                .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
                .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
        .IFF
        JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
                .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
                .WORD   $A      ;BUFFER ADDRESS BITS 0-15
                .WORD   $B      ;BA BITS 16 & 17 AND CHAR. COUNT
        .ENDC
                                ;****                    ****
        .NLIST ME
        .ENDM
```

```
                                    ;;*******************************************************************
                                    ;;*******************************************************************
                                    ;
                                    ;                  SUBROUTINE $WAIT
                                    ;
                                    ;          FUNCTION -  TO WAIT FOR RDI TO BE SET IN SEL0
                                    ;                      OR RDO TO BE SET IN SEL2
                                    ;
                                    ;     CALLING FORMAT:        JSR     PC,     $WAIT
                                    ;                            .WORD   FLAG
                                    ;                            (MACRO CALL -- WAIT RDI)
                                    ;
                                    ;     NESTING LEVEL    - MAY BE CALLED FROM ANOTHER SUBROUTINE
                                    ;
                                    ;     ENTRY CONDITIONS - FLAG  = 1   -   WAIT FOR RDO
                                    ;                              = 0   -   WAIT FOR RDI
                                    ;                        WAIT1 = DELAY COUNTER (DETERMINED IN INIT.)
                                    ;                        NESTPC= 1   -   ROUTINE NESTED WITHIN ANOTHER
                                    ;                                        SUBROUTINE.
                                    ;                              = 0   -   ROUTINE NOT NESTED.
                                    ;
                                    ;     EXIT CONDITIONS  - EITHER RDI OR RDO BIT SET AS EXPECTED
                                    ;                            OR (ERROR CONDITONS):
                                    ;                            1. RDI OR RDO SET, BUT NOT THE EXPECTED ONE
                                    ;                               THE USER WILL BE INFORMED.  HOWEVER,
                                    ;                               THIS WILL NOT NECESSARILY BE AN ERROR.
                                    ;                            2. BIT NOT SET BEFORE DELAY EXPIRED.
                                    ;                               THIS WILL RESULT IN A HARD ERROR MESSAGE
                                    ;                               AND THE CARRY BIT WILL BE SET.  THE CARRY
                                    ;                               BIT SET FLAG THE ERROR CONDITION.
                                    ;
                                    ;
                                    ;   REGISTERS DESTROYED - RESTORED
                                    ;
                                    ;;*******************************************************************
                                    ;;*******************************************************************
010266                              $WAIT:
010266  005037  002354                      CLR     ERRFLG          ;CLEAR ERROR FLAG
010272  005737  002370                      TST     NESTPC          ;IS THIS NESTED IN ANOTHER SUBROUTINE?
010276  001005                              BNE     10$             ;YES - USE THE SUBRPC ALREADY CALCULATED.
010300  011637  002366                      MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
010304  162737  000004  002366              SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
010312                              10$:
010312  017637  000000  002334              MOV     @(SP),TEMP      ;GET THE FLAG FOR RDI OR RDO
010320  062716  000002                      ADD     #2,(SP)         ;INC THE PC LEFT ON THE STACK TO POINT
                                                                    ;PAST THE FLAG ARGUMENT
010324  010046                              MOV     R0,-(SP)        ;SAVE R0
010326  010146                              MOV     R1,-(SP)        ;SAVE R1
010330  013701  002310                      MOV     WAIT1,R1        ;DELAY COUNTER DETERMINED BY BAUD RATE
                                                                    ;(DETERMINED IN INIT ROUTINE).
010334                              30$:
010334  005000                              CLR     R0              ;INNER LOOP COUNT OF DELAY COUNTER
010336                              40$:
010336  032777  000200  171670              BIT     #RDO,@SEL2      ;IS THE RDO BIT SET IN SEL2?
010344  001034                              BNE     60$             ;YES - EXIT BIT CHECK LOOP.
010346  032777  000200  171656              BIT     #RDI,@SEL0      ;IS THE RDI BIT SET IN SEL0?
```

```
2995  010354  001062                    BNE     70$             ;YES - EXIT
2996  010356                            BREAK                   ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
 (3)  010356  104422                                                    TRAP    C$BRK
2997  010360  005300                    DEC     R0              ;LOOP UNTIL R0 RETURNS TO 0
2998  010362  001365                    BNE     40$
2999  010364                            DELAY   1               ;DELAY 100 MICROSECONDS
 (2)  010364  012727  000001                                            MOV     #1,(PC)+
 (2)  010370  000000                                                    .WORD   0
 (2)  010372  013727  002116                                            MOV     L$DLY,(PC)+
 (2)  010376  000000                                                    .WORD   0
 (2)  010400  005367  177772                                            DEC     -6(PC)
 (2)  010404  001375                                                    BNE     .-4
 (2)  010406  005367  177756                                            DEC     -22(PC)
 (2)  010412  001367                                                    BNE     .-20
3000                                                        ;BETWEEN LOOPS.
3001  010414  005301                    DEC     R1              ;REPEAT UNTIL MAXIMUM LOOP SATISFIED.
3002  010416  001346                    BNE     30$
3003  010420                            ERRDF   1,EMG1,ERRG2    ;TIME OUT ERROR
 (4)  010420  104455                                                    TRAP    C$ERDF
 (5)  010422  000001                                                    .WORD   1
 (5)  010424  020014                                                    .WORD   EMG1
 (5)  010426  015070                                                    .WORD   ERRG2
3004  010430  005237  002354            INC     ERRFLG          ;SET ERROR FLAG
3005  010434  000445                    BR      100$            ;BRANCH TO COMMON EXIT.
3006  010436                    60$:
3007  010436  005737  002334            TST     TEMP            ;WERE WE WAITING FOR THE RDO FLAG?
3008  010442  001042                    BNE     100$            ;YES - OK, EXIT.
3009  010444  022737  0C0001  002360    CMP     #CNTRL,ERROR    ;IS THIS CONTROL OUT ERROR EXPECTED?
3010  010452  001436                    BEQ     100$            ;IF YES, DON'T REPORT THE FOLLOWING ERRORS.
3011  010454                            PRINTB  #FMS1           ;RECEIVED AN RDO, WHEN WAITING FOR RDI
 (7)  010454  012746  010600                                            MOV     #FMS1,-(SP)
 (6)  010460  012746  000001                                            MOV     #1,-(SP)
 (3)  010464  010600                                                    MOV     SP,R0
 (4)  010466  104414                                                    TRAP    C$PNTB
 (4)  010470  062706  000004                                            ADD     #4,SP
3012  010474  032777  000001  171532        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
3013  010502  001422                        BEQ     100$            ;NO NEED TO CHECK ERROR CODES.
3014  010504                                EPRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT.
 (4)  010504  104455                                                    TRAP    C$ERDF
 (5)  010506  000011                                                    .WORD   9
 (5)  010510  020136                                                    .WORD   EMG9
 (5)  010512  015070                                                    .WORD   ERRG2
3015  010514  005237  002354                INC     ERRFLG          ;SET ERROR FLAG.
3016  010520  000413                        BR      100$
3017  010522                        70$:
3018  010522  005737  002334                TST     TEMP            ;WERE WE WAITING FOR THE RDI FLAG?
3019  010526  001410                        BEQ     100$            ;YES - OK, EXIT
3020  010530                                PRINTB  #FMS2           ;RECEIVED AN RDI, WHEN WAITING FOR RDO
 (7)  010530  012746  010641                                            MOV     #FMS2,-(SP)
 (6)  010534  012746  000001                                            MOV     #1,-(SP)
 (3)  010540  010600                                                    MOV     SP,R0
 (4)  010542  104414                                                    TRAP    C$PNTB
 (4)  010544  062706  000004                                            ADD     #4,SP
3021  010550                        100$:
3022  010550  005737  002370                TST     NESTPC          ;WAS THIS NESTED IN ANOTHER SUBROUTINE?
3023  010554  001002                        BNE     105$            ;IF YES - LEAVE THE SUBROUTINE PC ALONE
```

```
3024  010556  005037  002366                  CLR     SUBRPC          ;CLEAR THE PC
3025  010562                          105$:
3026  010562  012601                          MOV     (SP)+,R1        ;RESTORE R1
3027  010564  012600                          MOV     (SP)+,R0        ;RESTORE R0
3028  010566  005737  002354                  TST     ERRFLG          ;WAS THERE AN ERROR (CARRY CLEARED ON TST)
3029  010572  001401                          BEQ     110$            ;IF NOT, RETURN WITH CARRY CLEAR
3030  010574  000261                          SEC                     ;SET CARRY.
3031  010576                          110$:
3032  010576  000207                          RETURN
3033
3034  010600  047045  040445  042122  FMS1:   .ASCIZ  /%N%ARDO SET WHEN EXPECTING RDI%N/
      010606  020117  042523  020124
      010614  044127  047105  042440
      010622  050130  041505  044524
      010630  043516  051040  044504
      010636  047045     000
3035  010641     045  022516  051101  FMS2:   .ASCIZ  /%N%ARDI SET WHEN EXPECTING RDO%N/
      010646  044504  051440  052105
      010654  053440  042510  020116
      010662  054105  042520  052103
      010670  047111  020107  042122
      010676  022517  000116
3036                                          .EVEN
3037
3038
```

```
3040                    ;;*****************************************************************************
3041                    ;;*****************************************************************************
3042                    ;
3043                    ;                       SUBROUTINE $CLRQI
3044                    ;
3045                    ;               FUNCTION -  TO CLEAR RQI AND WAIT FOR RDI TO BE CLEARED
3046                    ;
3047                    ;       CALLING FORMAT:         JSR     PC,     $CLRQI
3048                    ;                               (MACRO CALL -- WAIT RQI)
3049                    ;
3050                    ;       NESTING LEVEL    - MAY BE NESTED WITHIN ANOTHER SUBROUTINE
3051                    ;
3052                    ;       ENTRY CONDITIONS - WAIT2 = DELAY COUNTER (DETERMINED IN INIT. ROUTINE)
3053                    ;                         NESTPC= 1   -   ROUTINE NESTED WITHIN ANOTHER
3054                    ;                                         SUBROUTINE.
3055                    ;                               = 0   -   ROUTINE NOT NESTED.
3056                    ;
3057                    ;        EXIT CONDITIONS - 1. NON ERROR, DMR READY TO RECEIVE THE NEXT COMMAND
3058                    ;                         2. ERROR IF RDI DOES NOT CLEAR BEFORE THE
3059                    ;                            DELAY ROUTINE EXPIRES. AN ERROR MESSAGE WILL
3060                    ;                            OCCUR.  ALSO A CARRY BIT WILL BE SET TO FLAG
3061                    ;                            THE ERROR FOR THE USER.
3062                    ;
3063                    ;
3064                    ;    REGISTERS DESTROYED - RESTORED
3065                    ;
3066                    ;;*****************************************************************************
3067                    ;;*****************************************************************************
3068  010702            $CLRQI:
3069  010702 005037 002354          CLR     ERRFLG          ;CLEAR ERROR FLAG
3070  010706 042777 000040 171316   BIC     #RQI,@SEL0      ;REQUEST INPUT CLEAR
3071  010714 005737 002370          TST     NESTPC          ;IS THIS NESTED IN ANOTHER SUBROUTINE?
3072  010720 001005                 BNE     10$             ;YES - USE SUBRPC CALCULATED
3073  010722 011637 002366          MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $WAIT.
3074  010726 162737 000004 002366   SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
3075  010734                        10$:
3076  010734 010046                 MOV     R0,-(SP)        ;SAVE R0
3077  010736 010146                 MOV     R1,-(SP)        ;SAVE R1
3078  010740 013701 002312          MOV     WAIT2,R1        ;GET THE DELAY COUNTER (DETERMINED BY
3079                                                        ;BAUD RATE IN INIT ROUTINE)
3080  010744                        12$:
3081  010744 005000                 CLR     R0              ;INNER LOOP COUNT
3082  010746                        20$:
3083  010746 032777 000200 171256   BIT     #RDI,@SEL0      ;IS THE RDI BIT CLEAR IN SEL0?
3084  010754 001427                 BEQ     30$             ;YES - EXIT
3085  010756                        BREAK                   ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
 (3)  010756 104422                                                     TRAP    C$BRK
3086  010760 005300                 DEC     R0              ;LOOP UNTIL R0 RETURNS TO 0
3087  010762 001371                 BNE     20$
3088  010764                        DELAY   1               ;DELAY 100 MICROSECONDS
 (2)  010764 012727 000001                                              MOV     #1,(PC)+
 (2)  010770 000000                                                     .WORD   0
 (2)  010772 013727 002116                                              MOV     L$DLY,(PC)+
 (2)  010776 000000                                                     .WORD   0
 (2)  011000 005367 177772                                              DEC     -6(PC)
 (2)  011004 001375                                                     BNE     .-4
```

```
  (2)  011006  005367  177756                                                          DEC     -22(PC)
  (2)  011012  001367                                                                  BNE     .-20
3089   011014  005301                    DEC     R1              ;REPEAT UNTIL MAXIMUM LOOP SATISFIED.
3090   011016  001352                    BNE     12$
3091   011020                            ERRDF   1,EMG1,ERRG2    ;TIME OUT ERROR
  (4)  011020  104455                                                                  TRAP    C$ERDF
  (5)  011022  000001                                                                  .WORD   1
  (5)  011024  020014                                                                  .WORD   EMG1
  (5)  011026  015070                                                                  .WORD   ERRG2
3092   011030  005237  002354            INC     ERRFLG          ;SET ERROR FLAG
3093   011034                    50$:
3094   011034  005737  002370            TST     NESTPC          ;WAS THIS A NESTED ROUTINE?
3095   011040  001002                    BNE     40$             ;IF YES - LEAVE THE SUBRPC ALONE
3096   011042  005037  002366            CLR     SUBRPC          ;CLEAR THE PC
3097   011046                    40$:
3098   011046  012601                    MOV     (SP)+,R1        ;RESTORE R1
3099   011050  012600                    MOV     (SP)+,R0        ;RESTORE R0
3100   011052  005737  002354            TST     ERRFLG          ;WAS THERE AN ERROR? (CARRY CLEARED ON TST)
3101   011056  001401                    BEQ     50$             ;IF NOT - RETURN WITH CARRY CLEAR
3102   011060  000261                    SEC                     ;SET CARRY.
3103   011062                    50$:
3104   011062  000207                    RETURN
3105
3106
```

```
                                        ;;*******************************************************************
                                        ;;*******************************************************************
                                        ;
                                        ;                       SUBROUTINE $MSCLR
                                        ;
                                        ;               FUNCTION -  TO PERFORM A MASTER CLEAR FOR THE DMR11
                                        ;
                                        ;       CALLING FORMAT:         JSR     PC,     $MSCLR
                                        ;                               (MACRO CALL -- CLEAR)
                                        ;
                                        ;       NESTING LEVEL     - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
                                        ;                           SUBTEST OR TEST SEGMENT)
                                        ;
                                        ;       ENTRY CONDITIONS - WAIT2 = DELAY COUNTER (DETERMINED BY INIT. ROUTINE)
                                        ;                          CLRNO = EVEN OR ODD COUNT.  THE ACTUAL # IS NOT
                                        ;                                  SIGNIFICANT, HOWEVER IF BIT 0 IS SET
                                        ;                                  THEN THE MICROTEST IS SET ALONG WITH
                                        ;                                  THE MASTER CLEAR. THIS ROUTINE WILL INCR.
                                        ;                                  THE VALUE.  THIS WILL RESULT IN THE MICRO
                                        ;                                  TESTS BEING RUN ON EVERY OTHER MASTER CLEAR
                                        ;
                                        ;        EXIT CONDITIONS - 1. NO ERROR - DMR11 MICROPROCESSOR INITIALIZED
                                        ;                          2. IF RUN BIT NOT SET BEFORE DELAY TIMEOUT, ERROR
                                        ;                             WILL RESULT.  ADDITONALLY THE ERROR MESSAGE WILL
                                        ;                             RELAY THE RESULTS OF THE MICROTESTS IF THE RUN
                                        ;                             BIT IS NOT SET.
                                        ;
                                        ;        NOTE:              THERE IS A PATCH AREA TO ALLOW THESE DIAGNOSTICS
                                        ;                           TO RUN ON A M8206 (INSTEAD OF M8207).  THIS
                                        ;                           SHOULD BE FOR DEVELOPMENT USE ONLY.
                                        ;
                                        ;    REGISTERS DESTROYED - RESTORED
                                        ;
                                        ;;*******************************************************************
                                        ;;*******************************************************************
011064                                  $MSCLR:
011064  011637  002366                          MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
011070  162737  000004  002366                  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
011076  010046                                  MOV     R0,-(SP)        ;SAVE R0
011100  010146                                  MOV     R1,-(SP)        ;SAVE R1

011102  105077  171136                          CLRB    @BSEL3          ;CLEAR BSEL3

011106  000240                                  NOP                     ;************************************
011110  000240                                  NOP                     ;** PATCH AREA FOR 8206 IF NEEDED **
011112  000240                                  NOP                     ;CLR @#SEL6  -
011114  000240                                  NOP                     ;************************************

011116  032737  000001  002372                  BIT     #BIT0,CLRNO     ;IS THIS AN ODD MASTER CLEAR.
011124  001004                                  BNE     7$              ;IF YES - BR
011126  012777  040000  171076                  MOV     #MCLR,@SEL0     ;ISSUE A MASTER CLEAR.
011134  000403                                  BR      8$
011136                                  7$:
011136  012777  060000  171066                  MOV     #MCLR!MDIAG,@SEL0 ;ISSUE THE MASTER CLEAR AND TOGGLE
                                                                        ;MICRO TEST SWITCH.
011144                                  8$:
```

```
     011144  000240                               NOP                           ;*************************************
     011146  000240                               NOP                           ;** PATCH AREA FOR 8206 IF NEEDED **
     011150  000240                               NOP                           ;MOV #RUN,@#SEL0  -
     011152  000240                               NOP                           ;*************************************

     011154  005237  002372                       INC     CLRNO                 ;INCR WORD (CHANGE ODD TO EVEN ETC.)
     011160  013701  002312                       MOV     WAIT2,R1              ;GET THE # OF 100 MICRO SECOND DELAYS
                                                                                ;TO WAIT BEFORE EXITING THE ROUTINE.
     011164                               10$:
     011164  005000                               CLR     R0                    ;INNER LOOP COUNT
     011166                               20$:
     011166  032777  100000  171036               BIT     #RUN,@SEL0            ;IS THE RUN BIT SET IN SEL0?
     011174  001025                               BNE     40$                   ;YES - EXIT
     011176                                       BREAK                         ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
 (3) 011176  104422                                                                                        TRAP    C$BRK
     011200  005300                               DEC     R0                    ;LOOP UNTIL R0 RETURNS TO 0
     011202  001371                               BNE     20$
     011204                                       DELAY   1                     ;DELAY 100 MICROSECONDS
 (2) 011204  012727  000001                                                                                MOV     #1,(PC)+
 (2) 011210  000000                                                                                        .WORD   0
 (2) 011212  013727  002116                                                                                MOV     L$DLY,(PC)+
 (2) 011216  000000                                                                                        .WORD   0
 (2) 011220  005367  177772                                                                                DEC     -6(PC)
 (2) 011224  001375                                                                                        BNE     .-4
 (2) 011226  005367  177756                                                                                DEC     -22(PC)
 (2) 011232  001367                                                                                        BNE     .-20
     011234  005301                               DEC     R1                    ;REPEAT UNTIL MAX LOOP SATISFIED.
     011236  001352                               BNE     10$
     011240                                       ERRDF   1,EMG1,ERRG3          ;REPORT RUN NOT SET
 (4) 011240  104455                                                                                        TRAP    C$ERDF
 (5) 011242  000001                                                                                        .WORD   1
 (5) 011244  020014                                                                                        .WORD   EMG1
 (5) 011246  015204                                                                                        .WORD   ERRG3
     011250                               40$:
     011250  012601                               MOV     (SP)+,R1              ;RESTORE R1
     011252  012600                               MOV     (SP)+,R0              ;RESTORE R0
     011254  005037  002366                       CLR     SUBRPC                ;TIDY UP SUBRPC

     011260  000207                               RETURN
```

```
                                ;*******************************************************************************
                                ;*******************************************************************************
                                ;
                                ;                       SUBROUTINE $BASEI
                                ;
                                ;               FUNCTION -  TO PERFORM A BASE IN COMMAND
                                ;
                                ;       CALLING FORMAT:         JSR     PC,     $BASEI
                                ;                               .WORD A (SEL0 MAINTENANCE BITS)
                                ;                               .WORD B (SEL4 - ADDRESS)
                                ;                               .WORD C (SEL6 - MODE AND/OR RESUME)
                                ;                               (MACRO CALL -- BASEIN  OR  BASEIN A,B,C)
                                ;
                                ;       NESTING LEVEL    - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
                                ;                          SUBTEST OR TEST SEGMENT)
                                ;
                                ;       ENTRY CONDITIONS - A = MAINTENANCE BITS (I.E. LINE UNIT LOOP BACK)
                                ;                          B = BASE TABLE ADDRESS (SEL4)
                                ;                          C = MODE + RESUME (SEL6)
                                ;                          INFACE = 0  - NO INTERFACE WRITE REQUIRED
                                ;                                   1  - WRITE INTERFACE (AX3-15)
                                ;
                                ;        EXIT CONDITIONS - 1. IF NO ERROR - DMR11 BASE TABLE ASSIGNED
                                ;                          2. IF IN DMR MODE, AND INTERFACE WRITE REQUESTED
                                ;                             WRITE REQUESTED AX3-15.
                                ;                          3. TIMEOUT ERRORS ARE DETECTED IN WAIT SUBROUTINES.
                                ;                          DMRFLG = -1  DMR MODE REQUESTED (USED IN CONTROL IN
                                ;                                       ROUTINE)
                                ;                                   0  DMC MODE OR RESUME REQUESTED.
                                ;
                                ;
                                ;    REGISTERS DESTROYED - RESTORED
                                ;
                                ;*******************************************************************************
                                ;*******************************************************************************
011262                          $BASEI:
011262  011637  002366                  MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
011266  162737  000004  002366          SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
                                ;
011274  112777  000043  170730          MOVB    #RQI!BASEI,@BSEL0 ;ISSUE THE BASE IN COMMAND.
011302  012737  000001  002370          MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
011310                                  WAIT    RDI             ;WAIT FOR RDI
 (1)                                                            ;**** MACRO EXPANSION ****
 (1)    011310  004737  010266          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)    011314  000000                  .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                            ;****                    ****
011316                                  BNERROR 10$             ;IF NO ERROR, RDI SET - PROCEED
 (2)    011316  103003                                                          BCC     10$
011320  062716  000006                  ADD     #6,(SP)         ;CORRECT STACK FOR ERROR EXIT
011324  000467                          BR      30$             ;EXIT
011326                          10$:
011326  057677  000000  170676          BIS     @(SP),@SEL0     ;SET ANY MAINTENANCE BITS
011334  062716  000002                  ADD     #2,(SP)         ;INC. POINTER.
011340  017677  000000  170670          MOV     @(SP),@SEL4     ;SET UP BASE ADDRESS
011346  062716  000002                  ADD     #2,(SP)         ;INC. POINTER AGAIN
011352  017677  000000  170660          MOV     @(SP),@SEL6     ;SET UP RESUME BIT AND THE HIGH 2 BITS
```

```
                                                        ;OF THE BASE TABLE ADDRESS
011360  062716  000002                      ADD     #2,(SP)         ;INC. POINTER AGAIN (SHOULD BE AT RETURN PC)
011364                                      WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 (1)                                                                ;**** MACRO EXPANSION ****
 (1) 011364  004737  010702                 JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                                ;****                    ****
011370                                      BERROR  30$             ;IF ERROR, EXIT
 (2) 011370  103445                                                                  BCS     30$
011372  122777  000122  170640              CMPB    #122,@BSEL6     ;WAS THIS A DMR BASE IN?
011400  001004                              BNE     15$             ;IF NOT, CLEAR DMR FLAG (DMC MODE)
011402  032777  010000  170630              BIT     #RES,@SEL6      ;IS THIS A RESUME?
011410  001403                              BEQ     16$             ;IF NOT, PROCEED
011412                              15$:
011412  005037  002260                      CLR     DMRFLG          ;CLEAR DMR FLAG (NO DMR RUN ACKNOWLEDGE).
011416  000432                              BR      30$             ;SKIP - TO END
011420                              16$:
011420  012737  177777  002260              MOV     #-1,DMRFLG      ;FLAG THAT DMR MODE WAS REQUESTED.
011426  005737  002262                      TST     INFACE          ;IS AN INTERFACE WRITE REQUIRED?
011432  001424                              BEQ     30$             ;IF NOT - SKIP TO END
011434  022737  000001  002360              CMP     #CNTRL,ERROR    ;ARE WE EXPECTING AN ERROR (IN TEST THAT
                                                                    ;FORCES AN ERROR)
011442  001004                              BNE     17$             ;IF NOT PROCEED
011444  032777  000200  170560              BIT     #RDO,@SEL0      ;IF EXPECTING AN ERROR - IS RDO SET
011452  001014                              BNE     30$             ;IF YES - DON'T BOTHER CHANGING THE INTERFACE.
011454                              17$:
011454  112777  000055  170550              MOVB    #RQI!INTER,@BSEL0 ;ISSUE WRITE INTERFACE COMMAND.
011462                                      WAIT    RDI             ;WAIT FOR RDI
 (1)                                                                ;**** MACRO EXPANSION ****
 (1) 011462  004737  010266                 JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1) 011466  000000                         .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                                ;****                    ****
011470                                      BERROR  30$             ;IF ERROR, BR TO END.
 (2) 011470  103405                                                                  BCS     30$
011472  113777  002304  170550              MOVB    AX3,@BSEL7      ;WRITE AX3-15. INTERFACE SELECTED
                                                                    ;BY AX3 DETERMINED IN INIT. CODE.
011500                                      WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
 (1)                                                                ;**** MACRO EXPANSION ****
 (1) 011500  004737  010702                 JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                                ;****                    ****
011504                              30$:
011504  005037  002370                      CLR     NESTPC          ;CLEAR THE NEST FLAG
011510  005037  002366                      CLR     SUBRPC          ;TIDY UP SUBRPC
011514  000207                              RETURN
```

```
                                        ;;*******************************************************************
                                        ;;*******************************************************************
                                        ;
                                        ;                 SUBROUTINE $CNTIN
                                        ;
                                        ;           FUNCTION -  TO PERFORM A CONTROL IN COMMAND
                                        ;
                                        ;     CALLING FORMAT:          JSR     PC,     $CNTIN
                                        ;                              .WORD  A (SEL6 - MAINTENANCE MODE & HDX)
                                        ;                              (MACRO CALL -- CNTRIN  OR  CNTRIN A)
                                        ;
                                        ;     NESTING LEVEL     - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
                                        ;                         SUBTEST OR TEST SEGMENT)
                                        ;
                                        ;     ENTRY CONDITIONS - DMRFLG = -1  EXPECT  CONTROL OUT IF IN DMR MODE
                                        ;                               =  0  NO CONTROL OUT, IN DMC MODE OR RESUME.
                                        ;
                                        ;
                                        ;      EXIT CONDITIONS - 1. IF NO ERROR - DMR11 CONTROL IN PERFORMED
                                        ;                        2. TIMEOUTS REPORTED IN WAIT SUBROUTINES
                                        ;                        3. IF THIS IS A DMR MODE START UP CONTROL IN,
                                        ;                           THIS ROUTINE WILL WAIT FOR A CONTROL
                                        ;                           OUT - DMR RUN.  IF THIS CONTROL OUT IS
                                        ;                           NOT RECEIVED,  THIS WILL RESULT IN AN ERROR
                                        ;                           MESSAGE AND A REMINDER TO CHECK THE BAUD RATE,
                                        ;                           INTERFACE AND TURNAROUND (PROBABLE REASON).
                                        ;
                                        ;
                                        ;
                                        ;   REGISTERS DESTROYED
                                        ;
                                        ;;*******************************************************************
                                        ;;*******************************************************************
     011516                             $CNTIN:
     011516  011637  002366                     MOV     (SP),SUBRPC      ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
     011522  162737  000004  002366             SUB     #4,SUBRPC        ;BACKUP TO PC OF ACTUAL CALL
     011530  112777  000041  170474             MOVB    #RQI+CNTRL,@SEL0 ;SET UP CONTROL IN COMMAND
     011536  012737  000001  002370             MOV     #1,NESTPC        ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
     011544                                     WAIT    RDI              ;WAIT FOR SETTING OF RDI
 (1)                                                                     ;**** MACRO EXPANSION ****
 (1) 011544  004737  010266                     JSR     PC, $WAIT        ;CALL WAIT ROUTINE
 (1) 011550  000000                                     .WORD   0        ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                                     ;****                 ****
     011552                                     BNERROR 1$               ;IF NO ERROR - PROCEED
 (2) 011552  103003                                                                                  BCC     1$
     011554  062716  000002                     ADD     #2,(SP)          ;CORRECT RETURN ADDRESS
     011560  000463                             BR      20$              ;ERROR - EXIT
     011562                             1$:
     011562  017677  000000  170450             MOV     @(SP),@SEL6      ;SET MODE DESIRED
     011570  062716  000002                     ADD     #2,(SP)          ;INC. RETURN PC LEFT ON STACK.
     011574  032777  000400  170436             BIT     #MAINT,@SEL6     ;WAS MAINTENANCE MODE REQUESTED?
     011602  001402                             BEQ     5$               ;IF NOT, LEAVE DMRFLG AS IS.
     011604  005037  002260                     CLR     DMRFLG           ;CLEAR FLAG - NO RUN MODE CONTROL OUT.
     011610                             5$:
     011610                                     WAIT    RQI              ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 (1)                                                                     ;**** MACRO EXPANSION ****
```

```
  (1) 011610 004737 010702                  JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
  (1)                                       ;****                   ****
3328  011614 005737 002260                  TST     DMRFLG          ;WAS DMR MODE REQUESTED ON BASE IN?
3329  011620 001443                         BEQ     20$             ;BR IF NOT (DMC MODE)
3330  011622 005037 002260                  CLR     DMRFLG          ;CLEAR DMR RUN MODE FLAG
3331  011626                                WAIT    RDO             ;EXPECT RDO TO BE SET
  (1)                                       ;**** MACRO EXPANSION ****
  (1) 011626 004737 010266                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1) 011632 000001                         .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                       ;****                   ****
3332  011634                                BNERROR 7$              ;IF NO ERROR - PROCEED
  (2) 011634 103011                                                             BCC     7$
3333  011636                                PRINTB  #FMS3           ;PRINT RUN ACKNOWLEDGE NOT RECEIVED.
  (7) 011636 012746 011742                                                      MOV     #FMS3,-(SP)
  (6) 011642 012746 000001                                                      MOV     #1,-(SP)
  (3) 011646 010600                                                             MOV     SP,R0
  (4) 011650 104414                                                             TRAP    C$PNTB
  (4) 011652 062706 000004                                                      ADD     #4,SP
3334  011656 000421                         BR      15$
3335  011660                           7$:
3336  011660 032777 000001 170346          BIT     #CNTRL,@SEL2    ;DID WE RECEIVE A CONTROL OUT?
3337  011666 001005                         BNE     10$             ;IF YES - PROCEED.
3338  011670                                ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
  (4) 011670 104455                                                             TRAP    C$ERDF
  (5) 011672 000010                                                             .WORD   8
  (5) 011674 020072                                                             .WORD   EMG8
  (5) 011676 015070                                                             .WORD   ERRG2
3339  011700 000410                         BR      15$
3340  011702                           10$:
3341  011702 032777 000040 170330          BIT     #DMRRUN,@SEL6   ;WAS THE DMR RUN MODE BIT SET?
3342  011710 001004                         BNE     15$             ;BR IF OK.
3343  011712                                ERRDF   9,EMG9,ERRG2    ;WRONG CONTROL OUT RECEIVED.
  (4) 011712 104455                                                             TRAP    C$ERDF
  (5) 011714 000011                                                             .WORD   9
  (5) 011716 020136                                                             .WORD   EMG9
  (5) 011720 015070                                                             .WORD   ERRG2
3344
3345  011722                           15$:
3346  011722 042777 000207 170304          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
3347  011730                           20$:
3348  011730 005037 002370                 CLR     NESTPC          ;CLEAR THE NEST FLAG
3349  011734 005037 002366                 CLR     SUBRPC          ;CLEAR PC
3350  011740 000207                         RETURN
3351
3352  011742 040445 046504 020122  FMS3:    .ASCII  /%ADMR RUN ACKNOWLEDGMENT NOT RECEIVED%N/
      011750 052522 020116 041501
      011756 047113 053517 042514
      011764 043504 042515 052116
      011772 047040 052117 051040
      012000 041505 044505 042526
      012006 022504    116
3353  012011    045 024101 044103          .ASCIZ  /%A(CHECK INTERFACE, BAUD AND TURNAROUND)%N/
      012015 041505 020113 047111
      012024 042524 043122 041501
      012032 026105 041040 052501
      012040 020104 047101 020104
```

```
        012046  052524  047122  051101
        012054  052517  042116  022451
        012062  000116
3354                                    .EVEN
3355
3356
3357
3358
3359
3360                    ;*****************************************************************************
3361                    ;*****************************************************************************
3362                    ;
3363                    ;                       SUBROUTINE $DMRIN
3364                    ;
3365                    ;               FUNCTION -  TO PERFORM A DMR MODE INPUT COMMAND
3366                    ;
3367                    ;       CALLING FORMAT:         JSR     PC,     $DMRIN
3368                    ;                               .WORD   COMMAND
3369                    ;                               .WORD   B
3370                    ;                               .WORD   C
3371                    ;                               (MACRO CALL -- DMRIN A,B,C)
3372                    ;
3373                    ;       NESTING LEVEL     - MAY BE CALLED FROM IN-LINE CODE (TEST,
3374                    ;                           SUBTEST OR TEST SEGMENT) OR FROM THE $LOOP
3375                    ;                           SUBROUTINE
3376                    ;
3377                    ;       ENTRY CONDITIONS - MUST BE IN DMR MODE
3378                    ;                          FOR ALL COMMANDS EXCEPT WRITE MODEM
3379                    ;                               B = SEL4
3380                    ;                               C = SEL6
3381                    ;                          FOR MODEM WRITE
3382                    ;                               B = BITS TO CLEAR IN SEL6
3383                    ;                               C = BITS TO SET IN SEL6
3384                    ;                          NESTPC = 1 - SUBROUTINE NESTED WITHIN ANOTHER SUB.
3385                    ;                                 = 0 - SUBROUTINE NOT NESTED.
3386                    ;
3387                    ;           EXIT CONDITIONS - IF NO ERROR - DMR11 MODE INPUT COMMAND PERFORMED.
3388                    ;
3389                    ;
3390                    ;       REGISTERS DESTROYED
3391                    ;
3392                    ;*****************************************************************************
3393                    ;*****************************************************************************
3394    012064          $DMRIN:
3395    012064  005737  002370                  TST     NESTPC          ;IS THIS SUBROUTINE NESTED?
3396    012070  001005                          BNE     1$              ;IF YES - DON'T CHANGE  SUBRPC.
3397    012072  011637  002366                  MOV     (SP),SUBRPC     ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
3398    012076  162737  000004  002366          SUB     #4,SUBRPC       ;BACKUP TO PC OF ACTUAL CALL
3399    012104          1$:
3400    012104  117637  000000  002336          MOVB    @(SP),SAVE      ;SAVE DMR INPUT COMMAND
3401    012112  117677  000000  170112          MOVB    @(SP),@BSEL0    ;SET UP DMR INPUT COMMAND.
3402    012120  062716  000002                  ADD     #2,(SP)         ;INC RETURN PC LEFT ON STACK.
3403    012124  052777  000040  170100          BIS     #RQI,@SEL0      ;REQUEST INPUT.
3404    012132  013746  002370                  MOV     NESTPC,-(SP)    ;SAVE THE CURRENT NEST FLAG.
3405    012136  012737  000001  002370          MOV     #1,NESTPC       ;USE THE FLAG TO SHOW THE WAIT
3406                                                                    ;ROUTINE IS NESTED.
```

```
3407  012144                                          WAIT    RDI             ;WAIT FOR SETTING OF RDI
 (1)                                                                          ;**** MACRO EXPANSION ****
 (1)  012144  004737  010266                         JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)  012150  000000                                 .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                                          ;****                  ****
3408  012152  012637  002370                         MOV     (SP)+,NESTPC    ;RESTORE THE ORIGINAL NEST FLAG.
3409  012156                                          BNERROR 5$              ;IF NO ERROR, OK - PROCEED.
 (2)  012156  103003                                                                    BCC     5$
3410  012160  062716  000004                         ADD     #4,(SP)         ;UPDATE RETURN ADDRESS.
3411  012164  000433                                 BR      10$             ;ERROR EXIT.
3412  012166                                  5$:
3413  012166  122737  000005  002336                 CMPB    #WMODEM,SAVE    ;IS THIS A MODEM WRITE?
3414  012174  001413                                 BEQ     6$              ;IF YES - SET/CLEAR BITS.
3415  012176  017677  000000  170032                 MOV     @(SP),@SEL4     ;PASS VALUE FOR SEL4 (VALUE, IF ANY,
3416                                                                          ;DEPENDS ON THE DMR COMMAND)
3417  012204  062716  000002                         ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
3418  012210  017677  000000  170022                 MOV     @(SP),@SEL6     ;PASS VALUE FOR SEL6 (VALUE, IF ANY,
3419                                                                          ;DEPENDS ON THE DMR COMMAND)
3420  012216  062716  000002                         ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
3421  012222  000412                                 BR      7$
3422  012224                                  6$:
3423  012224  047677  000000  170006                 BIC     @(SP),@SEL6     ;CLEAR MODEM BITS
3424  012232  062716  000002                         ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK
3425  012236  057677  000000  167774                 BIS     @(SP),@SEL6     ;SET MODEM BITS
3426  012244  062716  000002                         ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
3427  012250                                  7$:
3428  012250                                          WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 (1)                                                                          ;**** MACRO EXPANSION ****
 (1)  012250  004737  010702                         JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                                          ;****                  ****
3429  012254                                  10$:
3430  012254  005737  002370                         TST     NESTPC          ;WAS THIS ROUTINE NESTED?
3431  012260  001002                                 BNE     15$             ;BR IF YES
3432  012262  005037  002366                         CLR     SUBRPC          ;CLEAR PC
3433  012266                                  15$:
3434  012266  005037  002336                         CLR     SAVE            ;RESTORE TEMP VALUE
3435  012272  000207                                 RETURN
3436
3437
3438
3439
3440  ;;*************************************************************************
3441  ;;*************************************************************************
3442  ;
3443  ;                               SUBROUTINE $BACC
3444  ;
3445  ;                       FUNCTION -  TO PERFORM A BUFFER ADDRESS/CHARACTER
3446  ;                                   COUNT IN COMMAND
3447  ;
3448  ;               CALLING FORMAT:         JSR     PC,     $BACC
3449  ;                                       .WORD   SEL0    ;BA/CC IN COMMAND
3450  ;                                       .WORD   SEL4    ;BUFFER ADDRESS
3451  ;                                       .WORD   SEL6    ;BA BITS 16 & 17 AND
3452  ;                                                       ;CHARACTER COUNT
3453  ;                                   (MACRO CALL -- BACCIT  OR  BACCIT A,B)
3454  ;                                OR (MACRO CALL -- BACCIR  OR  BACCIR A,B)
```

```
                        ;
                        ;       NESTING LEVEL    - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
                        ;                          SUBTEST OR TEST SEGMENT)
                        ;
                        ;       ENTRY CONDITIONS -
                        ;
                        ;        EXIT CONDITIONS - IF NO ERROR - DMR11 BA/CC COMMAND IN PERFORMED
                        ;
                        ;    REGISTERS DESTROYED - NOT AFFECTED
                        ;
                        ;;*************************************************************************
                        ;;*************************************************************************
012274                  $BACC:
012274  011637  002366          MOV     (SP),SUBRPC     ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
012300  162737  000004  002366  SUB     #4,SUBRPC       ;BACKUP TO PC OF ACTUAL CALL
012306  117677  000000  167716  MOVB    @(SP),@BSEL0    ;SET UP BA/CC COMMAND IN (TRANSMIT OR RECEIVE)
012314  062716  000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012320  012737  000001  002370  MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
012326                          WAIT    RDI             ;WAIT FOR SETTING OF RDI
 (1)                                                    ;**** MACRO EXPANSION ****
012326  004737  010266          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
012332  000000                  .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                    ;****                    ****
012334                          BNERROR 10$             ;IF NO ERROR - PROCEED
 (2)    012334  103003                                                          BCC     10$
012336  062716  000004          ADD     #4,(SP)         ;CORRECT STACK FOR ERROR EXIT.
012342  000414                  BR      20$             ;EXIT
012344                  10$:
012344  017677  000000  167664  MOV     @(SP),@SEL4     ;SET BUFFER ADDRESS
012352  062716  000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012356  017677  000000  167654  MOV     @(SP),@SEL6     ;SET UP BUFFER COUNT AND BUFFER ADDRESS
                                                        ;BITS 16 & 17
012364  062716  000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012370                          WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 (1)                                                    ;**** MACRO EXPANSION ****
012370  004737  010702          JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                    ;****                    ****
012374                  20$:
012374  005037  002370          CLR     NESTPC          ;CLEAR THE NEST FLAG
012400  005037  002366          CLR     SUBRPC          ;CLEAR PC
012404  000207                  RETURN


                        ;;*************************************************************************
                        ;;*************************************************************************
                        ;
                        ;                       SUBROUTINE $ERROR
                        ;
                        ;               FUNCTION -  TO CHECK THE FIRST 8. BASE TABLE ERROR COUNTS
                        ;                           FOR NON-ZERO VALUES.
                        ;
                        ;       CALLING FORMAT:         JSR     PC,     $ERROR
                        ;
```

```
                                        ;       NESTING LEVEL    - CAN BE NESTED WITHIN ANOTHER ROUTINE
                                        ;
                                        ;       ENTRY CONDITIONS - SHOULD BE DONE AFTER PROPER SHUTDOWN
                                        ;                         NESTPC = 1 - SUBROUTINE NESTED WITHIN ANOTHER SUB.
                                        ;                                = 0 - SUBROUTINE NOT NESTED.
                                        ;
                                        ;        EXIT CONDITIONS - IF ANY NON-ZERO VALUE FOUND IN THE BASE TABLE A
                                        ;                         SOFT ERROR IS DECLARED.
                                        ;
                                        ;
                                        ;    REGISTERS DESTROYED - RESTORED
                                        ;
                                        ;;*****************************************************************************
                                        ;;*****************************************************************************
012406                                  $ERROR:
012406  005737  002370                          TST     NESTPC          ;IS THIS ROUTINE NESTED?
012412  001005                                  BNE     10$             ;BR IF YES (PC ALREADY SAVED)
012414  011637  002366                          MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
012420  162737  000004  002366                  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
                                                                        ;THE INSTRUCTION AFTER THE CALL.
012426                                  10$:
012426  010046                                  MOV     R0,-(SP)        ;SAVE R0
012430  010146                                  MOV     R1,-(SP)        ;SAVE R1
012432  012700  002633                          MOV     #BASE+3,R0      ;POINTER TO ACTUAL BASE TABLE COUNTS.
012436  012701  000006                          MOV     #6.,R1          ;CHECK THE 6 NAK BYTES IN THE TABLE
012442                                  20$:
012442  105720                                  TSTB    (R0)+           ;IS THE NAK COUNT NON-ZERO?
012444  001016                                  BNE     30$             ;IF YES - REPORT SOFT ERROR
012446  005301                                  DEC     R1              ;LOOP UNTIL DONE.
012450  001374                                  BNE     20$
012452  122010                                  CMPB    (R0)+,(R0)      ;ARE THE REPS THE SAME?
012454  001012                                  BNE     30$             ;IF NOT - REPORT ERROR.
012456  022737  000022  002114                  CMP     #18.,L$TEST     ;IS THIS TEST 18 (LARGE BUFFER TEST)
012464  001403                                  BEQ     25$             ;IF YES - ALLOW 1 REP
012466  105710                                  TSTB    (R0)            ;IF NOT TEST 18 - REPORT IF NON ZERO.
012470  001004                                  BNE     30$
012472  000407                                  BR      40$             ;IF ZERO - OK.
012474                                  25$:
012474  122710  000001                          CMPB    #1,(R0)         ;IS THE REP 0 OR 1?
012500  002004                                  BGE     40$             ;IF YES - OK (WE ALLOW 1 REP BECAUSE
                                                                        ;IN TEST 18 AT LOW BAUD RATES 1 REP IS
                                                                        ;EXPECTED.)
012502                                  30$:
012502                                  ERRSOFT 5,EMS3,ERRG4    ;REPORT SOFT ERROR
(4) 012502  104457                                                      TRAP    C$ERSOFT
(5) 012504  000005                                                      .WORD   5
(5) 012506  012532                                                      .WORD   EMS3
(5) 012510  015464                                                      .WORD   ERRG4
012512                                  40$:
012512  005737  002370                  TST     NESTPC          ;IS THE ROUTINE NESTED?
012516  001002                          BNE     45$             ;BR IF YES
012520  005037  002366                  CLR     SUBRPC          ;CLEAR SAVED PC
012524                                  45$:
012524  012601                          MOV     (SP)+,R1        ;RESTORE R1
012526  012600                          MOV     (SP)+,R0        ;RESTORE R0
012530  000207                          RETURN
```

```
 3555
 3556  012532  051105  047522  051522  EMS3:   .ASCIZ  /ERRORS IN BASE TABLE/
       012540  044440  020116  040502
       012546  042523  052040  041101
       012554  042514     000
 3557          012560                          .EVEN
 3558
 3559
 3560
 3561
 3562                                  ;;*****************************************************************************
 3563                                  ;;*****************************************************************************
 3564                                  ;
 3565                                  ;                       SUBROUTINE $HALT
 3566                                  ;
 3567                                  ;               FUNCTION - TO SHUTDOWN THE DMR11
 3568                                  ;
 3569                                  ;       ENTRY CONDITIONS - NONE
 3570                                  ;
 3571                                  ;       EXIT CONDITIONS  - DMR SHUTDOWN
 3572                                  ;
 3573                                  ;       REGISTERS        - NO EFFECT
 3574                                  ;
 3575                                  ;
 3576                                  ;;*****************************************************************************
 3577                                  ;;*****************************************************************************
 3578  012560                          $HALT:
 3579  012560  011637  002366                 MOV     (SP),SUBRPC     ;SAVE THE PC WHEN THE SUBROUTINE WAS CALLED.
 3580  012564  162737  000004  002366         SUB     #4,SUBRPC       ;BACK UP TO THE ADDRESS OF THE ACTUAL CALL.
 3581  012572  112777  000042  167432         MOVB    #RQI!HLT,@SEL0  ;ISSUE A HALT
 3582  012600  105077  167430                 CLRB    @SEL2           ;CLEAR ANY OUTPUT PENDING
 3583  012604  012737  000001  002370         MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
 3584  012612                                  WAIT    RDI             ;WAIT FOR RDI
   (1)                                                                   ;**** MACRO EXPANSION ****
   (1)  012612  004737  010266                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
   (1)  012616  000000                          .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
   (1)                                          ;****                   ****
 3585  012620                                  BERROR  20$             ;IF ERROR, EXIT
   (2)  012620  103430                                                           BCS     20$
 3586  012622                                  WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
   (1)                                                                   ;**** MACRO EXPANSION ****
   (1)  012622  004737  010702                  JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
   (1)                                          ;****                   ****
 3587  012626                                  BERROR  20$             ;IF ERROR, EXIT
   (2)  012626  103425                                                           BCS     20$
 3588  012630                                  WAIT    RDO             ;WAIT FOR RDO
   (1)                                                                   ;**** MACRO EXPANSION ****
   (1)  012630  004737  010266                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
   (1)  012634  000001                          .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
   (1)                                          ;****                   ****
 3589  012636                                  BERROR  20$             ;IF ERROR, EXIT
   (2)  012636  103421                                                           BCS     20$
 3590  012640  032777  000001  167366         BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
 3591  012646  001005                         BNE     10$             ;IF YES - PROCEED
 3592  012650                                  ERRDF   4,EMS4,ERRG2    ;ERROR
   (4)  012650  104455                                                           TRAP    C$ERDF
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 (5)  012652  000004                                                          .WORD   4
 (5)  012654  012722                                                          .WORD   EMS4
 (5)  012656  015070                                                          .WORD   ERRG2
3593  012660  000410                    BR      20$
3594  012662                     10$:
3595  012662  032777  001000  167350    BIT     #HALTC,@SEL6    ;IS THE DMR HALTED?
3596  012670  001004                    BNE     20$             ;IF YES - EXIT
3597  012672                            ERRDF   4,EMS4,ERRG2    ;ERROR - NOT EXPECTED CONTROL OUT.
 (4)  012672  104455                                                          TRAP    C$ERDF
 (5)  012674  000004                                                          .WORD   4
 (5)  012676  012722                                                          .WORD   EMS4
 (5)  012700  015070                                                          .WORD   ERRG2
3598  012702                     20$:
3599  012702  042777  000207  167324    BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND COMMAND BITS.
3600  012710  005037  002370            CLR     NESTPC          ;CLEAR THE NEST FLAG
3601  012714  005037  002366            CLR     SUBRPC          ;CLEAR THE PC.
3602  012720  000207                    RETURN
3603
3604  012722  044123  052125  047504  EMS4:   .ASCIZ  /SHUTDOWN ERROR/
      012730  047127  042440  051122
      012736  051117     000
3605          012742                    .EVEN
3606
3607
3608
3609                     ;;*************************************************************************
3610                     ;;*************************************************************************
3611                     ;
3612                     ;                       SUBROUTINE $ROMO
3613                     ;
3614                     ;               FUNCTION - TO READ THE CONTENTS OF THE ROM
3615                     ;
3616                     ;       ENTRY CONDITIONS - ROMADR =  ROM ADDRESS
3617                     ;
3618                     ;       EXIT CONDITIONS  - BSEL6  =  CONTENTS OF ROM ADDRESS
3619                     ;
3620                     ;       REGISTERS        - NO EFFECT
3621                     ;
3622                     ;
3623                     ;*************************************************************************
3624                     ;*************************************************************************
3625  012742             $ROMO:
3626  012742  005077  167264            CLR     @SEL0           ;INIT
3627  012746  113777  002405  167260    MOVB    ROMADR+1,@SEL2  ;SET HIGH BYTE OF ROM ADDRESS
3628  012754  052777  001000  167250    BIS     #ROMI,@SEL0     ;ENABLE SEL6 TO BE USED AS MAINTENANCE REG.
3629  012762  012777  121053  167250    MOV     #121053,@SEL6   ;SET UP MICROINSTRUCTION TO
3630                                                            ;MOVE IBUS* 2 TO OBUS* 13
3631                                                            ;(OBUS* 13 IS A SHADOW REGISTER FOR
3632                                                            ;BITS 8-11 OF THE PC)
3633  012770  052777  000400  167234    BIS     #STUP,@SEL0     ;CLOCK THE INSTRUCTION
3634  012776  042777  001400  167226    BIC     #ROMI!STUP,@SEL0 ;CLEAR
3635  013004  042737  000377  013060    BIC     #377,1$         ;CLEAR ADDRESS FIELD OF BRANCH INST.
3636  013012  153737  002404  013060    BISB    ROMADR,1$       ;ADD ADDRESS OF BRANCH.
3637  013020  052777  001000  167204    BIS     #ROMI,@SEL0     ;ENABLE SEL6
3638  013026  013777  013060  167204    MOV     1$,@SEL6        ;SET UP MICROINSTRUCTION TO
3639                                                            ;BRANCH IMMEDIATELY TO PC.  BRANCH IS
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3640
3641  013034  052777  000400  167170          BIS     #STUP,@SEL0     ;NECESSARY TO TRANSFER PC SHADOW REG TO PC
3642                                                                    ;CLOCK THE INSTRUCTION
3643  013042  042777  001400  167162          BIC     #ROMI.STUP,@SEL0 ;ROM PC = ROM ADDRESS
3644  013050  052777  002000  167154          BIS     #ROMO,@SEL0     ;CLEAR
3645                                                                    ;CLOCK IN A MAINTENANCE ROM OUT
3646  013056  000207                          RETURN                  ;ROM CONTENTS ARE NOW IN SEL6.
3647
3648  013060  100000                  1$:     .WORD   100000          ;MICRO INSTRUCTION OPCODE FOR IMMEDIATE
3649                                                                    ;BRANCH (ROM ADDRESS IS ADDED INTO BITS 0-7)
3650
3651                                  ;;*************************************************************************
3652                                  ;;*************************************************************************
3653                                  ;
3654                                  ;                       SUBROUTINE $LOOP
3655                                  ;
3656                                  ;               FUNCTION - TO ISSUE AN EXTENDED CONTROL IN TO SET
3657                                  ;                          UP THE MODEM LOOPBACK DESIRED BY THE USER.
3658                                  ;
3659                                  ;       ENTRY CONDITIONS -  WMAINT = 0 - DON'T WRITE MAINT. BITS
3660                                  ;                           WMAINT = 1 - SET BITS
3661                                  ;                                (WMAINT SET IN INIT CODE)
3662                                  ;                           DMCMDE = 0 - DMR MODE
3663                                  ;                           DMTURN = TURN AROUND CONNECTOR
3664                                  ;
3665                                  ;       EXIT CONDITIONS  -
3666                                  ;
3667                                  ;       REGISTERS        -  NOT DESTROYED
3668                                  ;
3669                                  ;
3670                                  ;;*************************************************************************
3671                                  ;;*************************************************************************
3672  013062                          $LOOP:
3673  013062  005737  002276                  TST     DMCMDE          ;IS THE DMR IN DMC MODE?
3674  013066  001041                          BNE     30$             ;IF SO, EXIT (CAN'T DO DMR MODE INPUT)
3675  013070  005737  002306                  TST     WMAINT          ;DO WE NEED TO WRITE THE MAINTENANCE BITS?
3676  013074  001436                          BEQ     30$             ;IF NOT - EXIT.
3677  013076  011637  002366                  MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $LOOP
3678  013102  162737  000004  002366          SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
3679  013110  022737  000006  002254          CMP     #6,DMTURN       ;IS LOCAL MODEM LOOPBACK DESIRED?
3680  013116  001007                          BNE     10$             ;IF NOT - PROCEED.
3681  013120  012737  000004  013166          MOV     #MAINT2,100$    ;ENSURE REMOTE LOOPBACK IS CLEAR.
3682  013126  012737  000010  013170          MOV     #MAINT1,101$    ;SET MAINT BIT FOR LOCAL LOOPBACK
3683  013134  000406                          BR      20$
3684  013136                          10$:
3685                                                                  ;IN ALL OTHER LOOPBACK CONFIGURATIONS
3686                                                                  ;SET MAINTENANCE 2 (CONFIG. TYPE 1,3,7)
3687  013136  012737  000010  013166          MOV     #MAINT1,100$    ;ENSURE REMOTE LOOPBACK IS CLEAR.
3688  013144  012737  000004  013170          MOV     #MAINT2,101$    ;SET MAINT BIT FOR REMOTE LOOPBACK
3689  013152                          20$:
3690  013152  012737  000001  002370          MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
3691  013160                                  CALL    $DMRIN          ;DMR MODE INPUT COMMAND
3692  013164  000005                                  .WORD   WMODEM  ;WRITE MODEM COMMAND
3693  013166  000000                  100$:           .WORD   0       ;BITS TO CLEAR IN MODEM REGISTER
3694  013170  000000                  101$:           .WORD   0       ;BITS TO SET IN MODEM REGISTER
3695
```

```
 3696  013172                          30$:
 3697  013172  005037  002370                  CLR     NESTPC          ;CLEAR THE NEST FLAG
 3698  013176  005037  002366                  CLR     SUBRPC          ;CLEAR PC.
 3699  013202  000207                          RETURN
 3700
 3701
 3702
 3703
 3704
 3705                                  ;;*****************************************************************************
 3706                                  ;;*****************************************************************************
 3707                                  ;
 3708                                  ;                       SUBROUTINE $BUFFS
 3709                                  ;
 3710                                  ;               FUNCTION - TO DETERMINE BUFFERS FOR TEST 15 - 19.  THIS
 3711                                  ;                          SUBROUTINE WILL USE ONE OF THE FOLLOWING
 3712                                  ;                          THREE BUFFER AREAS:
 3713                                  ;                               1. IF MEMORY MANAGED, 32K - 48K
 3714                                  ;                               2. FREE MEMORY, IF MORE THAN 4K BYTES.
 3715                                  ;                               3. IF 2 OR 3 NOT POSSIBLE, DEFAULT 4K
 3716                                  ;                                  DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
 3717                                  ;
 3718                                  ;       CALL              - JSR  PC,$BUFFS
 3719                                  ;
 3720                                  ;       NESTING LEVEL     - CALLED ONLY BY TESTS  16-20
 3721                                  ;
 3722                                  ;       ENTRY CONDITIONS  - BUFNUM = # OF RCV & XMIT BUFFERS
 3723                                  ;
 3724                                  ;       EXIT CONDITIONS   - MMANAG = 1   MEMORY MANAGEMENT USED
 3725                                  ;                           MMANAG = 0   MEMORY MANAGEMENT NOT USED
 3726                                  ;                           RCVBUF     =  ADDRESS OF RECEIVE BUFFER (VIRTUAL)
 3727                                  ;                           RCVBUF+2   =  CHARACTER COUNT
 3728                                  ;                           RCVBUF+4   =  ADDRESS OF NEXT RECEIVE BUFFER
 3729                                  ;                                (UP TO 64 ADDRESSES AND COUNTS)
 3730                                  ;                           XMTBUF     =  ADDRESS OF TRANSMIT BUFFER (VIRTUAL)
 3731                                  ;                                (UP TO 64 ADDRESSES AND COUNTS)
 3732                                  ;
 3733                                  ;       REGISTERS         - NOT DESTROYED
 3734                                  ;
 3735                                  ;
 3736                                  ;;*****************************************************************************
 3737                                  ;;*****************************************************************************
 3738  013204                          $BUFFS:
 3739  013204  011637  002366                  MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $BUFFS
 3740  013210  162737  000004  002366          SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE CALL.
 3741  013216  005037  002340                  CLR     FLAG
 3742  013222                                  SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP 4 (WILL SET FLAG FOR NXM)
   (7) 013222  012746  000340                                                          MOV     #PRI07,-(SP)
   (6) 013226  012746  023512                                                          MOV     #NOXMEM,-(SP)
   (5) 013232  012746  000004                                                          MOV     #4,-(SP)
   (4) 013236  012746  000003                                                          MOV     #3,-(SP)
   (3) 013242  104437                                                                  TRAP    C$SVEC
   (2) 013244  062706  000010                                                          ADD     #10,SP
 3743  013250  005737  177572                  TST     @#177572        ;ADDRESS MEMORY MANAGEMENT REG
 3744  013254  005737  002340                  TST     FLAG            ;IS THE FLAG STILL CLEARED?
 3745                                                                  ;NOTE: THE FLAG WILL BE SET BY THE TRAP
```

```
3746
3747  013260  001143                        BNE     30$             ;IF THERE IS NO MEMORY MANAGEMENT.
3748  013262  023727  002120  003000        CMP     L$HIMEM,#3000   ;BR TO USE NON-MEMORY MANAG. BUFFERS.
3749                                                                ;IS THERE AT LEAST 48K WORDS? (16K WORDS
3750  013270  002537                        BLT     30$             ;FOR BUFFERS)
3751  013272  012737  000001  002302        MOV     #1,MMANAG       ;IF NOT, USE NON-MEMORY MANAG. BUFFERS.
3752  013300                                SETPRI  #PRI07          ;FLAG THAT MEMORY MANAGEMENT IS USED
 (3)  013300  012700  000340                                        ;MAKE SURE WE ARE IN KERNEL MODE.
 (3)  013304  104441                                                        MOV     #PRI07,R0
                                                                            TRAP    C$SPRI
3753                                                                ;SETTING PRI SHOULD SHOULD ALSO CLEAR
3754                                                                ;BITS 14 & 15
3755  013306  012701  172300                MOV     #172300,R1      ;GET ADDRESS OF KERNEL PDR REG 0.
3756  013312  012700  000010                MOV     #8.,R0          ;WRITE PDR REG 0-7.
3757  013316                          10$:
3758  013316  012721  077406                MOV     #77406,(R1)+    ;WRITE BITS FOR THE FOLLOWING PAGE DESCRIPTION
3759                                                                ;READ/WRITE ACCESS, 128. BLOCK PAGE LENGTH.
3760  013322  005300                        DEC     R0              ;WRITE ALL PDRS.
3761  013324  001374                        BNE     10$
3762  013326  012701  172340                MOV     #172340,R1      ;ADDRESS OF KERNEL PAR 0
3763  013332  005011                        CLR     (R1)            ;PAR 0, ADDRS      0 -  17776
3764  013334  012761  000200  000002        MOV     #200,2(R1)      ;PAR 1, ADDRS  20000 -  37776
3765  013342  012761  000400  000004        MOV     #400,4(R1)      ;PAR 2, ADDRS  40000 -  57776
3766  013350  012761  002000  000006        MOV     #2000,6(R1)     ;PAR 3, ADDRS 200000 - 217776 (BUFFER PAGE 1)
3767  013356  012761  002200  000010        MOV     #2200,10(R1)    ;PAR 4, ADDRS 220000 - 237776 (BUFFER PAGE 2)
3768  013364  012761  002400  000012        MOV     #2400,12(R1)    ;PAR 5, ADDRS 240000 - 257776 (BUFFER PAGE 3)
3769  013372  012761  002600  000014        MOV     #2600,14(R1)    ;PAR 6, ADDRS 260000 - 277776 (BUFFER PAGE 4)
3770  013400  012761  007600  000016        MOV     #7600,16(R1)    ;PAR 7, ADDRS 160000 - 677776 (I/O PAGE)
3771
3772  013406  012703  000400                MOV     #256.,R3        ;COUNTER FOR OUTER  LOOP OF TEST PATTERN
3773  013412  012704  060000                MOV     #60000,R4       ;USE VIRTUAL ADDRESS TO MAP TO PAR 5
3774                                                                ;GENERATE A TEST PATTERN IN THE 1ST 8K WORDS
3775                                                                ;VIRTUAL ADDRESS 60000 - 111776
3776  013416  012737  000001  177572        MOV     #1,@#177572     ;ENABLE MEMORY MANAGEMENT
3777  013424                          15$:
3778  013424  012701  000040                MOV     #32.,R1         ;COUNTER FOR INNER LOOP OF TEST PATTERN
3779  013430  012702  002410                MOV     #$CCITT,R2      ;ADDRESS FOR 32. WORD TEST PATTERN.
3780  013434                          16$:
3781  013434  012224                        MOV     (R2)+,(R4)+     ;WRITE TEST PATTERN
3782                                                                ;PHYSICAL ADDRESS 200000 - 237776
3783  013436  005737  002340                TST     FLAG            ;FLAG WILL BE SET IF WE ADDRESS NXM.
3784  013442  001050                        BNE     29$             ;IF NXM - DON'T USE MEMORY MANAGEMENT.
3785  013444  005301                        DEC     R1              ;DO TH INNER LOOP 32. TIMES
3786  013446  001372                        BNE     16$
3787  013450  005303                        DEC     R3              ;DO THE OUTER LOOP 256. TIMES
3788  013452  001364                        BNE     15$
3789  013454  012701  020000                MOV     #20000,R1       ;COUNTER TO CLEAR THE NEXT 8K WORDS
3790  013460                          17$:
3791  013460  005024                        CLR     (R4)+           ;CLEAR VIRTUAL ADDRESS 120000 - 157776
3792  013462  005737  002340                TST     FLAG            ;DOES AN NXM TRAP OCCUR?
3793  013466  001036                        BNE     29$             ;IF SO DON'T USE MEMORY MANAGEMENT.
3794  013470  005301                        DEC     R1
3795  013472  001372                        BNE     17$
3796  013474  005037  177572                CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
3797
3798  013500  012737  060000  003230        MOV     #60000,XMTBUF   ;VIRTUAL ADDRESS OF XMIT BUFFER
3799  013506  012737  120000  003630        MOV     #120000,RCVBUF  ;VIRTUAL ADDRESS OF RCV. BUFFER
```

```
3800  013514  022737  000001  002322          CMP     #1,BUFNUM       ;IS THERE ONLY 1 XMIT & RECEIVE BUFFER?
3801  013522  001004                          BNE     20$             ;IF NOT, BR
3802  013524  012737  037777  002320          MOV     #37777,BUFSIZ   ;EACH BUFFER IS 16K BYTES
3803  013532  000525                          BR      60$
3804  013534                              20$:
3805  013534  022737  000007  002322          CMP     #7,BUFNUM       ;ARE THERE 7 XMIT & RECEIVE (14 TOTAL BUFFER)?
3806  013542  001004                          BNE     21$             ;IF NOT - MUST BE 64 BUFFERS
3807  013544  012737  004000  002320          MOV     #4000,BUFSIZ    ;EACH BUFFER IS 2K BYTES
3808  013552  000515                          BR      60$
3809  013554                              21$:
3810  013554  012737  000376  002320          MOV     #376,BUFSIZ     ;EACH BUFFER IS 254. BYTES.
3811  013562  000511                          BR      60$
3812
3813  013564                              29$:
3814  013564  005037  177572                  CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
3815  013570                              30$:
3816  013570  005037  002302                  CLR     MMANAG          ;FLAG THAT MEMORY MANAGEMENT NOT USED.
3817  013574                          CLRVEC  #4                      ;RESTORE TRAP 4.
 (3)  013574  012700  000004                                                  MOV     #4,R0
 (3)  013600  104436                                                          TRAP    C$CVEC
3818  013602                          MEMORY  R2                      ;FIND THE FREE MEMORY AVAILABLE BETWEEN
 (3)  013602  104431                                                          TRAP    C$MEM
 (3)  013604  010002                                                          MOV     R0,R2
3819                                                                    ;THE DIAGNOSTIC AND THE DRS (SUPERVISOR).
3820  013606  021227  002000                  CMP     @R2,#2000       ;IS THERE AT LEAST 1K WORDS? (NOTE: CONTENTS
3821                                                                    ;OF THE RETURNED ADDRESS OF THE START OF FREE
3822                                                                    ;MEMORY CONTAIN THE AMOUNT OF AVAILABLE MEM.)
3823  013612  003406                          BLE     35$             ;IF NOT AT LEAST 1K, USE DEFAULT BUFFER.
3824  013614  010237  003230                  MOV     R2,XMTBUF       ;USE THE FREE MEMORY BUFFER.
3825  013620  011200                          MOV     @R2,R0          ;SAVE THE WORD SIZE OF THE BUFFER.
3826  013622  042700  000001                  BIC     #BIT0,R0        ;START WITH AN EVEN # OF WORDS.
3827  013626  000405                          BR      40$
3828  013630                              35$:
3829  013630  012737  004230  003230          MOV     #BIGBUF,XMTBUF  ;USE THE DEFAULT BUFFER (1ST HALF FOR XMIT).
3830  013636  012700  002000                  MOV     #2000,R0        ;1K WORD SIZE.
3831  013642                              40$:
3832  013642  013737  003230  003630          MOV     XMTBUF,RCVBUF   ;CALCULATE THE RECEIVE BUFFER ADDRESS
3833  013650  060037  003630                  ADD     R0,RCVBUF       ;AS STARTING IN THE 2ND HALF OF THE BUFFER.
3834  013654  010001                          MOV     R0,R1           ;BUFFER SIZE IN WORDS.
3835  013656  022737  000001  002322          CMP     #1,BUFNUM       ;ARE WE SETTING UP 1 RECEIVE AND XMIT BUFFER?
3836  013664  001415                          BEQ     47$             ;IF YES - R1 = BYTE SIZE FOR BOTH BUFFERS.
3837  013666  022737  000007  002322          CMP     #7,BUFNUM       ;ARE WE SETTING UP 7 RCV & 7 XMIT BUFFERS?
3838  013674  001004                          BNE     45$             ;IF NOT WE MUST NEED 64 RCV & 64 XMIT BUFFERS.
3839  013676  006201                          ASR     R1              ;R1 = # BYTES IN THE BUFFERS/8
3840  013700  006201                          ASR     R1
3841  013702  006201                          ASR     R1
3842  013704  000405                          BR      47$
3843  013706                              45$:
3844  013706  012704  000007                  MOV     #7,R4           ;DIVIDE BYTES BY 128.
3845  013712                              46$:
3846  013712  006201                          ASR     R1              ;SHIFT RIGHT 7 TIMES
3847  013714  005304                          DEC     R4
3848  013716  001375                          BNE     46$
3849  013720                              47$:
3850  013720  010137  002320                  MOV     R1,BUFSIZ       ;SAVE THE BUFFER SIZE IN BYTES.
3851  013724  162737  000002  002320          SUB     #2,BUFSIZ       ;ADJUST BUFFER SIZE BECAUSE WE
```

```
3852
3853  013732  042737  000001  002320          BIC     #1,BUFSIZ       ;WILL ADJUST BUFFER STARTING ADDRESS.
3854  013740  006200                          ASR     R0              ;ENSURE WE START WITH AN EVEN # OF BYTES.
3855  013742  010001                          MOV     R0,R1           ;# OF WORDS IN ALL XMIT BUFFERS.
3856  013744  013702  003230                  MOV     XMTBUF,R2       ;SAVE # OF WORDS IN ALL RCV BUFFERS.
3857  013750                          50$:    MOV     #$CCITT,R3      ;ADDRESS OF START OF XMIT BUFFERS.
3858  013750  012703  002410                  MOV     #32.,R4         ;ADDRESS OF TEST PATTERN
3859  013754  012704  000040                  MOV     (R3)+,(R2)      ;# OF WORDS IN THE TEST PATTERN.
3860  013760                          51$:    DEC     R0              ;WRITE TEST PATTERN INTO ALL XMIT BUFFERS.
3861  013760  012312                          BEQ     55$             ;ARE ALL THE XMIT BUFFERS WRITTEN?
3862  013762  005300                          DEC     R4              ;IF YES PROCEED.
3863  013764  001403                          BNE     51$             ;CONTINUE WITH TEST PATTERN TILL DONE.
3864  013766  005304                          BR      50$             ;START AT BEGINNING OF TEST PATTERN.
3865  013770  001373
3866  013772  000766
3867  013774                          55$:    MOV     RCVBUF,R2       ;ADDRESS OF RECEIVE BUFFERS
3868  013774  013702  003630                  CLR     (R2)+           ;CLEAR ALL RECEIVE BUFFERS.
3869  014000                          56$:    DEC     R1
3870  014000  005022                          BNE     56$
3871  014002  005301
3872  014004  001375
3873
3874
3875  014006                          60$:    MOV     RCVBUF,R0       ;ADDRESS OF RECEIVE BUFFER
3876  014006  013700  003630                  MOV     #RCVBUF,R1      ;TABLE ADDRESS OF RCV BUFFER POINTERS.
3877  014012  012701  003630                  MOV     BUFNUM,R2       ;# OF RCV. BUFFERS.
3878  014016  013702  002322          65$:    MOV     R0,(R1)+        ;SAVE THE RECEIVE BUFFER ADDRESS
3879  014022                                  MOV     BUFSIZ,(R1)+    ;SAVE THE BUFFER SIZE
3880  014022  010021                          ADD     BUFSIZ,R0       ;CALCULATE THE NEXT BUFFER ADDRESS.
3881  014024  013721  002320                  INC     R0              ;CHANGE EVEN ADDRESS TO ODD & ODD TO EVEN.
3882  014030  063700  002320                  DEC     R2              ;CALCULATE ALL THE BUFFER ADDRESSES.
3883  014034  005200                          BNE     65$
3884  014036  005302
3885  014040  001370
3886
3887  014042  013700  003230                  MOV     XMTBUF,R0       ;ADDRESS OF TRANSMIT BUFFERS
3888  014046  012701  003230                  MOV     #XMTBUF,R1      ;TABLE OF XMIT BUFFER POINTERS.
3889  014052  013702  002322                  MOV     BUFNUM,R2       ;#OF XMIT BUFFERS.
3890  014056  012703  000004                  MOV     #4,R3           ;R3 IS USED TO VARY THE CHARACTER COUNT.
3891  014062                          70$:    MOV     R0,(R1)+        ;SAVE THE XMIT BUFFER ADDRESS.
3892  014062  010021                          MOV     BUFSIZ,(R1)     ;SAVE THE BUFFER SIZE.
3893  014064  013711  002320                  SUB     R3,(R1)+        ;VARY THE BUFFER SIZE
3894  014070  160321                          ADD     BUFSIZ,R0       ;CALCULATE THE NEXT BUFFER ADDRESS
3895  014072  063700  002320                  DEC     R3              ;CHANGE THE CHARACTER COUNT VARIABLE.
3896  014076  005303                          BIT     #BIT0,R3        ;IS THE CONTENTS OF R3 ODD
3897  014100  032703  000001                  BNE     72$             ;IF YES, DON'T ADJUST BUFFER ADDRESS.
3898  014104  001001                          INC     R0              ;CHANGE EVEN TO ODD ETC.
3899  014106  005200                  72$:    TST     R3              ;WHAT IS R3.
3900  014110                                  BGE     75$             ;CONTINUE UNTIL R3 = -1
3901  014110  005703                          MOV     #4,R3           ;RE-INIT. THE R3 VARIABLE AGAIN.
3902  014112  002002                  75$:    DEC     R2              ;CALCULATE ALL THE XMIT BUFFERS.
3903  014114  012703  000004                  BNE     70$
3904  014120
3905  014120  005302
3906  014122  001357
3907
```

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 3908  014124  005037  002340                  CLR     FLAG            ;RESTORE FLAG USED IN TRAP VECTOR.
 3909  014130  005037  002366                  CLR     SUBRPC          ;CLEAR PC.
 3910  014134  000207                          RETURN
 3911
 3912
 3913
 3914
 3915                                  ;;*****************************************************************************
 3916                                  ;;*****************************************************************************
 3917                                  ;
 3918                                  ;                       SUBROUTINE $INOUT
 3919                                  ;
 3920                                  ;               FUNCTION - TO MANAGE THE INTERRUPT FROM BASE IN
 3921                                  ;                          TO BA/CC OUT IN THE INTERRUPT TESTS 15-19
 3922                                  ;
 3923                                  ;       ENTRY CONDITIONS - BUFNUM = # OF RCV AND XMIT BUFFERS
 3924                                  ;                          ALL BUFFERS SET UP IN  THE $BUFFS SUBROUTINE.
 3925                                  ;                          WAIT3  = # OF OUTER LOOP TIMEOUT COUNTERS.
 3926                                  ;                                   THIS VALUE IS DETERMINED BY THE BAUD
 3927                                  ;                                   RATE IN THE INIT. SECTION OF CODE.
 3928                                  ;
 3929                                  ;       EXIT CONDITIONS  -
 3930                                  ;
 3931                                  ;       REGISTERS        - R0 - R5 DESTROYED
 3932                                  ;
 3933                                  ;
 3934                                  ;;*****************************************************************************
 3935                                  ;;*****************************************************************************
 3936  014136                          $INOUT:
 3937  014136  011637  002366                  MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $LOOP
 3938  014142  162737  000004  002366          SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
 3939  014150  012737  000001  002370          MOV     #1,NESTPC       ;FLAG THAT ANY SUBROUTINE USED WILL BE NESTED.
 3940  014156  013737  002322  002324          MOV     BUFNUM,INRCV    ;# OF BA/CC IN RECEIVES
 3941  014164  013737  002322  002326          MOV     BUFNUM,INXMIT   ;# OF BA/CC IN TRANSMITS
 3942  014172  013737  002322  002330          MOV     BUFNUM,OUTRCV   ;# OF BA/CC OUT RECEIVES
 3943  014200  013737  002322  002332          MOV     BUFNUM,OUTXMT   ;# OF BA/CC OUT TRANSMITS
 3944  014206  005037  002346                  CLR     INFLAG          ;CLEAR INPUT BA/CC FLAG
 3945  014212  005037  002350                  CLR     OUTFLG          ;CLEAR OUTPUT BA/CC FLAG
 3946  014216  005037  002272                  CLR     START           ;CLEAR FLAG TO SHOW START UP NOT DONE (SET
 3947                                                                  ;AFTER CONTROL IN)
 3948  014222  012702  003630                  MOV     #RCVBUF,R2      ;ADDR OF RCV. BUFFER TABLE (FOR INPUT,
 3949  014226  012703  003230                  MOV     #XMTBUF,R3      ;ADDR OF XMIT BUFFER TABLE (FOR INPUT)
 3950  014232  012704  003630                  MOV     #RCVBUF,R4      ;ADDR OF RCV. BUFFER TABLE (OUTPUT CHECKING)
 3951  014236  012705  003230                  MOV     #XMTBUF,R5      ;ADDR OF XMIT BUFFER TABLE (OUTPUT CHECKING)
 3952  014242                                  SETPRI  #PRI04          ;SET THE PRIORITY TO LEVEL 4 TO ALLOW THE
   (3) 014242  012700  000200                                                          MOV     #PRI04,R0
   (3) 014246  104441                                                                  TRAP    C$SPRI
 3953                                                                  ;DMR TO INTERRUPT AT LEVEL 5
 3954  014250  013737  002314  002316          MOV     WAIT3,WAIT4     ;TIMEOUT COUNTER DETERMINED BY BAUD RATE.
 3955  014256  112777  000143  165746          MOVB    #IESET!RQI!BASEI,@BSEL0 ;FIRST COMMAND - BASE IN.
 3956  014264                          8$:
 3957  014264  012701  001000                  MOV     #1000,R1        ;INNER LOOP COUNTER
 3958  014270                          10$:
 3959  014270                                  BREAK                   ;OPERATOR INTERRUPT ENABLE.  CALL TO
   (3) 014270  104422                                                                  TRAP    C$BRK
 3960                                                                  ;THE SUPERVISOR TO ALLOW CONSOLE INTERRUPT
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                                        ;(NOTE: INFLAG AND OUTFLG SET IN THE INTERRUPT
                                        ;SERVICE ROUTINES)
                        TST     INFLAG  ;ARE THE INPUTS DONE?   (INISR DONE?)
                        BEQ     12$     ;IF NOT KEEP CHECKING.
                        TST     OUTFLG  ;ARE THE OUTPUTS DONE?  (OUTISR DONE?)
                        BNE     20$     ;IF YES EXIT WAIT LOOP.
                12$:
                        DELAY   1       ;WAIT 100 MICROSECONDS.
(2) 014306 012727 000001                                        MOV     #1,(PC)+
(2) 014312 000000                                               .WORD   0
(2) 014314 013727 002116                                        MOV     L$DLY,(PC)+
(2) 014320 000000                                               .WORD   0
(2) 014322 005367 177772                                        DEC     -6(PC)
(2) 014326 001375                                               BNE     .-4
(2) 014330 005367 177756                                        DEC     -22(PC)
(2) 014334 001367                                               BNE     .-20
                        DEC     R1      ;CONTINUE IN LOOP UNTIL R1 - 0.
                        BNE     10$
                        DEC     WAIT4   ;DECREMENT OUTER LOOP COUNTER
                        BNE     8$      ;IF NOT DONE - GO THROUGH INNER LOOP AGAIN.
                        ERRDF   2,EMG2,ERRG1    ;TIMEOUT MESSAGE.
(4) 014350 104455                                               TRAP    C$ERDF
(5) 014352 000002                                               .WORD   2
(5) 014354 020025                                               .WORD   EMG2
(5) 014356 014562                                               .WORD   ERRG1
                                        ;ALSO PRINT # OF BUFFERS NOT COMPLETE.

014360 000453           BR      60$     ;EXIT
014362          20$:

014362 012700 003630    MOV     #RCVBUF,R0      ;RECEIVE BUFFER POINTER TABLE ADDRESS.
014366 012701 003230    MOV     #XMTBUF,R1      ;TRANSMIT BUFFERS
014372 013702 002322    MOV     BUFNUM,R2       ;# OF RCV. AND XMIT BUFFERS.
014376 005737 002302    TST     MMANAG          ;ARE THE BUFFERS MEMORY MANAGED?
014402 001403           BEQ     40$             ;IF YES - PROCEED.
014404 012737 000001 177572     MOV     #1,@#177572     ;TURN ON MEMORY MANAGEMENT
014412          40$:
014412 012003           MOV     (R0)+,R3        ;ADDRESS OF A RECEIVE BUFFER.
014414 012104           MOV     (R1)+,R4        ;ADDRESS OF A TRANSMIT BUFFER.
014416 011005           MOV     @R0,R5          ;CHARACTER COUNT.
014420 022021           CMP     (R0)+,(R1)+     ;ARE THE CHARACTER COUNTS THE SAME?
014422 001412           BEQ     45$             ;IF YES - PROCEED.
014424 005737 002302    TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
014430 001402           BEQ     41$             ;IF NOT - SKIP TURN OFF.
014432 005037 177572    CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
014436          41$:
014436                  ERRDF   12,EMG12,ERRG10
014436 104455                                                   TRAP    C$ERDF
014440 000014                                                   .WORD   12
014442 020241                                                   .WORD   EMG12
014444 016160                                                   .WORD   ERRG10
014446 000420           BR      60$             ;EXIT
014450          45$:
014450 122324           CMPB    (R3)+,(R4)+     ;ARE THE CHARACTERS THE SAME?
014452 001005           BNE     50$             ;IF NOT - ERROR EXIT
014454 005305           DEC     R5              ;CHECK ALL THE CHARACTERS
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4001  014456  001374                        BNE     45$
4002  014460  005302                        DEC     R2              ;CHECK ALL THE BUFFERS.
4003  014462  001353                        BNE     40$
4004  014464  000411                        BR      60$
4005  014466                          50$:
4006  014466  005737  002302                TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
4007  014472  001402                        BEQ     51$             ;IF NOT - SKIP TURN OFF.
4008  014474  005037  177572                CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
4009  014500                          51$:
4010  014500                                ERRDF   15,EMG15,ERRG12
  (4) 014500  104455                                                              TRAP    C$ERDF
  (5) 014502  000017                                                              .WORD   15
  (5) 014504  020341                                                              .WORD   EMG15
  (5) 014506  016244                                                              .WORD   ERRG12
4011  014510                          60$:
4012  014510  005737  002302                TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
4013  014514  001402                        BEQ     61$             ;IF NOT - SKIP TURN OFF.
4014  014516  005037  177572                CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
4015  014522                          61$:
4016  014522  042777  000120  165502        BIC     #IESET!IECLR,@SEL0 ;DISABLE BOTH INPUT INTERRUPTS
4017  014530  042777  000100  165476        BIC     #IE0,@SEL2      ;DISABLE OUTPUT INTERRUPT
4018
4019  014536                                SHUTDN                  ;SHUT DOWN THE DMR
  (1)                                                             ;**** MACRO EXPANSION ****
  (1) 014536  004737  012560                JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                                             ;****                ****
4020  014542                                SETPRI  #PRI07          ;RETURN PROCESSOR PRIORITY TO 7
  (3) 014542  012700  000340                                                      MOV     #PRI07,R0
  (3) 014546  104441                                                              TRAP    C$SPRI
4021  014550  005037  002370                CLR     NESTPC          ;CLEAR NESTED FLAG.
4022  014554  005037  002366                CLR     SUBRPC          ;CLEAR PC.
4023  014560  000207                        RETURN
4024
4025
4026
4027
4028
4029
4030
4031
4032
4033
4034
4035                                  .SBTTL  GLOBAL ERROR REPORT REPORT SECTION
4036                                  ;////////////////////////////////////////////////////////////////////////////
4037                                  ;/    THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
4038                                  ;/    THAT ARE USED IN MORE THAN ONE TEST.
4039                                  ;////////////////////////////////////////////////////////////////////////////
4040                                          .EVEN
4041
4042  014562                          BGNMSG  ERRG1
  (3) 014562                                                                      ERRG1::
4043  014562                                  PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
  (8) 014562  013746  002366                                                      MOV     SUBRPC,-(SP)
  (7) 014566  012746  016362                                                      MOV     #FMG3,-(SP)
  (6) 014572  012746  000002                                                      MOV     #2,-(SP)
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  (3)  014576  010600                                                          MOV     SP,R0
  (4)  014600  104414                                                          TRAP    C$PNTB
  (4)  014602  062706  000006                                                  ADD     #6,SP
4044   014606                PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
  (9)  014606  017746  165422                                                  MOV     @SEL2,-(SP)
  (8)  014612  017746  165414                                                  MOV     @SEL0,-(SP)
  (7)  014616  012746  016276                                                  MOV     #FMG1,-(SP)
  (6)  014622  012746  000003                                                  MOV     #3,-(SP)
  (3)  014626  010600                                                          MOV     SP,R0
  (4)  014630  104414                                                          TRAP    C$PNTB
  (4)  014632  062706  000010                                                  ADD     #10,SP
4045   014636                PRINTB  #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS.
  (9)  014636  017746  165376                                                  MOV     @SEL6,-(SP)
  (8)  014642  017746  165370                                                  MOV     @SEL4,-(SP)
  (7)  014646  012746  016330                                                  MOV     #FMG2,-(SP)
  (6)  014652  012746  000003                                                  MOV     #3,-(SP)
  (3)  014656  010600                                                          MOV     SP,R0
  (4)  014660  104414                                                          TRAP    C$PNTB
  (4)  014662  062706  000010                                                  ADD     #10,SP
4046   014666                PRINTB  #FMG21,BUFNUM   ;# OF BUFFERS
  (8)  014666  013746  002322                                                  MOV     BUFNUM,-(SP)
  (7)  014672  012746  017545                                                  MOV     #FMG21,-(SP)
  (6)  014676  012746  000002                                                  MOV     #2,-(SP)
  (3)  014702  010600                                                          MOV     SP,R0
  (4)  014704  104414                                                          TRAP    C$PNTB
  (4)  014706  062706  000006                                                  ADD     #6,SP
4047   014712                PRINTB  #FMG22,BUFSIZ   ;BUFFER SIZE
  (8)  014712  013746  002320                                                  MOV     BUFSIZ,-(SP)
  (7)  014716  012746  017625                                                  MOV     #FMG22,-(SP)
  (6)  014722  012746  000002                                                  MOV     #2,-(SP)
  (3)  014726  010600                                                          MOV     SP,R0
  (4)  014730  104414                                                          TRAP    C$PNTB
  (4)  014732  062706  000006                                                  ADD     #6,SP
4048   014736  005437  002324        NEG     INRCV           ;NEGATE BUFFER VALUES
4049   014742  005437  002326        NEG     INXMIT
4050   014746  005437  002330        NEG     OUTRCV
4051   014752  005437  002332        NEG     OUTXMT
4052   014756  063737  002322  002324ADD     BUFNUM,INRCV    ;CALCULATE BUFFERS ASSIGNED.
4053   014764  063737  002322  002326ADD     BUFNUM,INXMIT
4054   014772  063737  002322  002330ADD     BUFNUM,OUTRCV   ;CALCULATE BUFFERS RECEIVED.
4055   015000  063737  002322  002332ADD     BUFNUM,OUTXMT
4056   015006                PRINTB  #FMG23,INRCV,INXMIT
  (9)  015006  013746  002326                                                  MOV     INXMIT,-(SP)
  (8)  015012  013746  002324                                                  MOV     INRCV,-(SP)
  (7)  015016  012746  017652                                                  MOV     #FMG23,-(SP)
  (6)  015022  012746  000003                                                  MOV     #3,-(SP)
  (3)  015026  010600                                                          MOV     SP,R0
  (4)  015030  104414                                                          TRAP    C$PNTB
  (4)  015032  062706  000010                                                  ADD     #10,SP
4057   015036                PRINTB  #FMG24,OUTRCV,OUTXMT
  (9)  015036  013746  002332                                                  MOV     OUTXMT,-(SP)
  (8)  015042  013746  002330                                                  MOV     OUTRCV,-(SP)
  (7)  015046  012746  017733                                                  MOV     #FMG24,-(SP)
  (6)  015052  012746  000003                                                  MOV     #3,-(SP)
  (3)  015056  010600                                                          MOV     SP,R0
  (4)  015060  104414                                                          TRAP    C$PNTB
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  (4)  015062  062706  000010                                                          ADD     #10,SP
4058   015066                    ENDMSG
  (3)  015066                                                                  L10002:
  (3)  015066  104423                                                                 TRAP    C$MSG
4059
4060
4061   015070                    BGNMSG  ERRG2
  (3)  015070                                                                  ERRG2::
4062   015070  005737  002366            TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
4063   015074  001412                    BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
4064   015076                            PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
  (8)  015076  013746  002366                                                          MOV     SUBRPC,-(SP)
  (7)  015102  012746  016362                                                          MOV     #FMG3,-(SP)
  (6)  015106  012746  000002                                                          MOV     #2,-(SP)
  (3)  015112  010600                                                                  MOV     SP,R0
  (4)  015114  104414                                                                  TRAP    C$PNTB
  (4)  015116  062706  000006                                                          ADD     #6,SP
4065   015122                    10$:
4066   015122                            PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
  (9)  015122  017746  165106                                                          MOV     @SEL2,-(SP)
  (8)  015126  017746  165100                                                          MOV     @SEL0,-(SP)
  (7)  015132  012746  016276                                                          MOV     #FMG1,-(SP)
  (6)  015136  012746  000003                                                          MOV     #3,-(SP)
  (3)  015142  010600                                                                  MOV     SP,R0
  (4)  015144  104414                                                                  TRAP    C$PNTB
  (4)  015146  062706  000010                                                          ADD     #10,SP
4067   015152                            PRINTB  #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS.
  (9)  015152  017746  165062                                                          MOV     @SEL6,-(SP)
  (8)  015156  017746  165054                                                          MOV     @SEL4,-(SP)
  (7)  015162  012746  016330                                                          MOV     #FMG2,-(SP)
  (6)  015166  012746  000003                                                          MOV     #3,-(SP)
  (3)  015172  010600                                                                  MOV     SP,R0
  (4)  015174  104414                                                                  TRAP    C$PNTB
  (4)  015176  062706  000010                                                          ADD     #10,SP
4068   015202                    ENDMSG
  (3)  015202                                                                  L10003:
  (3)  015202  104423                                                                 TRAP    C$MSG
4069
4070   015204                    BGNMSG  ERRG3
  (3)  015204                                                                  ERRG3::
4071   015204  005737  002366            TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
4072   015210  001412                    BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
4073   015212                            PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
  (8)  015212  013746  002366                                                          MOV     SUBRPC,-(SP)
  (7)  015216  012746  016362                                                          MOV     #FMG3,-(SP)
  (6)  015222  012746  000002                                                          MOV     #2,-(SP)
  (3)  015226  010600                                                                  MOV     SP,R0
  (4)  015230  104414                                                                  TRAP    C$PNTB
  (4)  015232  062706  000006                                                          ADD     #6,SP
4074   015236                    10$:
4075   015236                            PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
  (9)  015236  017746  164772                                                          MOV     @SEL2,-(SP)
  (8)  015242  017746  164764                                                          MOV     @SEL0,-(SP)
  (7)  015246  012746  016276                                                          MOV     #FMG1,-(SP)
  (6)  015252  012746  000003                                                          MOV     #3,-(SP)
  (3)  015256  010600                                                                  MOV     SP,R0
```

```
  (4) 015260 104414                                                                    TRAP    C$PNTB
  (4) 015262 062706 000010                                                             ADD     #10,SP
4076 015266 032777 100000 164736      BIT     #RUN,@SEL0      ;IS THE RUN BIT SET
4077 015274 001043                    BNE     20$             ;IF RUN SET, CHECK.
4078 015276 122777 000001 164740      CMPB    #1,@BSEL3       ;DID CPU MICRO. FAIL?
4079 015304 001011                    BNE     12$             ;IF NOT SEE IF LU FAILED.
4080 015306                           PRINTB  #FMG4           ;CPU MICRO. FAILED.
  (7) 015306 012746 016434                                                             MOV     #FMG4,-(SP)
  (6) 015312 012746 000001                                                             MOV     #1,-(SP)
  (3) 015316 010600                                                                    MOV     SP,R0
  (4) 015320 104414                                                                    TRAP    C$PNTB
  (4) 015322 062706 000004                                                             ADD     #4,SP
4081 015326 000455                    BR      30$
4082 015330                     12$:
4083 015330 122777 000002 164706      CMPB    #2,@BSEL3       ;DID LINE UNIT MICRO. FAIL?
4084 015336 001011                    BNE     15$
4085 015340                           PRINTB  #FMG5           ;LINE UNIT FAILED.
  (7) 015340 012746 016465                                                             MOV     #FMG5,-(SP)
  (6) 015344 012746 000001                                                             MOV     #1,-(SP)
  (3) 015350 010600                                                                    MOV     SP,R0
  (4) 015352 104414                                                                    TRAP    C$PNTB
  (4) 015354 062706 000004                                                             ADD     #4,SP
4086 015360 000440                    BR      30$
4087 015362                     15$:
4088 015362                           PRINTB  #FMG5           ;NO RUN - MASTER CLEAR FAILED.
  (7) 015362 012746 016465                                                             MOV     #FMG5,-(SP)
  (6) 015366 012746 000001                                                             MOV     #1,-(SP)
  (3) 015372 010600                                                                    MOV     SP,R0
  (4) 015374 104414                                                                    TRAP    C$PNTB
  (4) 015376 062706 000004                                                             ADD     #4,SP
4089 015402 000427                    BR      30$
4090 015404                     20$:
4091 015404 105777 164634             TSTB    @BSEL3          ;IS BSEL3 STILL 0?
4092 015410 001010                    BNE     25$             ;IF NOT - SEE IF MICRODIAG. RUN.
4093 015412                           PRINTB  #FMG19          ;DEVICE IS NOT DMR (DMC?)
  (7) 015412 012746 017473                                                                     MOV     #FMG19,-(SP)
  (6) 015416 012746 000001                                                                     MOV     #1,-(SP)
  (3) 015422 010600                                                                            MOV     SP,R0
  (4) 015424 1044,4                                                                            TRAP    C$PNTB
  (4) 015426 062706 000004                                                                     ADD     #4,SP
4094 015432                     25$:
4095 015432 122777 000100 164604      CMPB    #100,@BSEL3     ;WERE MICRODIAGNOSTICS DISABLE?
4096 015440 001010                    BNE     30$
4097 015442                           PRINTB  #FMG20          ;MICRODIAGNOSTICS DISABLED
  (7) 015442 012746 017516                                                                     MOV     #FMG20,-(SP)
  (6) 015446 012746 000001                                                                     MOV     #1,-(SP)
  (3) 015452 010600                                                                            MOV     SP,R0
  (4) 015454 104414                                                                            TRAP    C$PNTB
  (4) 015456 062706 000004                                                                     ADD     #4,SP
4098 015462                     30$:
4099 015462                     ENDMSG
  (3) 015462                                                                           L10004:
  (3) 015462 104423                                                                            TRAP    C$MSG
4100
4101
4102 015464                     BGNMSG  ERRG4
```

```
    (3) 015464                                                                  ERRG4::
   4103 015464 005737 002366              TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
   4104 015470 001412                     BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
   4105 015472                            PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
    (8) 015472 013746 002366                                                                  MOV     SUBRPC,-(SP)
    (7) 015476 012746 016362                                                                  MOV     #FMG3,-(SP)
    (6) 015502 012746 000002                                                                  MOV     #2,-(SP)
    (3) 015506 010600                                                                         MOV     SP,R0
    (4) 015510 104414                                                                         TRAP    C$PNTB
    (4) 015512 062706 000006                                                                  ADD     #6,SP
   4106 015516                     10$:
   4107 015516 105737 002633              TSTB    BASE+3          ;ONLY PRINT NON-ZERO VALUES
   4108 015522 001003                     BNE     11$
   4109 015524 105737 002636              TSTB    BASE+6
   4110 015530 001416                     BEQ     12$
   4111 015532                     11$:
   4112 015532                            PRINTB  #FMG7,<B,BASE+3>,<B,BASE+6>
    (9) 015532 005046                                                                         CLR     -(SP)
    (9) 015534 153716 002636                                                                  BISB    BASE+6,(SP)
    (8) 015540 005046                                                                         CLR     -(SP)
    (8) 015542 153716 002633                                                                  BISB    BASE+3,(SP)
    (7) 015546 012746 016557                                                                  MOV     #FMG7,-(SP)
    (6) 015552 012746 000003                                                                  MOV     #3,-(SP)
    (3) 015556 010600                                                                         MOV     SP,R0
    (4) 015560 104414                                                                         TRAP    C$PNTB
    (4) 015562 062706 000010                                                                  ADD     #10,SP
   4113 015566                     12$:
   4114 015566 105737 002635              TSTB    BASE+5
   4115 015572 001003                     BNE     13$
   4116 015574 105737 002640              TSTB    BASE+8.
   4117 015600 001416                     BEQ     14$
   4118 015602                     13$:
   4119 015602                            PRINTB  #FMG8,<B,BASE+5>,<B,BASE+8.>
    (9) 015602 005046                                                                         CLR     -(SP)
    (9) 015604 153716 002640                                                                  BISB    BASE+8.,(SP)
    (8) 015610 005046                                                                         CLR     -(SP)
    (8) 015612 153716 002635                                                                  BISB    BASE+5,(SP)
    (7) 015616 012746 016630                                                                  MOV     #FMG8,-(SP)
    (6) 015622 012746 000003                                                                  MOV     #3,-(SP)
    (3) 015626 010600                                                                         MOV     SP,R0
    (4) 015630 104414                                                                         TRAP    C$PNTB
    (4) 015632 062706 000010                                                                  ADD     #10,SP
   4120 015636                     14$:
   4121 015636 105737 002634              TSTB    BASE+4
   4122 015642 001003                     BNE     15$
   4123 015644 105737 002637              TSTB    BASE+7
   4124 015650 001416                     BEQ     16$
   4125 015652                     15$:
   4126 015652                            PRINTB  #FMG9,<B,BASE+4>,<B,BASE+7>
    (9) 015652 005046                                                                         CLR     -(SP)
    (9) 015654 153716 002637                                                                  BISB    BASE+7,(SP)
    (8) 015660 005046                                                                         CLR     -(SP)
    (8) 015662 153716 002634                                                                  BISB    BASE+4,(SP)
    (7) 015666 012746 016701                                                                  MOV     #FMG9,-(SP)
    (6) 015672 012746 000003                                                                  MOV     #3,-(SP)
    (3) 015676 010600                                                                         MOV     SP,R0
```

```
   (4)  015700  104414
   (4)  015702  062706  000010
 4127   015706
 4128   015706  105737  002642          16$:    TSTB    BASE+10.
 4129   015712  001003                          BNE     17$
 4130   015714  105737  002641                  TSTB    BASE+9.
 4131   015720  001416                          BEQ     20$
 4132   015722                          17$:
 4133   015722                                  PRINTB  #FMG10,<B,BASE+10.>,<B,BASE+9.>
   (9)  015722  005046                                                          CLR     -(SP)
   (9)  015724  153716  002641                                                  BISB    BASE+9.,(SP)
   (8)  015730  005046                                                          CLR     -(SP)
   (8)  015732  153716  002642                                                  BISB    BASE+10.,(SP)
   (7)  015736  012746  016752                                                  MOV     #FMG10,-(SP)
   (6)  015742  012746  000003                                                  MOV     #3,-(SP)
   (3)  015746  010600                                                          MOV     SP,R0
   (4)  015750  104414                                                          TRAP    C$PNTB
   (4)  015752  062706  000010                                                  ADD     #10,SP
 4134   015756                          20$:
 4135   015756                          ENDMSG
   (3)  015756                                                          L10005:
   (3)  015756  104423                                                          TRAP    C$MSG
 4136
 4137
 4138
 4139   015760                          BGNMSG  ERRG7
   (3)  015760                                                          ERRG7::
 4140   015760                                  PRINTB  #FMG12          ;BA/CC OUT RECV
   (7)  015760  012746  017042                                                  MOV     #FMG12,-(SP)
   (6)  015764  012746  000001                                                  MOV     #1,-(SP)
   (3)  015770  010600                                                          MOV     SP,R0
   (4)  015772  104414                                                          TRAP    C$PNTB
   (4)  015774  062706  000004                                                  ADD     #4,SP
 4141   016000                                  PRINTB  #FMG13,@SEL4,@SEL6 ;ACTUAL BA/CC
   (9)  016000  017746  164234                                                  MOV     @SEL6,-(SP)
   (8)  016004  017746  164226                                                  MOV     @SEL4,-(SP)
   (7)  016010  012746  017073                                                  MOV     #FMG13,-(SP)
   (6)  016014  012746  000003                                                  MOV     #3,-(SP)
   (3)  016020  010600                                                          MOV     SP,R0
   (4)  016022  104414                                                          TRAP    C$PNTB
   (4)  016024  062706  000010                                                  ADD     #10,SP
 4142   016030                                  PRINTB  #FMG15,-2(R4)       ;EXPECTED BA/CC
   (8)  016030  016446  177776                                                  MOV     -2(R4),-(SP)
   (7)  016034  012746  017223                                                  MOV     #FMG15,-(SP)
   (6)  016040  012746  000002                                                  MOV     #2,-(SP)
   (3)  016044  010600                                                          MOV     SP,R0
   (4)  016046  104414                                                          TRAP    C$PNTB
   (4)  016050  062706  000006                                                  ADD     #6,SP
 4143   016054                          ENDMSG
   (3)  016054                                                          L10006:
   (3)  016054  104423                                                          TRAP    C$MSG
 4144
 4145   016056                          BGNMSG  ERRG8
   (3)  016056                                                          ERRG8::
 4146   016056                                  PRINTB  #FMG11          ;BA/CC OUT XMIT
   (7)  016056  012746  017010                                                  MOV     #FMG11,-(SP)
```

```
   (6)  016062  012746  000001                                                        MOV     #1,-(SP)
   (3)  016066  010600                                                               MOV     SP,R0
   (4)  016070  104414                                                               TRAP    C$PNTB
   (4)  016072  062706  000004                                                       ADD     #4,SP
 4147   016076                       PRINTB  #FMG13,@SEL4,@SEL6   ;ACTUAL BA/CC
   (9)  016076  017746  164136                                                       MOV     @SEL6,-(SP)
   (8)  016102  017746  164130                                                       MOV     @SEL4,-(SP)
   (7)  016106  012746  017073                                                       MOV     #FMG13,-(SP)
   (6)  016112  012746  000003                                                       MOV     #3,-(SP)
   (3)  016116  010600                                                               MOV     SP,R0
   (4)  016120  104414                                                               TRAP    C$PNTB
   (4)  016122  062706  000010                                                       ADD     #10,SP
 4148   016126                       PRINTB  #FMG14,-4(R5),-2(R5) ;EXPECTED BA/CC
   (9)  016126  016546  177776                                                       MOV     -2(R5),-(SP)
   (8)  016132  016546  177774                                                       MOV     -4(R5),-(SP)
   (7)  016136  012746  017147                                                       MOV     #FMG14,-(SP)
   (6)  016142  012746  000003                                                       MOV     #3,-(SP)
   (3)  016146  010600                                                               MOV     SP,R0
   (4)  016150  104414                                                               TRAP    C$PNTB
   (4)  016152  062706  000010                                                       ADD     #10,SP
 4149   016156                 ENDMSG
   (3)  016156                                                                 L10007:
   (3)  016156  104423                                                               TRAP    C$MSG
 4150
 4151
 4152   016160                 BGNMSG  ERRG10
   (3)  016160                                                                 ERRG10::
 4153   016160                       PRINTB  #FMG16,-2(R0),-2(R1) ;RCV CC & XMIT CC
   (9)  016160  016146  177776                                                       MOV     -2(R1),-(SP)
   (8)  016164  016046  177776                                                       MOV     -2(R0),-(SP)
   (7)  016170  012746  017252                                                       MOV     #FMG16,-(SP)
   (6)  016174  012746  000003                                                       MOV     #3,-(SP)
   (3)  016200  010600                                                               MOV     SP,R0
   (4)  016202  104414                                                               TRAP    C$PNTB
   (4)  016204  062706  000010                                                       ADD     #10,SP
 4154   016210                 ENDMSG
   (3)  016210                                                                 L10010:
   (3)  016210  104423                                                               TRAP    C$MSG
 4155
 4156   016212                 BGNMSG  ERRG11
   (3)  016212                                                                 ERRG11::
 4157   016212                       PRINTB  #FMG17,-4(R0),-4(R1) ;RCV BUFFER & XMIT BUFFER
   (9)  016212  016146  177774                                                       MOV     -4(R1),-(SP)
   (8)  016216  016046  177774                                                       MOV     -4(R0),-(SP)
   (7)  016222  012746  017331                                                       MOV     #FMG17,-(SP)
   (6)  016226  012746  000003                                                       MOV     #3,-(SP)
   (3)  016232  010600                                                               MOV     SP,R0
   (4)  016234  104414                                                               TRAP    C$PNTB
   (4)  016236  062706  000010                                                       ADD     #10,SP
 4158   016242                 ENDMSG
   (3)  016242                                                                 L10011:
   (3)  016242  104423                                                               TRAP    C$MSG
 4159
 4160   016244                 BGNMSG  ERRG12
   (3)  016244                                                                 ERRG12::
 4161   016244  005303                 DEC     R3              ;BACKUP TO RECEIVE ADDRESS
```

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 4162  016246  005304                          DEC     R4              ;BACKUP TO TRANSMIT ADDRESS
 4163  016250                                  PRINTB  #FMG18,R3,R4    ;PRINT OUT ADDRESS
  (9)  016250  010446                                                                  MOV     R4,-(SP)
  (8)  016252  010346                                                                  MOV     R3,-(SP)
  (7)  016254  012746  017404                                                          MOV     #FMG18,-(SP)
  (6)  016260  012746  000003                                                          MOV     #3,-(SP)
  (3)  016264  010600                                                                  MOV     SP,R0
  (4)  016266  104414                                                                  TRAP    C$PNTB
  (4)  016270  062706  000010                                                          ADD     #10,SP
 4164  016274                        ENDMSG
  (3)  016274                                                                  L10012:
  (3)  016274  104423                                                                  TRAP    C$MSG
 4165
 4166
 4167
 4168
 4169
 4170
 4171  016276  040445  042523  030114  FMG1:   .ASCIZ  /%ASEL0: %06%A SEL2: %06%N/
       016304  020072  047445  022466
       016312  020101  042523  031114
       016320  020072  047445  022466
       016326  000116
 4172  016330  040445  042523  032114  FMG2:   .ASCIZ  /%ASE'4: %06%A SEL6: %06%N/
       016336  020072  047445  022466
       016344  020101  042523  033114
       016352  020072  047445  022466
       016360  000116
 4173  016362  040445  051105  047522  FMG3:   .ASCIZ  /%AERROR IN SUBROUTINE CALLED AT PC: %06%N/
       016370  020122  047111  051440
       016376  041125  047522  052125
       016404  047111  020105  040503
       016412  046114  042105  040440
       016420  020124  041520  020072
       016426  047445  022466  000116
 4174  016434  040445  050103  020125  FMG4:   .ASCIZ  /%ACPU MICROTEST FAILED%N/
       016442  044515  051103  052117
       016450  051505  020124  040506
       016456  046111  042105  047045
       016464     000
 4175  016465     045  046101  027125  FMG5:   .ASCIZ  /%ALU. MICROTEST FAILED%N/
       016472  046440  041511  047522
       016500  042524  052123  043040
       016506  044501  042514  022504
       016514  000116
 4176  016516  040445  047516  051040  FMG6:   .ASCIZ  /%ANO RUN - MASTER CLEAR FAILED%N/
       016524  047125  026440  046440
       016532  051501  042524  020122
       016540  046103  040505  020122
       016546  040506  046111  042105
       016554  047045     000
 4177  016557     045  047101  045501  FMG7:   .ASCIZ  /%ANAKS-NO BUFFER  RCV: %D3%A SENT: %D3%N/
       016564  026523  047516  041040
       016572  043125  042506  020122
       016600  051040  053103  020072
       016606  042045  022463  020101
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                016614  042523  052116  020072
                016622  042045  022463  000116
4178            016630  040445  040516  051513  FMG8:   .ASCIZ  /%4NAKS-BAD DATA   RCV: %D3%A SENT: %D3%N/
                016636  041055  042101  042040
                016644  052101  020101  020040
                016652  041522  035126  022440
                016660  031504  040445  051440
                016666  047105  035124  022440
                016674  031504  047045     000
4179            016701     045  047101  045501  FMG9:   .ASCIZ  /%4NAKS-BAD HEADER RCV: %D3%A SENT: %D3%N/
                016706  026523  040502  020104
                016714  042510  042101  051105
                016722  051040  053103  020072
                016730  042045  022463  020101
                016736  042523  052116  020072
                016744  042045  022463  000116
4180            016752  040445  042522  051520  FMG10:  .ASCIZ  /%4REPS-RCV: %D3%A SENT: %D3%N/
                016760  051055  053103  020072
                016766  042045  022463  020101
                016774  042523  052116  020072
                017002  042045  022463  000116
4181            017010  040445  046530  052111  FMG11:  .ASCIZ  /%4XMIT BACC OUT COMMAND%N/
                017016  041040  041501  020103
                017024  052517  020124  047503
                017032  046515  047101  022504
                017040  000116
4182            017042  040445  041522  020126  FMG12:  .ASCIZ  /%4RCV BACC OUT COMMAND%N/
                017050  040502  041503  047440
                017056  052125  041440  046517
                017064  040515  042116  047045
                017072     000
4183            017073     045  040501  052103  FMG13:  .ASCIZ  /%4ACTUAL   ADDR. %O6%A ACTUAL COUNT   %D5%N/
                017100  040525  020114  020040
                017106  042101  051104  020056
                017114  047445  022466  020101
                017122  041501  052524  046101
                017130  041440  052517  052116
                017136  020040  022440  032504
                017144  047045     000
4184            017147     045  042501  050130  FMG14:  .ASCIZ  /%4EXPECTED ADDR. %O6%A EXPECTED COUNT %D5%N/
                017154  041505  042524  020104
                017162  042101  051104  020056
                017170  047445  022466  020101
                017176  054105  042520  052103
                017204  042105  041440  052517
                017212  052116  022440  032504
                017220  047045     000
4185            017223     045  042501  050130  FMG15:  .ASCIZ  /%4EXPECTED ADDR. %O6%N/
                017230  041505  042524  020104
                017236  042101  051104  020056
                017244  047445  022466  000116
4186            017252  040445  041522  020126  FMG16:  .ASCIZ  /%4RCV CHAR. COUNT %D5%A XMIT CHAR. COUNT %D5%N/
                017260  044103  051101  020056
                017266  047503  047125  020124
                017274  042045  022465  020101
                017302  046530  052111  041440
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                017310  040510  027122  041440
                017316  052517  052116  022440
                017324  032504  047045     000
4187            017331     045  051101  053103  FMG17:  .ASCIZ  /%ARCV BUFFER AT %O6%A XMIT BUFFER AT %O6%N/
                017336  041040  043125  042506
                017344  020122  052101  022440
                017352  033117  040445  054040
                017360  044515  020124  052502
                017366  043106  051105  040440
                017374  020124  047445  022466
                017402  000116
4188            017404  040445  040504  040524  FMG18:  .ASCIZ  /%ADATA DIFFERS AT RCV ADDR. %O6%A AND XMIT ADDR. %O6%N/
                017412  042040  043111  042506
                017420  051522  040440  020124
                017426  041522  020126  042101
                017434  051104  020056  047445
                017442  022466  020101  047101
                017450  020104  046530  052111
                017456  040440  042104  027122
                017464  022440  033117  047045
                017472     000
4189            017473     045  042101  053105  FMG19:  .ASCIZ  /%ADEVICE NOT DMR%N/
                017500  041511  020105  047516
                017506  020124  046504  022522
                017514  000116
4190            017516  040445  044515  051103  FMG20:  .ASCIZ  /%AMICROTEST DISABLED%N/
                017524  052117  051505  020124
                017532  044504  040523  046102
                017540  042105  047045     000
4191            017545     045  051501  040524  FMG21:  .ASCIZ  /%ASTATUS OF BUFFERS %N%ANUMBER OF BUFFERS:%D3%N/
                017552  052524  020123  043117
                017560  041040  043125  042506
                017566  051522  022440  022516
                017574  047101  046525  042502
                017602  020122  043117  041040
                017610  043125  042506  051522
                017616  022472  031504  047045
                017624     000
4192            017625     045  041101  043125  FMG22:  .ASCIZ  /%ABUFFER SIZE: %D5%N/
                017632  042506  020122  044523
                017640  042532  020072  042045
                017646  022465  000116
4193            017652  040445  047111  020040  FMG23:  .ASCIZ  /%AIN  - RCV ASSIGNED:%D3%A   XMIT ASSIGNED:%D3%N/
                017660  020055  041522  020126
                017666  051501  044523  047107
                017674  042105  022472  031504
                017702  040445  020040  054040
                017710  044515  020124  051501
                017716  044523  047107  042105
                017724  022472  031504  047045
                017732     000
4194            017733     045  047501  052125  FMG24:  .ASCIZ  /%AOUT - RCV RETURNED:%D3%A   XMIT RETURNED:%D3%N/
                017740  026440  051040  053103
                017746  051040  052105  051125
                017754  042516  035104  042045
                017762  022463  020101  020040
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                017770  046530  052111  051040
                017776  052105  051125  042516
                020004  035104  042045  022463
                020012  000116
4195
4196
4197    020014  044524  042515  047440  EMG1:   .ASCIZ  /TIME OUT/
        020022  052125     000
4198    020025     124  046511  020105  EMG2:   .ASCIZ  /TIME OUT - DURING INTERRUPT EXERCISE/
        020032  052517  020124  020055
        020040  052504  044522  043516
        020046  044440  052116  051105
        020054  052522  052120  042440
        020062  042530  041522  051511
        020070  000105
4199    020072  054105  042520  052103  EMG8:   .ASCIZ  /EXPECTED CONTROL OUT - NOT RECEIVED/
        020100  042105  041440  047117
        020106  051124  046117  047440
        020114  052125  026440  047040
        020122  052117  051040  041505
        020130  044505  042526  000104
4200    020136  047125  054105  042520  EMG9:   .ASCIZ  /UNEXPECTED CONTROL OUT/
        020144  052103  042105  041440
        020152  047117  051124  046117
        020160  047440  052125     000
4201    020165     105  051122  051117  EMG10:  .ASCIZ  /ERROR - MULTIPLE XMITS/
        020172  026440  046440  046125
        020200  044524  046120  020105
        020206  046530  052111  000123
4202    020214  052502  043106  051105  EMG11:  .ASCIZ  /BUFFER ADDRESS ERROR/
        020222  040440  042104  042522
        020230  051523  042440  051122
        020236  051117     000
4203
4204    020241     103  040510  040522  EMG12:  .ASCIZ  /CHARACTER COUNT ERROR/
        020246  052103  051105  041440
        020254  052517  052116  042440
        020262  051122  051117     000
4205    020267     105  051122  051117  EMG13:  .ASCIZ  /ERROR - MULTIPLE RCVS/
        020274  026440  046440  046125
        020302  044524  046120  020105
        020310  041522  051526     000
4206    020315     122  041505  044505  EMG14:  .ASCIZ  /RECEIVED EXTRA DATA/
        020322  042526  020104  054105
        020330  051124  020101  040504
        020336  040524     000
4207    020341     104  052101  020101  EMG15:  .ASCIZ  /DATA ERROR/
        020346  051105  047522  000122
4208    020354  047125  054105  042520  EMG16:  .ASCIZ  /UNEXPECTED HALT RECEIVED/
        020362  052103  042105  044040
        020370  046101  020124  042522
        020376  042503  053111  042105
        020404     000
4209    020405     103  047117  051124  EMG17:  .ASCIZ  /CONTROL IN PROBLEM - IN INTERRUPT ROUTINE/
        020412  046117  044440  020116
        020420  051120  041117  042514
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                020426  020115  020055  047111
                020434  044440  052116  051105
                020442  052522  052120  051040
                020450  052517  044524  042516
                020456     000
4210            020457     123  052520  044522  EMG18:  .ASCIZ  /SPURIOUS RDO INTERRUPT/
                020464  052517  020123  042122
                020472  020117  047111  042524
                020500  051122  050125  000124
4211
4212                                               .EVEN
4213
4214
4215
4216                                       .SBTTL  LOAD DEVICE PROTECTION TABLE
4217
4218                                       ;////////////////////////////////////////////////////////////////////////
4219                                       ;/ THIS TABLE IDENTIFIES THE LOAD DEVICE TO THE SUPERVISOR, SO THAT IT CAN BE
4220                                       ;/ PROTECTED FROM TESTING. IF DESIRED.
4221                                       ;////////////////////////////////////////////////////////////////////////
4222
4223  020506                                       BGNPROT
 (3)  020506                                                                        L$PROT::
4224
4225  020506  177777                              .WORD   -1              ;DON'T CHECK CSR ADDRESS
4226  020510  177777                              .WORD   -1              ;DON'T CHECK MASSBUS UNIT NUMBER
4227  020512  177777                              .WORD   -1              ;DON'T CHECK DRIVE NUMBER
4228
4229  020514                                       ENDPROT
4230
4231
4232
4233
4234
4235
4236
4237
4238
4239                                       .SBTTL  INITIALIZE SECTION
4240
4241                                       ;////////////////////////////////////////////////////////////////////////
4242                                       ;/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
4243                                       ;/ AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
4244                                       ;////////////////////////////////////////////////////////////////////////
4245
4246  020514                               BGNINIT
 (3)  020514                                                                        L$INIT::
4247
4248  020514                                       SETPRI  #PRI07          ;SET DIAGNOSTIC PRIORITY = 7
 (3)  020514  012700  000340                                                        MOV     #PRI07,R0
 (3)  020520  104441                                                                TRAP    C$SPRI
4249  020522  010637  002364                      MOV     SP,PSTACK       ;STORE BASE LEVEL PROGRAM STACK POINTER
4250  020526  005037  002366                      CLR     SUBRPC          ;CLEAR STORAGE WORD FOR SUBROUTINE PC CALL
4251  020532  005037  002360                      CLR     ERROR           ;CLEAR ERROR FLAGS
4252  020536  005037  002274                      CLR     RESUME          ;CLEAR FLAG USED TO ALLOW BASE IN - RESUME.
4253  020542  005037  002276                      CLR     DMCMDE          ;CLEAR FLAG USED TO INDICATE DMC MODE
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4254  020546  005037  002372                CLR     CLRNO           ;CLEAR WORD USED TO RUN MICRO TESTS ON
4255                                                                  ;EVERY OTHER MASTER CLEAR.
4256  020552  005737  002264                TST     FRSTIM          ;IS THIS THE TIME THROUGH AFTER LOAD?
4257  020556  001005                        BNE     1$              ;IF NOT - ERROR TRAP VECTOR ALREADY SAVED
4258  020560  012737  000001  002264        MOV     #1,FRSTIM       ;FLAG THAT WE'VE BEEN THRU THE 1ST TIME
4259  020566  005037  002266                CLR     FRSPAS          ;CLEAR COUNTER FOR # OF PASSES AFTER LOAD
4260
4261  020572                            1$:
4262  020572                                CLRVEC  #4              ;ENSURE VECTOR 4 IS IN NORMAL STATE.
  (3) 020572  012700  000004                                                    MOV     #4,R0
  (3) 020576  104436                                                            TRAP    C$CVEC
4263
4264  020600                                READEF  #EF.START       ;IS THIS JUST STARTED?
  (3) 020600  012700  000040                                                    MOV     #EF.START,R0
  (3) 020604  104447                                                            TRAP    C$REFG
4265  020606                                BCOMPLETE STARST        ;IF YES - BRANCH.
  (2) 020606  103416                                                            BCS     STARST
4266  020610                                READEF  #EF.RESTART     ;IS THIS A RESTART ?
  (3) 020610  012700  000037                                                    MOV     #EF.RESTART,R0
  (3) 020614  104447                                                            TRAP    C$REFG
4267  020616                                BCOMPLETE STARST        ;IF YES - BRANCH.
  (2) 020616  103412                                                            BCS     STARST
4268  020620                                READEF  #EF.NEW         ;IS THIS A NEW PASS?
  (3) 020620  012700  000035                                                    MOV     #EF.NEW,R0
  (3) 020624  104447                                                            TRAP    C$REFG
4269  020626                                BCOMPLETE NEWST         ;IF YES - BRANCH
  (2) 020626  103410                                                            BCS     NEWST
4270  020630                                READEF  #EF.CONTINUE    ;IS THIS A CONTINUATION?
  (3) 020630  012700  000036                                                    MOV     #EF.CONTINUE,R0
  (3) 020634  104447                                                            TRAP    C$REFG
4271  020636                                BNCOMPLETE GETPRM       ;IF NOT - GET PARAMETERS
  (2) 020636  103013                                                            BCC     GETPRM
4272  020640  000137  021510                JMP     END             ;OTHERWISE - DON'T INITIALIZE.
4273
4274  020644                            STARST:
4275  020644  005037  002270                CLR     STARES          ;CLEAR THE FLAG TO SHOW START/RESTART.
4276
4277  020650                            NEWST:
4278  020650  012737  177777  002362        MOV     #-1,LOGDEV      ;INITIALIZE LOGICAL UNIT NUMBER.
4279  020656  005237  002266                INC     FRSPAS          ;INCREMENT # OF PASSES AFTER LOAD.
4280  020662  005237  002270                INC     STARES          ;INCREMENT # OF PASSES SINCE START/RESTART.
4281  020666                            GETPRM:
4282  020666  005237  002362                INC     LOGDEV          ;NEXT LOGICAL UNIT TO BE TESTED
4283  020672  023737  002362  002012        CMP     LOGDEV,L$UNIT   ;IS THE MAXIMUM UNIT # EXCEEDED?
4284  020700  002363                        BGE     NEWST           ;IF YES - DO A NEW START
-285  020702                                GPHARD  LOGDEV,R1       ;GET THE P-TABLE POINTER INTO R1
  (3) 020702  013700  002362                                                    MOV     LOGDEV,R0
  (3) 020706  104442                                                            TRAP    C$GPHRD
  (3) 020710  010001                                                            MOV     R0,R1
4286  020712                                BNCOMPLETE  GETPRM      ;IF NOT AVAILABLE, GET THE NEXT ONE
  (2) 020712  103365                                                            BCC     GETPRM
4287  020714  012137  002252                MOV     (R1)+,WTYPE     ;MICROPROCESSOR TYPE
4288  020720  011100                        MOV     (R1),R0         ;SAVE THE ADDRESS
4289  020722  032700  000007                BIT     #7,R0           ;DOES THIS DEVICE ADDRESS END IN NON-ZERO?
4290  020726  001414                        BEQ     10$             ;IF NOT - OK (76XXX0)
4291  020730  042711  000007                BIC     #7,(R1)         ;MAKE IT 76XXX0
```

```
4292  020734                        PRINTB  #FINIT1,(R1),R0 ;INFORM THE USER
 (9)  020734  010046                                                MOV     R0,-(SP)
 (8)  020736  011146                                                MOV     (R1),-(SP)
 (7)  020740  012746  021512                                        MOV     #FINIT1,-(SP)
 (6)  020744  012746  000003                                        MOV     #3,-(SP)
 (3)  020750  010600                                                MOV     SP,R0
 (4)  020752  104414                                                TRAP    C$PNTB
 (4)  020754  062706  000010                                        ADD     #10,SP
4293  020760                  10$:
4294  020760  011137  002232                MOV     (R1),CSR        ;CSR ADDRESS
4295  020764  011137  002242                MOV     (R1),BSEL1
4296  020770  005237  002242                INC     BSEL1           ;HIGH BYTE ADDRESS OF CSR
4297  020774  011137  002234                MOV     (R1),SEL2
4298  021000  062737  000002  002234        ADD     #2,SEL2         ;CONTROL OUT REGISTER ADDRESS
4299  021006  011137  002244                MOV     (R1),BSEL3
4300  021012  062737  000003  002244        ADD     #3,BSEL3        ;HIGH BYTE OF SEL2
4301  021020  011137  002236                MOV     (R1),SEL4
4302  021024  062737  000004  002236        ADD     #4,SEL4         ;PORT REG (SEL 4) ADDRESS
4303  021032  011137  002246                MOV     (R1),BSEL5
4304  021036  062737  000005  002246        ADD     #5,BSEL5        ;HIGH BYTE OF SEL4
4305  021044  011137  002240                MOV     (R1),SEL6
4306  021050  062737  000006  002240        ADD     #6,SEL6         ;PORT REG (SEL 6) ADDRESS
4307  021056  012137  002250                MOV     (R1)+,BSEL7
4308  021062  062737  000007  002250        ADD     #7,BSEL7        ;HIGH BYTE OF SEL6
4309  021070  011100                        MOV     (R1),R0         ;GET VECTOR
4310  021072  032700  000007                BIT     #7,R0           ;DOES THIS VECTOR END IN NON-ZERO?
4311  021076  001414                        BEQ     11$             ;IF NOT - OK (XX0)
4312  021100  042711  000007                BIC     #7,(R1)         ;MAKE IT XX0
4313  021104                        PRINTB  #FINIT2,(R1),R0 ;INFORM THE USER
 (9)  021104  010046                                                MOV     R0,-(SP)
 (8)  021106  011146                                                MOV     (R1),-(SP)
 (7)  021110  012746  021605                                        MOV     #FINIT2,-(SP)
 (6)  021114  012746  000003                                        MOV     #3,-(SP)
 (3)  021120  010600                                                MOV     SP,R0
 (4)  021122  104414                                                TRAP    C$PNTB
 (4)  021124  062706  000010                                        ADD     #10,SP
4314  021130                  11$:
4315  021130  011137  002226                MOV     (R1),DMRVEC     ;RCV. VECTOR
4316  021134  011137  002230                MOV     (R1),DMTVEC     ;TRANSMIT VECTOR
4317  021140  011100                        MOV     (R1),R0         ;RCV. VECTOR
4318  021142  105060  000003                CLRB    3(R0)           ;CLEAR HI BYTE OF PSW FOR RCV. VECTOR.
4319  021146  105060  000007                CLRB    7(R0)           ;CLEAR HI BYTE OF PSW FOR XMIT. VECTOR.
4320                                                                 ;THIS WILL ENSURE THAT WE DON'T PICK
4321                                                                 ;UP ANY UNEXPECTED BITS IN PROCESSORS
4322                                                                 ;WHICH USE BITS 11-15 OF THE PSW.  IE
4323                                                                 ;IF BIT 11 IS SET IN AN 11/70 ANOTHER
4324                                                                 ;REGISTER SET MAY BE USED.
4325  021152  062737  000004  002230        ADD     #4,DMTVEC       ;ADJUST XMIT VECTOR
4326
4327                                                                 ;SET UP ISRS FOR DMR. INTERRUPTS ENABLED IN
4328                                                                 ;TESTS 15-19.
4329
4330  021160                        SETVEC  DMRVEC,#INISR,#PRI05    ;INPUT ISR
 (7)  021160  012746  000240                                        MOV     #PRI05,-(SP)
 (6)  021164  012746  021772                                        MOV     #INISR,-(SP)
 (5)  021170  013746  002226                                        MOV     DMRVEC,-(SP)
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  (4) 021174 012746 000003                                                  MOV     #3,-(SP)
  (3) 021200 104437                                                         TRAP    C$SVEC
  (2) 021202 062706 000010                                                  ADD     #10,SP
4331 021206                         SETVEC  DMTVEC,#OUTISR,#PRIO5   ;OUTPUT ISR
  (7) 021206 012746 000240                                                  MOV     #PRIO5,-(SP)
  (6) 021212 012746 023054                                                  MOV     #OUTISR,-(SP)
  (5) 021216 013746 002230                                                  MOV     DMTVEC,-(SP)
  (4) 021222 012746 000003                                                  MOV     #3,-(SP)
  (3) 021226 104437                                                         TRAP    C$SVEC
  (2) 021230 062706 000010                                                  ADD     #10,SP
4332
4333 021234 062701 000014               ADD     #14,R1          ;INCR. P-TABLE POINTER.
4334 021240 012137 002254               MOV     (R1)+,DMTURN    ;TURNAROUND
4335
4336
4337 021244 013700 002224               MOV     SPEED,R0        ;GET THE SOFTWARE P-TABLE VALUE GIVEN
4338                                                             ;BY THE USER
4339
4340
4341 021250                         13$:
4342 021250 012701 000002               MOV     #2,R1           ;GET FIRST TIMER VALUE
4343 021254 012702 000012               MOV     #10.,R2         ;GET SECOND TIMER VALUE
4344 021260                         14$:
4345 021260 006301                      ASL     R1              ; TIMER VALUES X 2
4346 021262 006302                      ASL     R2
4347 021264 005300                      DEC     R0              ; DEC SPEED VARIABLE
4348 021266 001374                      BNE     14$             ; CONTINUE UNTIL DONE INCREASING WAIT VALUES
4349
4350 021270 010137 002310               MOV     R1,WAIT1        ;SAVE TIMER VALUE FOR $WAIT
4351 021274 006201                      ASR     R1              ;HALF THAT VALUE
4352 021276 006201                      ASR     R1              ;HALF IT AGAIN.
4353 021300 010137 002312               MOV     R1,WAIT2        ;SAVE TIMER VALUE FOR $MSCLR AND $CLRQI
4354                                                             ;SUBROUTINES.
4355 021304 010237 002314               MOV     R2,WAIT3        ;TIMER VALUE FOR $INOUT SUBROUTINE.
4356
4357                                                             ;CHECK TURNAROUND.
4358 021310 012737 000333 002304        MOV     #333,AX3        ;MASK FOR AX3-15 - BIT CLEARED WILL
4359                                                             ;BE THE INTERFACE SELECTED.
4360 021316 022737 000001 002254        CMP     #1,DMTURN       ;IS V.35 REQUESTED?
4361 021324 001004                      BNE     20$             ;IF NOT - CONTINUE
4362 021326 042737 000020 002304        BIC     #BIT4,AX3       ;SELECT V.35
4363 021334 000427                      BR      30$
4364 021336                         20$:
4365 021336 022737 000002 002254        CMP     #2,DMTURN       ;IS INTEGRAL REQUESTED?
4366 021344 001004                      BNE     22$             ;IF NOT - CONTINUE.
4367 021346 042737 000010 002304        BIC     #BIT3,AX3       ;SELECT INTEGRAL MODEM.
4368 021354 000417                      BR      30$
4369 021356                         22$:
4370 021356 022737 000003 002254        CMP     #3,DMTURN       ;IS EIA REQUESTED?
4371 021364 001004                      BNE     25$             ;IF NOT - CONTINUE.
4372 021366 042737 000100 002304        BIC     #BIT6,AX3       ;SELECT EIA(XYZ).
4373 021374 000407                      BR      30$
4374 021376                         25$:
4375 021376 022737 000004 002254        CMP     #4,DMTURN       ;IS RS422 REQUESTED?
4376 021404 001007                      BNE     35$             ;IF NOT, DON'T ALLOW INTERFACE CHANGE.
4377 021406 042737 000200 002304        BIC     #BIT7,AX3       ;SELECT RS422.
```

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 4378  021414
 4379  021414  012737  000001  002262          30$:    MOV     #1,INFACE       ;SET FLAG THAT ALLOWS INTERFACE CHANGE.
 4380  021422  000404                          35$:    BR      40$
 4381  021424                                  40$:
 4382  021424  005037  002262                          CLR     INFACE          ;CLEAR FLAG - NO INTERFACE CHANGE.
 4383  021430  005037  002304                          CLR     AX3             ;CLEAR AX3 BITS
 4384  021434
 4385  021434  022737  000001  002254                  CMP     #1,DMTURN       ;IS THIS V.35?
 4386  021442  001414                                  BEQ     45$             ;IF YES - SET WRITE MAINT. BIT
 4387  021444  022737  000003  002254                  CMP     #3,DMTURN       ;IS THIS EIA?
 4388  021452  001410                                  BEQ     45$             ;IF YES - SET WRITE MAINT. BIT
 4389  021454  022737  000006  002254                  CMP     #6,DMTURN       ;IS THIS LOCAL LOOP?
 4390  021462  001404                                  BEQ     45$             ;IF YES - SET WRITE MAINT. BIT.
 4391  021464  022737  000007  002254                  CMP     #7,DMTURN       ;IS THIS REMOTE LOOP?
 4392  021472  001004                                  BNE     50$             ;IF NOT - CLEAR MAINT. BIT FLAG
 4393  021474                                  45$:
 4394  021474  012737  000001  002306                  MOV     #1,WMAINT       ;SET FLAG TO WRITE MODEM MAINTENANCE BITS.
 4395  021502  000402                                  BR      END
 4396  021504                                  50$:
 4397  021504  005037  002306                          CLR     WMAINT          ;CLEAR FLAG - DON'T WRITE MAINT. 1 OR 2.
 4398  021510                                  END:
 4399  021510                                  ENDINIT
  (3)  021510                                                                  L10014:
  (3)  021510  104411                                                                  TRAP    C$INIT
 4400  021512  040445  025052  053440  FINIT1: .ASCIZ  /%A** WARNING - WILL ASSUME DMR ADDRESS %O6%A (NOT %O6%A)%N/
       021520  051101  044516  043516
       021526  026440  053440  046111
       021534  020114  051501  052523
       021542  042515  042040  051115
       021550  040440  042104  042522
       021556  051523  022440  033117
       021564  040445  024040  047516
       021572  020124  047445  022466
       021600  024501  047045     000
 4401  021605     045  025101  020052  FINIT2: .ASCIZ  /%A** WARNING - WILL ASSUME DMR VECTOR  %O3%A (NOT %O3%A)%N/
       021612  040527  047122  047111
       021620  020107  020055  044527
       021626  046114  040440  051523
       021634  046525  020105  046504
       021642  020122  042526  052103
       021650  051117  020040  047445
       021656  022463  020101  047050
       021664  052117  022440  031517
       021672  040445  022451  000116
 4402                                            .EVEN
 4403
 4404
 4405
 4406
 4407
 4408
 4409
 4410
 4411
 4412                                    .SBTTL  AUTO DROP UNIT SECTION
 4413
```

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

021700                  BGNAUTO
                                                                        L$AUTO::
021700                          SETVEC  #4,#NOXMEM,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
(7) 021700 012746 000340                                                MOV     #PRI07,-(SP)
(6) 021704 012746 023512                                                MOV     #NOXMEM,-(SP)
(5) 021710 012746 000004                                                MOV     #4,-(SP)
(4) 021714 012746 000003                                                MOV     #3,-(SP)
(3) 021720 104437                                                       TRAP    C$SVEC
(2) 021722 062706 000010                                                ADD     #10,SP
021726 005037 002340                    CLR     FLAG            ;CLEAR FLAG THAT WILL BE SET IF NXM OCCURS.
021732 005777 160274                    TST     @CSR            ;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.
                        ;;*************************************************************************

021736                          CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
(3) 021736 012700 000004                                                MOV     #4,R0
(3) 021742 104436                                                       TRAP    C$CVEC
021744 005737 002340                    TST     FLAG            ;DID NXM OCCUR?
021750 001406                           BEQ     1$              ;IF NOT EXIT
021752                                  DODU    LOGDEV          ;DROP THE DEVICE
(3) 021752 013700 002362                                                MOV     LOGDEV,R0
(3) 021756 104451                                                       TRAP    C$DODU
021760                                  DOCLN                   ;DO CLEAN UP - FORCE BACK TO INIT CODE.
(3) 021760 104444                                                       TRAP    C$DCLN
021762 005037 002340                    CLR     FLAG            ;RESTORE FLAG.
021766                  1$:
021766                  ENDAUTO
(3) 021766                                                              L10015:
(3) 021766 104461                                                       TRAP    C$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
                                ;////////////////////////////////////////////////////////////////////////////////

021770                          BGNCLN
021770                                                                  L$CLEAN::
                                                        ;NULL CLEANUP
021770                          ENDCLN
021770                                                                  L10016:
021770  104412                                                                  TRAP    C$CLEAN


                                .SBTTL  GLOBAL INTERRUPT HANDLING ROUTINES

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

022772                          BGNSRV  INISR                   ;INPUT INTERRUPT SERVICE ROUTINE
022772                                                                  INISR::
022772  010046                          MOV     R0,-(SP)        ;SAVE R0
022774  010146                          MOV     R1,-(SP)        ;SAVE R1
022776  017701  160230                  MOV     @SEL0,R1        ;SAVE THE CONTROL IN COMMAND.
022002  042701  177760                  BIC     #177760,R1      ;CLEAR ALL BUT THE COMMAND BITS (0-3)
022006  032777  000200  160216          BIT     #RDI,@SEL0      ;IS RDI SET
022014  001002                          BNE     1$              ;IF YES - PROCESS INPUT COMMAND.
022016  000137  022526                  JMP     NEXT            ;ISSUE NEXT INPUT COMMAND.
                                        ;*******************************************************************************
                                        ;
                                        ; PROCESS INPUT COMMAND
                                        ;
                                        ;*******************************************************************************
022022                          1$:
022022  022701  000004                  CMP     #BACCR,R1       ;IS THIS A RCV. BA/CC?
022026  001533                          BEQ     29$             ;BR IF YES.
022030  022701  000000                  CMP     #BACCT,R1       ;IS THIS A XMIT. BA/CC?
022034  001537                          BEQ     30$             ;BR IF YES.
022036  022701  000003                  CMP     #BASEI,R1       ;IS THIS A BASE IN?
022042  001461                          BEQ     20$             ;BR IF YES.
022044  022701  000001                  CMP     #CNTRL,R1       ;IS THIS A CONTROL IN?
022050  001444                          BEQ     15$             ;BR IF YES.
022052  022701  000005                  CMP     #WMODEM,R1      ;IS THIS A WRITE MODEM?
022056  001417                          BEQ     10$             ;BR IF YES.
022060  022701  000015                  CMP     #INTER,R1       ;IS THIS AN INTERFACE WRITE.
022064  001410                          BEQ     5$              ;BR IF YES.
022066  022701  000002                  CMP     #HLT,R1         ;IS THIS A HALT?
022072  001572                          BEQ     70$             ;EXIT - IF YES (NOTHING TO SET UP)
022074                                  ERRDF   17,EMG17,ERRG2  ;PROBLEM IF IT'S NOT ONE OF THE ABOVE.
022074  104455                                                                  TRAP    C$ERDF
022076  000021                                                                  .WORD   17
```

```
 (5)  022100  020405                                                        .WORD   EMG17
 (5)  022102  015070                                                        .WORD   ERRG2
4506  022104  000565                    BR      70$             ;EXIT
4507
4508  022106                        5$:
4509                                    ;
4510                                    ; WRITE AX3-15
4511                                    ;
4512  022106  113777  002304  160134    MOVB    AX3,@BSEL7      ;WRITE NECESSARY AX3-15 INTERFACE.
4513                                                            ;AX3 HAS BEEN DETERMINED IN THE INIT
4514                                                            ;CODE.
4515  022114  000561                    BR      70$
4516
4517
4518  022116                        10$:
4519                                    ;
4520                                    ; MODEM WRITE
4521                                    ;
4522  022116  022737  000006  002254    CMP     #6,DMTURN       ;IS LOCAL MODEM LOOPBACK DESIRED?
4523  022124  001007                    BNE     11$             ;BR IF NOT
4524  022126  042777  000004  160104    BIC     #MAINT2,@SEL6   ;ENSURE REMOTE LOOPBACK IS CLEAR.
4525  022134  052777  000010  160076    BIS     #MAINT1,@SEL6   ;SET MAINTENANCE 1 BIT
4526  022142  000546                    BR      70$
4527  022144                        11$:
4528  022144  042777  000010  160066    BIC     #MAINT1,@SEL6   ;ENSURE LOCAL LOOPBACK IS CLEAR.
4529  022152  052777  000004  160060    BIS     #MAINT2,@SEL6   ;SET MAINTENANCE 2 BIT.
4530  022160  000537                    BR      70$             ;CLEAR RQI
4531  022162                        15$:
4532                                    ;
4533                                    ;CONTROL IN
4534                                    ;
4535  022162  005737  002300            TST     MNTMDE          ;IS MAINTENANCE MODE REQUESTED
4536  022166  001404                    BEQ     17$             ;BR IF NOT
4537  022170  012777  000400  160042    MOV     #MAINT,@SEL6    ;REQUEST MAINT. MODE
4538  022176  000530                    BR      70$
4539  022200                        17$:
4540  022200  005077  160034            CLR     @SEL6           ;FULL DUPLEX - NON-MAINT. MODE.
4541  022204  000525                    BR      70$
4542  022206                        20$:
4543                                    ;
4544                                    ;BASE IN
4545                                    ;
4546  022206  012777  002630  160022    MOV     #BASE,@SEL4     ;BASE TABLE ADDRESS.
4547
4548  022214  005737  002276            TST     DMCMDE          ;ARE WE IN DMC MODE?
4549  022220  001004                    BNE     22$             ;BR IF YES
4550  022222  012777  000522  160010    MOV     #DMR,@SEL6      ;DMR MODE.
4551  022230  000402                    BR      23$             ;CHECK LOOPBACK.
4552  022232                        22$:
4553  022232  005077  160002            CLR     @SEL6           ;DMC MODE
4554  022236                        23$:
4555  022236  005737  002272            TST     START           ;IS THIS THE FIRST BASE IN?
4556  022242  001004                    BNE     24$             ;IF NOT - SET RESUME.
4557  022244  052777  000100  157762    BIS     #IE0,@SEL2      ;ON FIRST BASE IN SET RDO INT.ENABLE.
4558  022252  000406                    BR      25$
4559  022254                        24$:
```

```
4560  022254  052777  010000  157756          BIS     #RES,@SEL6      ;SET RESUME
4561  022262  012737  177777  002352          MOV     #-1,RESFLG      ;FLAG THAT THIS IS A BASE IN RESUME COMMAND
4562                                                                  ;(THIS WILL BE USED LATER IN THIS ISR TO
4563                                                                  ;DECIDE WHAT THE NEXT COMMAND WILL BE)
4564  022270                                25$:
4565  022270  005737  002254                  TST     DMTURN          ;IS INTERNAL LOOPACK REQUESTED?
4566  022274  001004                          BNE     27$             ;BR IF NOT - CLEAR LU LOOP
4567  022276  052777  004000  157726          BIS     #LPLU,@SEL0     ;SET THE LINE UNIT LOOPBACK BIT
4568  022304  000465                          BR      70$             ;CLEAR RQI AND EXIT.
4569  022306                                27$:
4570  022306  042777  004000  157716          BIC     #LPLU,@SEL0     ;CLEAR LINE UNIT LOOPBACK (CONNECTOR OR
4571                                                                  ;CABLE)
4572  022314  000461                          BR      70$             ;CLEAR RQI AND EXIT
4573
4574                                          ;
4575                                          ;BA/CC IN RCV
4576                                          ;
4577  022316                                29$:
4578  022316  005337  002324                  DEC     INRCV           ;DECREMENT COUNTER
4579  022322  012277  157710                  MOV     (R2)+,@SEL4     ;RCV BUFFER ADDRESS
4580  022326  012277  157706                  MOV     (R2)+,@SEL6     ;RCV CHARACTER COUNT
4581  022332  000406                          BR      40$
4582                                          ;
4583                                          ;BA/CC IN XMIT
4584                                          ;
4585  022334                                30$:
4586  022334  005337  002326                  DEC     INXMIT          ;DECREMENT COUNTER
4587  022340  012377  157672                  MOV     (R3)+,@SEL4     ;XMIT BUFFER ADDRESS.
4588  022344  012377  157670                  MOV     (R3)+,@SEL6     ;XMIT CHARACTER COUNT.
4589  022350                                40$:
4590  022350  005737  002302                  TST     MMANAG          ;ARE THE BUFFERS MEMORY MANAGED?
4591  022354  001441                          BEQ     70$             ;IF NOT SKIP CONVERTING VIRTUAL ADDR
4592                                                                  ;TO PHYSICAL ADDR.
4593  022356  052777  040000  157654          BIS     #BIT14,@SEL6    ;SET BIT 16 OF PHSICAL ADDRESS (I.E.
4594                                                                  ;VIRTUAL ADDR 60000 = PHYSICAL ADDR 200000
4595  022364  010246                          MOV     R2,-(SP)        ;SAVE R2 (NEXT RCV BUFFER ADDRESS)
4596  022366  017702  157644                  MOV     @SEL4,R2        ;SAVE THE VIRTUAL ADDRESS.
4597  022372  042777  160000  157636          BIC     #160000,@SEL4   ;CLEAR BITS CORRESPONDING TO THE PAGE #
4598                                                                  ;IN THE VIRTUAL ADDRESS.
4599  022400  042702  017777                  BIC     #17777,R2       ;SAVE ONLY THE PAGE # IN THE SAVED ADDR.
4600  022404  022702  060000                  CMP     #60000,R2       ;IS THIS PAGE 3?
4601  022410  001421                          BEQ     44$             ;IF YES, PHYSICAL ADDRESS CALCULATED
4602  022412  022702  100000                  CMP     #100000,R2      ;IS THIS PAGE 4?
4603  022416  001004                          BNE     41$             ;IF NOT SEE IF IT'S PAGE 4 OR 5
4604  022420  052777  020000  157610          BIS     #BIT13,@SEL4    ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4605                                                                  ;ADDR 100000 = PHYSICAL ADDR. 220000
4606  022426  000412                          BR      44$
4607  022430                                41$:
4608  022430  022702  120000                  CMP     #120000,R2      ;IS THIS PAGE 4?
4609  022434  001004                          BNE     42$             ;IF NOT, MUST BE PAGE 5.
4610  022436  052777  040000  157572          BIS     #BIT14,@SEL4    ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4611                                                                  ;ADDR 120000 = PHYSICAL ADDR. 240000
4612  022444  000403                          BR      44$
4613  022446                                42$:
4614  022446  052777  060000  157562          BIS     #BIT14!BIT13,@SEL4 ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4615                                                                  ;ADDR 140000 = PHYSICAL ADDR. 260000
```

```
4616  022454                          44$:
4617  022454  012602                          MOV     (SP)+,R2        ;RESTORE R2 (NEXT RCV BUFFER ADDRESS)
4618  022456  000400                          BR      70$             ;CLEAR RQI AND EXIT
4619
4620
4621  022460                          70$:
4622  022460  010137  002356                  MOV     R1,LAST         ;SAVE THE INPUT COMMAND (USED
4623                                                                  ;TO DETERMINE NEXT INPUT COMMAND)
4624  022464  005737  002276                  TST     DMCMDE          ;ARE WE IN DMC MODE?
4625  022470  001011                          BNE     80$             ;IF YES - DON'T USE IECLR
4626                                                                  ;NOTE: INTERRUPT CAPABILITY FOR RQI
4627                                                                  ;CLEAR IS ONLY AVAILABLE IN DMR MODE.
4628  022472  012601                          MOV     (SP)+,R1        ;RESTORE R1
4629  022474  012600                          MOV     (SP)+,R0        ;RESTORE R0
4630  022476  052777  000020  157526          BIS     #IECLR,@SEL0    ;SET INTERRUPT ENABLE FOR RDI CLEAR.
4631  022504  042777  000040  157520          BIC     #RQI,@SEL0      ;CLEAR RQI - INT. GENERATED WHEN RDI
4632                                                                  ;CLEARS IN RESPONSE.
4633  022512  000002                          RTI                     ;RETURN AND WAIT FOR RQI CLEAR INTERRUPT.
4634
4635  022514                          80$:
4636  022514  042777  000020  157510          BIC     #IECLR,@SEL0    ;ENSURE INTERRUPT ENABLE FOR RDI CLEAR IS CLR.
4637  022522                                  CALL    $CLRQI          ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
4638                                          ;*************************************************************************
4639                                          ;
4640                                          ; RDI CLEAR - DETERMINE NEXT INPUT COMMAND.
4641                                          ;
4642                                          ;*************************************************************************
4643  022526                          NEXT:
4644  022526  022737  000002  002356          CMP     #HLT,LAST       ;WAS THE LAST COMMAND A HALT?
4645  022534  001015                          BNE     110$            ;IF NOT - PROCEED.
4646  022536  005737  002274                  TST     RESUME          ;ARE WE TESTING RESUME?
4647  022542  001541                          BEQ     170$            ;IF NOT, DON'T ISSUE ANOTHER COMMAND.
4648  022544  005737  002346                  TST     INFLAG          ;INPUT BUFFER DONE?
4649  022550  001403                          BEQ     106$            ;IF NOT, BASE IN.
4650  022552  005737  002350                  TST     OUTFLG          ;OUTPUT BUFFER DONE?
4651  022556  001133                          BNE     170$            ;IF YES, DON'T ISSUE ANOTHER COMMAND.
4652  022560                          106$:
4653  022560  112777  000143  157444          MOVB    #IESET!RQI!BASEI,@SEL0 ;ISSUE A BASE IN.
4654  022566  000527                          BR      170$            ;EXIT
4655  022570                          110$:
4656  022570  005737  002276                  TST     DMCMDE          ;ARE WE IN DMC MODE?
4657  022574  001032                          BNE     130$            ;IF YES - DON'T BOTHER CHECKING MODEM
4658                                                                  ;WRITE AND AX3-15 WRITE COMMANDS
4659  022576  022737  000003  002356          CMP     #BASEI,LAST     ;WAS THE LAST COMMAND A BASE IN ?
4660  022604  001405                          BEQ     115$            ;IF YES - SEE IF INTER. OR M. WRITE IS NEEDED?
4661  022606  022737  000015  002356          CMP     #INTER,LAST     ;WAS THE LAST COMMAND AN AX3-15 WRITE?
4662  022614  001413                          BEQ     117$
4663  022616  000421                          BR      130$            ;KEEP CHECKING FOR NEXT COMMAND.
4664  022620                          115$:
4665  022620  005737  002262                  TST     INFACE          ;IS AN AX3-15 WRITE NEEDED?
4666  022624  001407                          BEQ     117$            ;BR IF NOT
4667  022626  005737  002272                  TST     START           ;WAS CONTROL IN ISSUED?
4668  022632  001004                          BNE     117$            ;IF YES - NO NEED TO REWRITE AX3-15. THIS
4669                                                                  ;SHOULD HAVE BEEN DONE ON THE 1ST BASE IN.
4670  022634  112777  000155  157370          MOVB    #IESET.RQI.INTER,@BSEL0 ;ISSUE AN AX3-15 WRITE COMMAND.
4671  022642  000501                          BR      170$
```

```
4672  022644                          117$:
4673  022644  005737  002306                  TST     WMAINT          ;WRITE MAINT 1 OR 2?
4674  022650  001404                          BEQ     130$            ;IF NOT - SKIP WRITE MODEM COMMAND.
4675  022652  112777  000145  157352          MOVB    #IESET!RQI!WMODEM,@BSEL0 ;ISSUE A MODEM WRITE COMMAND
4676  022660  000472                          BR      170$
4677  022662                          130$:
4678  022662  005737  002272                  TST     START           ;WAS A CONTROL IN ISSUED?
4679  022666  001006                          BNE     150$            ;IF YES - SKIP
4680  022670  005237  002272                  INC     START           ;SET FLAG.
4681  022674  112777  000141  157330          MOVB    #IESET!RQI!CNTRL,@BSEL0 ;ISSUE A CONTROL IN
4682  022702  000461                          BR      170$
4683  022704                          150$:
4684  022704  005737  002324                  TST     INRCV           ;ARE ALL THE BA/CC IN RCVS DONE?
4685  022710  001424                          BEQ     160$            ;IF YES - BR TO SEE IF XMITS DONE.
4686  022712  005737  002274                  TST     RESUME          ;IS A TEST OF RESUME REQUESTED?
4687  022716  001415                          BEQ     153$            ;BR IF NOT.
4688  022720  032737  000001  002324          BIT     #BIT0,INRCV     ;IS THIS AN ODD COUNT?
4689  022726  001411                          BEQ     153$            ;BR IF NOT.
4690  022730  005737  002352                  TST     RESFLG          ;WAS THE LAST COMMAND A BASE IN RESUME?
4691  022734  001004                          BNE     152$            ;IF YES, ISSUE BA/CC
4692                                                                  ;HALT - TO TEST RESUME.  NOTE: THIS WILL
4693                                                                  ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4694                                                                  ;FOLLOWING EVERY OTHER BA/CC
4695                                                                  ;COMMAND  (NEVER FOLLOWING A RESUME)
4696  022736  112777  000142  157266          MOVB    #IESET!RQI!HLT,@BSEL0 ;HALT IT
4697  022744  000440                          BR      170$
4698  022746                          152$:
4699  022746  005037  002352                  CLR     RESFLG          ;CLEAR FLAG.
4700  022752                          153$:
4701  022752  112777  000144  157252          MOVB    #IESET!RQI!BACCR,@BSEL0 ;ISSUE A BA/CC IN RCV. COMMAND.
4702  022760  000432                          BR      170$
4703  022762                          160$:
4704  022762  005737  002326                  TST     INXMIT          ;ARE ALL THE BA/CC IN XMITS DONE?
4705  022766  001424                          BEQ     165$            ;IF YES, SET THE FLAG
4706  022770  005737  002274                  TST     RESUME          ;IS A TEST OF RESUME REQUESTED?
4707  022774  001415                          BEQ     163$            ;BR IF NOT.
4708  022776  032737  000001  002326          BIT     #BIT0,INXMIT    ;IS THIS AN ODD COUNT?
4709  023004  001411                          BEQ     163$            ;BR IF NOT.
4710  023006  005737  002352                  TST     RESFLG          ;WAS THE LAST COMMAND A BASE IN RESUME?
4711  023012  001004                          BNE     162$            ;IF YES, ISSUE BA/CC
4712                                                                  ;HALT - TO TEST RESUME.  NOTE: THIS WILL
4713                                                                  ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4714                                                                  ;FOLLOWING EVERY OTHER BA/CC
4715                                                                  ;COMMAND  (NEVER FOLLOWING A RESUME)
4716  023014  112777  000142  157210          MOVB    #IESET!RQI.HLT,@BSEL0 ;HALT IT
4717  023022  000411                          BR      170$
4718  023024                          162$:
4719  023024  005037  002352                  CLR     RESFLG          ;CLEAR BASE IN RESUME FLAG.
4720  023030                          163$:
4721  023030  112777  000140  157174          MOVB    #IESET!RQI!BACCT,@BSEL0 ;ISSUE A BA/CC IN XMIT COMMAND.
4722  023036  000403                          BR      170$
4723  023040                          165$:
4724  023040  012737  177777  002346          MOV     #-1,INFLAG      ;FLAG THAT ALL BA/CC INS DONE.
4725
4726  023046                          170$:
4727  023046  012601                          MOV     (SP)+,R1        ;RESTORE R1
```

```
                        MOV     (SP)+,R0        ;RESTORE R0

                ENDSRV
                                                                L10017:
                                                                        RTI

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

                BGNSRV  OUTISR                  ;OUTPUT INTERRUPT SERVICE ROUTINE
                                                                OUTISR::
                        MOV     R0,-(SP)        ;SAVE R0
                        BIT     #RDO,@SEL2      ;IS THE RDO OUT BIT SET?
                        BNE     5$              ;IF YES - OK TO PROCEED.
                                                ;OTHERWISE REPORT SPURIOUS INTERRUPT
                        ERRDF   18,EMG18,ERRG2
                                                                TRAP    C$ERDF
                                                                .WORD   18
                                                                .WORD   EMG18
                                                                .WORD   ERRG2
                        JMP     60$
                5$:
                        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT
                        BEQ     20$             ;IF NOT - PROCESS BA/CC OUT
                        BIT     #HALTC,@SEL6    ;IS THIS CONTROL OUT A HALT?
                        BNE     10$             ;IF IT IS - SEE IF WE SHOULD RESUME.
                        BIT     #DMRRUN,@SEL6   ;IS THIS DMR RUN MODE ACKNOWLEDGE?
                        BEQ     10$             ;IF NOT - REPORT ERROR
                        JMP     65$             ;EXIT
                7$:
                        ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT.
                                                                TRAP    C$ERDF
                                                                .WORD   9
                                                                .WORD   EMG9
                                                                .WORD   ERRG2
                        BR      65$             ;EXIT ROUTINE
                10$:
                        TST     INFLAG          ;ARE THE INPUTS DONE?
                        BEQ     15$             ;BR IF NOT
                        TST     OUTFLG          ;ARE THE OUTPUTS DONE?
                        BNE     60$             ;IF YES - ALL DONE, EXIT
                15$:
                        TST     RESUME          ;IS A RESUME REQUESTED?
                        BNE     65$             ;IF YES - OK, BR TO EXIT
                16$:
                        ERRDF   16,EMG16        ;ERROR - UNEXPECTED HALT.
                                                                TRAP    C$ERDF
                                                                .WORD   16
                                                                .WORD   EMG16
                                                                .WORD   0
                        JMP     60$
                20$:
                        TST     MMANAG          ;ARE THE BUFFERS MEMORY MANAGED?
                        BEQ     40$             ;IF NOT - NO NEED TO DETERMINE PHYS. ADDR.
                        BIT     #BIT14,@SEL6    ;IS BIT 16 OF THE PHYSICAL ADDR SET?
                                                ;(I.E. BUFFER SHOULD BE IN PHYSICAL
```

```
                                                        ;ADDRESS RANGE: 200000 - 277776)
023222  001005                          BNE     21$     ;PROCEED - IF BIT SET.
023224                                  ERRDF   11,EMG11,ERRG2
(4)     023224  104455                                                  TRAP    C$ERDF
(5)     023226  000013                                                  .WORD   11
(5)     023230  020214                                                  .WORD   EMG11
(5)     023232  015070                                                  .WORD   ERRG2
023234  000505                          BR      60$
023236                          21$:
023236  042777  140000  156774          BIC     #BIT15!BIT14,@SEL6 ;CLEAR THE EXTENDED ADDRESS BITS.
023244  017702  156766                  MOV     @SEL4,R2        ;SAVE BITS 0-15 OF THE PHYSICAL ADDPESS.
023250  042702  017777                  BIC     #17777,R2       ;SAVE ONLY PAGE ADDRESS BITS.
023254  042777  160000  156754          BIC     #160000,@SEL4   ;CLEAR PAGE ADDRESS BITS IN SEL4
                                                        ;DETERMINE PAGE # FOR VIRTUAL ADDRESS.
023262  005702                          TST     R2              ;IS THIS PAGE 3?
023264  001004                          BNE     22$             ;IF NOT CHECK FOR OTHER PAGES
023266  052777  060000  156742          BIS     #60000,@SEL4    ;SET BITS FOR PAGE 3.
023274  000421                          BR      40$
023276                          22$:
023276  022702  020000                  CMP     #20000,R2       ;IS THIS PAGE 4?
023302  001004                          BNE     23$             ;IF NOT - KEEP CHECKING
023304  052777  100000  156724          BIS     #100000,@SEL4   ;SET BITS FOR PAGE 4.
023312  000412                          BR      40$
023314                          23$:
023314  022702  040000                  CMP     #40000,R2       ;IS THIS PAGE 5?
023320  001004                          BNE     24$             ;IF NOT - MUST BE PAGE 6
023322  052777  120000  156706          BIS     #120000,@SEL4   ;SET BITS FOR PAGE 5.
023330  000403                          BR      40$
023332                          24$:
023332  052777  140000  156676          BIS     #140000,@SEL4   ;SET BITS FOR PAGE 6.
023340                          40$:
023340  032777  000004  156666          BIT     #RCV,@SEL2      ;IS THIS A RECV. BUFFER?
023346  001023                          BNE     50$             ;IF YES - PROCESS THE BUFFER.
023350  005337  002332                  DEC     OUTXMT          ;DECREMENT BA/CC OUT XMIT.
023354  022577  156656                  CMP     (R5)+,@SEL4     ;IS THE XMIT BUFFER ADDRESS CORRECT?
023360  001406                          BEQ     41$             ;IF YES - PROCEED.
023362  005725                          TST     (R5)+           ;INCR. POINTER FOR ERROR MESSAGE.
023364                                  ERRDF   11,EMG11,ERRG8  ;IF NOT - ERROR
(4)     023364  104455                                                  TRAP    C$ERDF
(5)     023366  000013                                                  .WORD   11
(5)     023370  020214                                                  .WORD   EMG11
(5)     023372  016056                                                  .WORD   ERRG8
023374  000425                          BR      60$             ;EXIT ROUTINE
023376                          41$:
023376  022577  156636                  CMP     (R5)+,@SEL6     ;IS THE CHAR. COUNT CORRECT?
023402  001422                          BEQ     60$             ;IF OK - EXIT ROUTINE.
023404                                  ERRDF   12,EMG12,ERRG8  ;IF NOT - ERROR
(4)     023404  104455                                                  TRAP    C$ERDF
(5)     023406  000014                                                  .WORD   12
(5)     023410  020241                                                  .WORD   EMG12
(5)     023412  016056                                                  .WORD   ERRG8
023414  000415                          BR      60$             ;EXIT
023416                          50$:
023416  005337  002330                  DEC     OUTRCV          ;DECREMENT BA/CC OUT RCV
023422  022477  156610                  CMP     (R4)+,@SEL4     ;IS THE RCV BUFFER ADDRESS CORRECT?
023426  001406                          BEQ     51$             ;IF OK - PROCEED
```

```
                        ERRDF   11,EMG11,ERRG7
                                                                        TRAP    C$ERDF
                                                                        .WORD   11
                                                                        .WORD   EMG11
                                                                        .WORD   ERRG7
                        TST     (R4)+           ;UPDATE POINTER
                        BR      60$             ;EXIT ROUTINE
                51$:
                        MOV     @SEL6,(R4)+     ;CHANGE THE CHARACTER COUNT TO WHAT
                                                ;WAS RECEIVED.
                60$:
                        TST     OUTXMT          ;HAVE ALL THE XMITS BEEN DONE?
                        BNE     65$             ;IF NOT, CONTINUE
                        TST     OUTRCV          ;HAVE ALL THE RECEIVES BEEN DONE?
                        BNE     65$             ;IF NOT, CONTINUE
                61$:
                        BIC     #IEO,@SEL2      ;CLEAR THE OUTPUT INTERRUPT
                        MOV     #-1,OUTFLG      ;FLAG AS DONE.
                65$:
                        BIC     #RDO!CMD,@SEL2  ;CLEAR THE RDO BIT.
                        MOV     (SP)+,R0        ;RESTORE R0
                ENDSRV
                                                                                L10020:
                                                                                        RTI

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

                BGNSRV  NOXMEM
                                                                                NOXMEM::

                        MOV     #1,FLAG         ;SET FLAG IF MEMORY ADDRESSED IS NON-EXISTENT.

                ENDSRV
                                                                                L10021:
                                                                                        RTI


                .SBTTL  DROP UNIT SECTION

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

                BGNDU
                                                                                L$DU::

                        BRESET                  ;ISSUE UNIBUS RESET TO CLEAN UP
                                                                        TRAP    C$RESET
                        PRINTF  #FMDROP,LOGDEV
                                                                        MOV     LOGDEV,-(SP)
```

```
(7)  023530  012746  023552                                              MOV     #FMDROP,-(SP)
(6)  023534  012746  000002                                              MOV     #2,-(SP)
(3)  023540  010600                                                      MOV     SP,R0
(4)  023542  104417                                                      TRAP    C$PNTF
(4)  023544  062706  000006                                              ADD     #6,SP

     023550                          ENDDU
(3)  023550                                                  L10022:
(3)  023550  104453                                                      TRAP    C$DU


     023552  047045  040445  047125  FMDROP: .ASCIZ  /%N%AUNIT %D2%A DROPPED/
     023560  052111  022440  031104
     023566  040445  042040  047522
     023574  050120  042105     000
             023602                          .EVEN




                                     .SBTTL          TEST 1 - DMR CSR VERIFICATION
                                     ;
                                     ;*****************************************************************
                                     ;*              TEST 1 - DMR-11
                                     ;* VERIFY THAT ADDRESSING THE 4 UNIBUS CSRS DOES NOT CAUSE A NON-
                                     ;* EXISTENT MEMORY TRAP.
                                     ;*
                                     ;* THE DMR IS AN NPR DEVICE RESIDING ON A UNIBUS.  COMMUNICATION
                                     ;* BETWEEN THE MAIN CPU AND THE DMR IS ACCOMPLISHED THROUGH A
                                     ;* SET OF FOUR 16-BIT UNIBUS CONTROL AND STATUS REGISTERS (CSRS).
                                     ;* THE FOUR REGISTERS ARE ASSIGNED ADDRESSES IN THE I/O PAGE
                                     ;* FLOATING ADDRESS SPACE: 76XXX0 - 76XXX6
                                     ;*
                                     ;* NOTE: THIS TEST IS REDUNDANT IN THAT STATIC LOGIC TESTS SHOULD
                                     ;* HAVE BEEN RUN BEFORE THESE FREE-RUNNING TESTS WERE STARTED, AND
                                     ;* THEY SHOULD HAVE DETECTED ANY CSR ADDRESSING PROBLEMS.
                                     ;* BUT JUST IN CASE THOSE STATIC TESTS AREN'T RUN, WE'LL BE SAFE.
                                     ;*****************************************************************
     023602                          BGNTST
(3)  023602                                                  T1::

     023602                                  SETVEC  #4,#LOCATE,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
(7)  023602  012746  000340                                              MOV     #PRI07,-(SP)
(6)  023606  012746  023724                                              MOV     #LOCATE,-(SP)
(5)  023612  012746  000004                                              MOV     #4,-(SP)
(4)  023616  012746  000003                                              MOV     #3,-(SP)
(3)  023622  104437                                                      TRAP    C$SVEC
(2)  023624  062706  000010                                              ADD     #10,SP
     023630  005037  002340                  CLR     FLAG            ;FLAG USED IN THE TRAP ROUTINE.
     023634  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
```

```
                                ;;*******************************************************************
        023636  005777  156370          TST     @SEL0           ;TEST THE CSR AT 76XXX0
        023642  012701  000002          MOV     #2,R1           ;SAVE THE OFFSET OF THE NEXT CSR
        023646  005777  156362          TST     @SEL2           ;TEST THE CSR AT 76XXX2
        023652  012701  000004          MOV     #4,R1           ;SAVE THE OFFSET OF THE NEXT CSR
        023656  005777  156354          TST     @SEL4           ;TEST THE CSR AT 76XXX4
        023662  012701  000006          MOV     #6,R1           ;SAVE THE OFFSET OF THE NEXT CSR
        023666  005777  156346          TST     @SEL6           ;TEST THE CSR AT 76XXX6
        023672  005737  002340          TST     FLAG            ;WAS THERE A TRAP?
        023676  001406                  BEQ     10$             ;IF NOT - EXIT.
        023700                          DODU    LOGDEV          ;DROP THE DEVICE
 (3)    023700  013700  002362                                                  MOV     LOGDEV,R0
 (3)    023704  104451                                                          TRAP    C$DODU
        023706                          DOCLN                   ;DO CLEAN UP - FORCE BACK TO INIT CODE.
 (3)    023706  104444                                                          TRAP    C$DCLN
        023710  005037  002340          CLR     FLAG            ;RESTORE THE FLAG.
        023714                  10$:
        023714                          CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
 (3)    023714  012700  000004                                                  MOV     #4,R0
 (3)    023720  104436                                                          TRAP    C$CVEC

        023722                  ENDTST
 (3)    023722                                                          L10023:
 (3)    023722  104401                                                          TRAP    C$ETST


        023724                  BGNSRV  LOCATE                  ;INTERRUPT SERVICE ROUTINE
 (3)    023724                                                          LOCATE::
        023724  010046                  MOV     R0,-(SP)        ;SAVE R0
        023726  005737  002340          TST     FLAG            ;HAVE WE HAD AT LEAST 1 PREVIOUS TRAP?
        023732  001006                  BNE     10$             ;IF YES, DON'T BOTHER DECLARING ANOTHER
                                                                ;DEVICE FATAL ERROR
        023734                          ERRDF   6,EMT0          ;NON-EXISTENT DEVICE ERROR
 (4)    023734  104455                                                          TRAP    C$ERDF
 (5)    023736  000006                                                          .WORD   6
 (5)    023740  024002                                                          .WORD   EMT0
 (5)    023742  000000                                                          .WORD   0
        023744  005237  002340          INC     FLAG            ;SET THE FLAG
        023750                  10$:
        023750                          PRINTX  #FMT0,R1,CSR(R1) ;PRINT THE CSR THAT DOESN'T RESPOND.
 (9)    023750  016146  002232                                                  MOV     CSR(R1),-(SP)
 (8)    023754  010146                                                          MOV     R1,-(SP)
 (7)    023756  012746  024040                                                  MOV     #FMT0,-(SP)
 (6)    023762  012746  000003                                                  MOV     #3,-(SP)
 (3)    023766  010600                                                          MOV     SP,R0
 (4)    023770  104415                                                          TRAP    C$PNTX
 (4)    023772  062706  000010                                                  ADD     #10,SP
        023776  012600                  MOV     (SP)+,R0        ;RESTORE R0
        024000                  ENDSRV
 (3)    024000                                                          L10024:
 (2)    024000  000002                                                          RTI

        024002  051503  020122  042101  EMT0:   .ASCIZ  /CSR ADDRESSING ERROR - TRAP 4/
        024010  051104  051505  044523
        024016  043516  042440  051122
```

```
                024024  051117  026440  052040
                024032  040522  020120  000064
 4929           024040  051445  022463  041501  FMT0:   .ASCIZ  /%S3%ACSR (SEL%D1%A) AT %O6%A DOES NOT RESPOND%N/
                024046  051123  024040  042523
                024054  022514  030504  040445
                024062  020051  052101  022440
                024070  033117  040445  042040
                024076  042517  020123  047516
                024104  020124  042522  050123
                024112  047117  022504  000116
 4930                                           .EVEN
 4931
 4932
 4933
 4934
 4935                                   .SBTTL          TEST 2 - ROM CHECK
 4936
 4937                                   ;*************************************************************************
 4938                                   ;*                  TEST 2 - DMR-11
 4939                                   ;* ROM CRC/CCITT - CHECK ROM POSITION AND CALCULATE CRC/CCITT.  THE
 4940                                   ;* LAST 4 BYTES CONTAIN INFORMATION ABOUT THE ROM TO CHECK.  THE 1ST
 4941                                   ;* OF THESE BYTES CONTAINS THE ASCII VERSION NUMBER.  THE 2ND BYTE
 4942                                   ;* CONTAINS THE ROM NUMBER.  THE 3RD AND 4TH BYTES CONTAIN A NEGATIVE
 4943                                   ;* CRC/CCITT WORD FOR THE ROM.
 4944                                   ;*                      CHIP ADDRESS RANGE
 4945                                   ;*    LOCATION  CHIP NO.        BYTE    ADDRESS RANGE
 4946                                   ;*      E03        0             LOW     0000 - 1777
 4947                                   ;*      E02        1             HIGH    0000 - 1777
 4948                                   ;*      E04        2             LOW     2000 - 3777
 4949                                   ;*      E01        3             HIGH    2000 - 3777
 4950                                   ;*      E05        4             LOW     4000 - 5777
 4951                                   ;*      E14        5             HIGH    4000 - 5777
 4952                                   ;*
 4953                                   ;*************** IMPORTANT !!!!!!!!!! ********************************
 4954                                   ;* FOR THIS TEST TO RUN CORRECTLY, ENSURE THAT SWITCH 1 AT LOCATION
 4955                                   ;* E85 ON THE M8207 IS ON.  IF THIS SWITCH IS OFF, BSEL1 WILL BE
 4956                                   ;* LOCKED OUT AND THE MAINTENANCE FEATURES WILL NOT BE ENABLED.
 4957                                   ;*************************************************************************
 4958                                   ;*
 4959                                   ;*      SUBTEST 1 - ON THE FIRST PASS PRINT THE VERSION # IN EACH ROM
 4960                                   ;*      SUBTEST 2 - GENERATE THE CRC-CCITT IN EACH ROM AND COMPARE IT
 4961                                   ;*                  IT AGAINST THE CRC BLASTED IN THE ROM
 4962                                   ;*      SUBTEST 3 - COMPARE THE ROM # BLASTED IN THE ROM AGAINST THE
 4963                                   ;*                  EXPECTED ROM #.
 4964                                   ;*
 4965                                   ;*************************************************************************
 4966  024120                           BGNTST
  (3)  024120                                                                            T2::
 4967  024120                             BGNSUB
  (3)  024120                                                                            T2.1:
  (3)  024120  104402                                                                       TRAP    C$BSUB
 4968  024122  022737  000001  002270          CMP     #1,STARES       ;IS THIS THE FIRST PASS?
 4969  024130  001061                          BNE     5$              ;IF NOT - SKIP THIS SUBROUTINE.
 4970                                                                   ;GET VERSION # FROM EACH ROM AND PRINT IT OUT
 4971  024132  005004                          CLR     R4              ;# OF THE 1ST ROM
 4972  024134  012705  000001                  MOV     #1,R5           ;# OF NEXT ROM
```

```
        024140  012737  001774  002404          MOV     #1774,ROMADR            ;ADDRESS OF BYTE CONTAINING # IN ROMS 0 & 1
        024146                                  PRINTB  #FMT1,LOGDEV            ;MICROCODE VERSION
   (8)  024146  013746  002362                                                                          MOV     LOGDEV,-(SP)
   (7)  024152  012746  025074                                                                          MOV     #FMT1,-(SP)
   (6)  024156  012746  000002                                                                          MOV     #2,-(SP)
   (3)  024162  010600                                                                                  MOV     SP,R0
   (4)  024164  104414                                                                                  TRAP    C$PNTB
   (4)  024166  062706  000006                                                                          ADD     #6,SP
        024172                          1$:
        024172                                  CALL    $ROMO                   ;GET ROM CONTENTS.
        024176  117737  156036  025430          MOVB    @BSEL6,REV1             ;SAVE THE ASCII REVISION # OF THE ROM
        024204  117737  156040  025432          MOVB    @BSEL7,REV2             ;SAVE THE REV. # OF THE NEXT ROM
                                                                                ;PRINT
        024212                                  PRINTB  #FMT2,R4,#REV1,R5,#REV2
  (11)  024212  012746  025432                                                                          MOV     #REV2,-(SP)
  (10)  024216  010546                                                                                  MOV     R5,-(SP)
   (9)  024220  012746  025430                                                                          MOV     #REV1,-(SP)
   (8)  024224  010446                                                                                  MOV     R4,-(SP)
   (7)  024226  012746  025143                                                                          MOV     #FMT2,-(SP)
   (6)  024232  012746  000005                                                                          MOV     #5,-(SP)
   (3)  024236  010600                                                                                  MOV     SP,R0
   (4)  024240  104414                                                                                  TRAP    C$PNTB
   (4)  024242  062706  000014                                                                          ADD     #14,SP

        024246  022705  000005                  CMP     #5,R5                   ;ARE WE DONE?
        024252  001410                          BEQ     5$                      ;IF YES - EXIT
        024254  062704  000002                  ADD     #2,R4                   ;INCR. ROM NUMBERS
        024260  062705  000002                  ADD     #2,R5                   ;
        024264  062737  002000  002404          ADD     #2000,ROMADR            ;ADDRESS OF BYTES CONTAINING NEXT ROM REV #S.
        024272  000737                          BR      1$

        024274                          5$:
        024274                            ENDSUB
   (3)  024274                                                                                  L10026:
   (3)  024274  104403                                                                                  TRAP    C$ESUB


        024276                            BGNSUB
   (3)  024276                                                                                  T2.2:
   (3)  024276  104402                                                                                  TRAP    C$BSUB
        024300  005037  002340                  CLR     FLAG                    ;USE THE FLAG TO MARK WHEN AN ERRDF
                                                                                ;HAS BEEN DETECTED IN THIS TEST.
        024304  005004                          CLR     R4                      ;START CRC CHECK WITH ROM 0
                                                                                ;R4 IS THE ROM #.  THE LOCATION FOR THE
                                                                                ;ROM IS CONTAINED IN THE TABLE 'ROMLOC'.
        024306  005037  002404                  CLR     ROMADR                  ;BEGIN AT ROM ADDRESS 0

        024312                          10$:
        024312  012737  177777  002374          MOV     #-1,LOCRC               ;INITIALIZE CRC WORD FOR THE LOW BYTE
                                                                                ;CALCULATION.
        024320  012737  177777  002376          MOV     #-1,HICRC               ;INIT. CRC WORD FOR THE HIGH BYTE.
        024326  012701  001000                  MOV     #1000,R1                ;COUNTER FOR LOOP TO READ THE ROM CONTENTS
                                                                                ;AND CALCULATE THE CRC - THE COUNTER IS 512.,
                                                                                ;BECAUSE 2 ADDRESS LOCATIONS ARE READ FOR EACH
                                                                                ;PASS (I.E. THE ROMS ARE 1K X 8 BITS)
```

```
5010                                                    ;
5011                                                    ; BECAUSE A ROM OUT WILL OUTPUT THE ROM CONTENTS (I.E. 16 BITS)
5012                                                    ; THIS ROUTINE WILL CALCULATE/CHECK THE CRC 2 ROMS AT A TIME.
5013                                                    ;
5014  024332                                  20$:
5015  024332                                            CALL    $ROMO           ;GET THE ROM CONTENTS
5016  024336  117737  155676  002400                    MOVB    @BSEL6,LOWORD   ;SAVE THE LOW BYTE OF THE ROM CONTENTS.
5017  024344  117737  155700  002402                    MOVB    @BSEL7,HIWORD   ;SAVE THE HIGH BYTE OF THE ROM CONTENTS.
5018  024352  005237  002404                            INC     ROMADR          ;INCREMENT THE ROM ADDRESS POINTER
5019  024356                                            CALL    $ROMO           ;GET THE CONTENTS OF THE NEXT ROM ADDRESS
5020  024362  117737  155652  002401                    MOVB    @BSEL6,LOWORD+1 ;SAVE THE NEXT LOW BYTE.
5021  024370  117737  155654  002403                    MOVB    @BSEL7,HIWORD+1 ;SAVE THE NEXT HIGH BYTE.
5022                                                                            ;NOTE: AT THIS POINT LOWORD IS A WORD WHICH
5023                                                                            ;HAS 2 CONSECUTIVE LOW BYTES OF ROM CONTENTS.
5024  024376  005237  002404                            INC     ROMADR          ;INCREMENT THE ROM ADDRESS POINTER
5025  024402  005301                                    DEC     R1              ;ARE WE FINISHED WITH THESE 2 ROMS?
5026  024404  001443                                    BEQ     40$             ;IF YES, CHECK CRC
5027                                                    ;
5028                                                    ;CRC/CCITT CALCULATION = CONVERT THE WORD (LOWORD & HIWORD) TO
5029                                                    ;                        A SERIAL STREAM FOR CALCULATION.
5030                                                    ;
5031  024406  012703  000020                            MOV     #16.,R3         ;16 BITS TO CONSIDER
5032  024412                                  25$:
5033  024412  000241                                    CLC                     ;CLEAR THE CARRY
5034  024414  006037  002374                            ROR     LOCRC           ;ROTATE BIT0 INTO THE CARRY BIT
5035  024420  006037  002400                            ROR     LOWORD          ;ROTATE BIT0 INTO C AND THE OLD C INTO BIT15
5036                                                                            ;ARE THE BITS 15 & BITS 0 THE SAME?
5037                                                                            ;IF YES (V IS CLEAR), DON'T DO THE CRC
5038  024424  102011                                    BVC     30$             ;NOTE: V IS THE EXCLUSIVE OR OF BIT0 & BIT15.
5039  024426  012702  102010                            MOV     #102010,R2      ;CRC/CCITT POLYNOMIAL
5040  024432  043702  002374                            BIC     LOCRC,R2
5041  024436  042737  102010  002374                    BIC     #102010,LOCRC
5042  024444  050237  002374                            BIS     R2,LOCRC
5043  024450                                  30$:
5044  024450  000241                                    CLC                     ;CLEAR THE CARRY
5045  024452  006037  002376                            ROR     HICRC           ;ROTATE BIT 0 INTO C
5046  024456  006037  002402                            ROR     HIWORD          ;ROTATE OLD C INTO BIT15 (SIGN) & BIT0 INTO C
5047                                                                            ;ARE THE BITS 0 OF HICRC & HIWORD THE SAME?
5048  024462  102011                                    BVC     35$             ;IF YES (V IS CLEAR), DON'T DO THE CRC.
5049                                                                            ;NOTE: V IS THE EXCLUSIVE OR OF BIT0 & BIT15.
5050  024464  012702  102010                            MOV     #102010,R2      ;CRC/CCITT POLYNOMIAL
5051  024470  043702  002376                            BIC     HICRC,R2
5052  024474  042737  102010  002376                    BIC     #102010,HICRC
5053  024502  050237  002376                            BIS     R2,HICRC
5054  024506                                  35$:
5055  024506  005303                                    DEC     R3              ;DO ALL 16 BITS
5056  024510  001340                                    BNE     25$
5057  024512  000707                                    BR      20$             ;GET THE CONTENTS OF THE NEXT 2 ROM ADDRESSES.
5058  024514                                  40$:
5059                                                    ;
5060                                                    ; AT THIS POINT WE'VE READ THE CONTENTS AND CALCULATED THE CRC FOR
5061                                                    ; 2 ROM ROMS (ONE LOW BYTE & ONE HIGH BYTE).  ALSO WE'VE READ THE
5062                                                    ; CRC BLASTED INTO THE LAST 2 BYTES OF THE ROM (IN LOWORD/HIWORD)
5063                                                    ;
5064  024514  005137  002374                            COM     LOCRC           ;COMPLEMENT THE CALCULATED CRC .
5065  024520  023737  002374  002400                    CMP     LOCRC,LOWORD    ;IS THE CRC IN ROM THE SAME AS THE
```

```
                                                                ;CALCULATED CRC?
024526  001427                          BEQ     50$             ;IF YES - CHECK THE HIGH BYTE CRC (NEXT ROM)
024530  005737  002340                  TST     FLAG            ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
                                                                ;WE'RE IN A LOOP)
024534  001007                          BNE     41$             ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
024536  012737  000001  002340          MOV     #1,FLAG         ;FLAG THAT ERRDF HAS BEEN DETECTED.
024544                                  ERRDF   7,EMT1          ;ROM ERROR
(4)     024544  104455                                                  TRAP    C$ERDF
(5)     024546  000007                                                  .WORD   7
(5)     024550  025362                                                  .WORD   EMT1
(5)     024552  000000                                                  .WORD   0
024554                          41$:
024554                                  PRINTB  #FMT3,R4,LOCRC,LOWORD
(10)    024554  013746  002400                                          MOV     LOWORD,-(SP)
(9)     024560  013746  002374                                          MOV     LOCRC,-(SP)
(8)     024564  010446                                                  MOV     R4,-(SP)
(7)     024566  012746  025220                                          MOV     #FMT3,-(SP)
(6)     024572  012746  000004                                          MOV     #4,-(SP)
(3)     024576  010600                                                  MOV     SP,R0
(4)     024600  104414                                                  TRAP    C$PNTB
(4)     024602  062706  000012                                          ADD     #12,SP
024606                          50$:
024606  005204                          INC     R4              ;INCR ROM #
024610  005137  002376                  COM     HICRC           ;COMPLEMENT THE CALCULATED CRC FOR THE HI BYTE
024614  023737  002376  002402          CMP     HICRC,HIWORD    ;ROM CRC AND CALCULATED CRC THE SAME?
024622  001427                          BEQ     60$             ;IF YES - CHECK THE ROM LOCATIONS.
024624  005737  002340                  TST     FLAG            ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
                                                                ;WE'RE IN A LOOP)
024630  001007                          BNE     51$             ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
024632  012737  000001  002340          MOV     #1,FLAG         ;FLAG THAT ERRDF HAS BEEN DETECTED.
024640                                  ERRDF   7,EMT1          ;ROM ERROR
(4)     024640  104455                                                  TRAP    C$ERDF
(5)     024642  000007                                                  .WORD   7
(5)     024644  025362                                                  .WORD   EMT1
(5)     024646  000000                                                  .WORD   0
024650                          51$:
024650                                  PRINTB  #FMT3,R4,HICRC,HIWORD
(10)    024650  013746  002402                                          MOV     HIWORD,-(SP)
(9)     024654  013746  002376                                          MOV     HICRC,-(SP)
(8)     024660  010446                                                  MOV     R4,-(SP)
(7)     024662  012746  025220                                          MOV     #FMT3,-(SP)
(6)     024666  012746  000004                                          MOV     #4,-(SP)
(3)     024672  010600                                                  MOV     SP,R0
(4)     024674  104414                                                  TRAP    C$PNTB
(4)     024676  062706  000012                                          ADD     #12,SP
024702                          60$:
024702  022704  000005                  CMP     #5,R4           ;IF WE'VE DONE ROMS 0-5, WE'RE DONE.
024706  001403                          BEQ     70$             ;EXIT WHEN DONE
024710  005204                          INC     R4              ;CHECK THE NEXT ROM.
024712  000137  024312                  JMP     10$
024716                          70$:

                                  ENDSUB
                                                                L10027:
024716                                                                  TRAP    C$ESUB
024716
(3)     024716  104403
```

```
5096  024720                                 BGNSUB
 (3)  024720                                                                                          T2.3:
 (3)  024720  104402                                                                                        TRAP    C$BSUB
5097  024722  005037  002340                      CLR     FLAG                ;CLEAR FLAG
5098  024726  005004                              CLR     R4                  ;BEGIN AT ROM 0
5099  024730  012737  001775  002404              MOV     #1775,ROMADR        ;ADDRESS OF BYTE CONTAINING ROM #
5100  024736                             10$:
5101  024736                                      CALL    $ROMO               ;GET ROM CONTENTS
5102  024742  117701  155272                      MOVB    @BSEL6,R1           ;SAVE THE CONTENTS OF THE LOW BYTE
5103                                                                          ;FOR ROMS 0,2,4
5104  024746  000402                              BR      17$
5105  024750                             15$:
5106  024750  117701  155274                      MOVB    @BSEL7,R1           ;SAVE THE CONTENTS OF THE HIGH BYTE
5107                                                                          ;FOR ROMS 1,3,5
5108  024754                             17$:
5109  024754  042701  177760                      BIC     #^C17,R1            ;CONVERT THE ASCII BYTE TO AN OCTAL WORD.
5110  024760  020104                              CMP     R1,R4               ;IS THIS THE EXPECTED ROM #
5111  024762  001427                              BEQ     20$                 ;IF YES - OK.
5112  024764  005737  002340                      TST     FLAG                ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
5113                                                                          ;WE'RE IN A LOOP)
5114  024770  001007                              BNE     18$                 ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5115  024772  012737  000001  002340              MOV     #1,FLAG             ;FLAG THAT ERRDF HAS BEEN DETECTED.
5116  025000                                      ERRDF   7,EMT2              ;ROM ERROR
 (4)  025000  104455                                                                                        TRAP    C$ERDF
 (5)  025002  000007                                                                                        .WORD   7
 (5)  025004  025402                                                                                        .WORD   EMT2
 (5)  025006  000000                                                                                        .WORD   0
5117  025010                             18$:
5118  025010                                      PRINTB  #FMT4,<B,ROMLOC(R4)>,R1,R4
(10)  025010  010446                                                                                        MOV     R4,-(SP)
 (9)  025012  010146                                                                                        MOV     R1,-(SP)
 (8)  025014  005046                                                                                        CLR     -(SP)
 (8)  025016  156416  025421                                                                                BISB    ROMLOC(R4),(SP)
 (7)  025022  012746  025304                                                                                MOV     #FMT4,-(SP)
 (6)  025026  012746  000004                                                                                MOV     #4,-(SP)
 (3)  025032  010600                                                                                        MOV     SP,R0
 (4)  025034  104414                                                                                        TRAP    C$PNTB
 (4)  025036  062706  000012                                                                                ADD     #12,SP
5119  025042                             20$:
5120  025042  022704  000005                      CMP     #5,R4               ;DID WE FINISH THE LAST ROM?
5121  025046  001410                              BEQ     30$                 ;IF YES - SKIP TO THE END
5122  025050  005204                              INC     R4                  ;POINT TO THE NEXT ROM #
5123  025052  032704  000001                      BIT     #BIT0,R4            ;IS THIS AN ODD #
5124  025056  001334                              BNE     15$                 ;IF YES GO BACK AND READ THE HIGH BYTE
5125
5126  025060  062737  002000  002404              ADD     #2000,ROMADR        ;INCR. ADDRESS POINTER TO NEXT ROM #.
5127  025066  000723                              BR      10$
5128  025070                             30$:
5129  025070                                 ENDSUB
 (3)  025070                                                                                          L10030:
 (3)  025070  104403                                                                                        TRAP    C$ESUB
5130
5131  025072                             ENDTST
 (3)  025072                                                                                          L10025:
 (3)  025072  104401                                                                                        TRAP    C$ETST
5132  025074  047045  040445  044515     FMT1:    .ASCIZ  /%N%AMICROCODE REVISION IN UNIT%D3%A:%N/
```

```
                025102  051103  041517  042117
                025110  020105  042522  044526
                025116  044523  047117  044440
                025124  020116  047125  052111
                025132  042045  022463  035101
                025140  047045     000
5133            025143     045  051101  046517  FMT2:   .ASCIZ  /%AROM%D2%A - REV. %T%N%AROM%D2%A - REV. %T%N/
                025150  042045  022462  020101
                025156  020055  042522  027126
                025164  022440  022524  022516
                025172  051101  046517  042045
                025200  022462  020101  020055
                025206  042522  027126  022440
                025214  022524  000116
5134            025220  040445  047522  022515  FMT3:   .ASCIZ  /%AROM%D2%A: CALCUATED CRC =%O6%A  CRC IN ROM =%O6%N/
                025226  031104  040445  020072
                025234  040503  041514  040525
                025242  042524  020104  051103
                025250  020103  022475  033117
                025256  040445  020040  051103
                025264  020103  047111  051040
                025272  046517  036440  047445
                025300  022466  000116
5135            025304  040445  022505  031104  FMT4:   .ASCIZ  /%AE%D2%A IS ROM %D1%A (SHOULD BE ROM %D1%A)%N/
                025312  040445  044440  020123
                025320  047522  020115  042045
                025326  022461  020101  051450
                025334  047510  046125  020104
                025342  042502  051040  046517
                025350  022440  030504  040445
                025356  022451  000116
5136
5137            025362  051103  026503  041503  EMT1:   .ASCIZ  /CRC-CCITT ERROR/
                025370  052111  020124  051105
                025376  047522  000122
5138            025402  047514  040503  044524  EMT2:   .ASCIZ  /LOCATION ERROR/
                025410  047117  042440  051122
                025416  051117     000
5139
5140            025421     003     002     004  ROMLOC: .BYTE 3,2,4,1,5,14.     ;ROM 0 - ROM LOCATION 3 ETC.
                025424     001     005     016
5141                    025430                          .EVEN
5142            025430  000000                  REV1:   .WORD   0               ;ASCII VALUE OF THE REV. NUMBER
5143            025432  000000                  REV2:   .WORD   0               ;ASCII VALUE OF THE REV. NUMBER
5144
5145
5146
5147
5148
5149
5150                                            .SBTTL          TEST 3 - MASTER CLEAR AND MICROTEST
5151
5152                                            ;*******************************************************************************
5153                                            ;*              TEST 3 - DMR-11
5154                                            ;* MASTER CLEAR
5155                                            ;* THIS TEST WILL ISSUE 2 MASTER CLEARS.  EACH CALL TO THE MASTER
```

```
                                    ;* CLEAR ROUTINE WILL ENSURE THAT THE RUN BIT WILL BE SET.  ALSO
                                    ;* THE MASTER CLEAR WILL CAUSE THE DIAGNOSTIC MICROTESTS TO BE
                                    ;* RUN WHEN THE MICRODIAGNOSTIC BIT (BIT 13 IN SEL0) IS CORRECTLY
                                    ;* SET OR CLEARED.  BECAUSE THE RUNNING OF MICROTESTS DEPENDS ON THE
                                    ;* EXCLUSIVE OR OF THE  HARDWARE SWITCH 10 ON E134 OF THE M8203 AND
                                    ;* THE MICRODIAGNOSTIC BIT, WE CAN'T KNOW WHETHER THE SETTING OR
                                    ;* CLEARING OF BIT 13 WILL RESULT IN THE RUNNING OF MICROTESTS.
                                    ;* THEREFORE THE MASTER CLEAR SUBROUTINE WILL TOGGLE (I.E. SET
                                    ;* BIT 13 ONLY ON EVERY OTHER MASTER CLEAR) THE SOFTWARE BIT.
                                    ;* THIS WILL ENSURE THAT REGARDLESS OF THE POSITION OF THE
                                    ;* HARDWARE SWITCH, MICROTESTS WILL BE RUN EVERY OTHER MASTER CLEAR.
                                    ;* WHEN RUNNING THIS TEST, WE EXPECT TO ADD THE RESULTS OF BSEL3
                                    ;* AFTER EACH MASTER CLEAR.
                                    ;* BSEL3 = 100         -  MICROTESTS DISABLED
                                    ;* BSEL3 = 200         -  MICROTESTS RUN SUCCESFULLY
                                    ;* IF THE RESULT OF THE 2 MASTER CLEARS IS NOT 300, AN ERROR IS
                                    ;* REPORTED.
                                    ;*
                                    ;* ADDITIONALLY THIS ROUTINE WILL REPORT WHENEVER THE RESULT OF
                                    ;* BSEL3 IS 0.  THIS WILL MEAN THAT THE DEVICE IS NOT A DMR
                                    ;* (I.E. DMC)
                                    ;*********************************************************************
      025434                        BGNTST
 (3)  025434                                                                             T3::
      025434                                CLEAR                   ;MACRO FOR MASTER CLEAR
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  025434  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
 (1)                                                                ;****                ****

      025440                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  025440  104410                                                                     TRAP    C$ESCAPE
 (3)  025442  000072                                                                     .WORD   L10031-.
      025444  105777  154574                TSTB    @BSEL3          ;IS THERE A DMR RESPONSE?
      025450  001011                        BNE     1$
      025452                                PRINTB  #FMG19          ;REPORT DEVICE NOT DMR.
 (7)  025452  012746  017473                                                             MOV     #FMG19,-(SP)
 (6)  025456  012746  000001                                                             MOV     #1,-(SP)
 (3)  025462  010600                                                                     MOV     SP,R0
 (4)  025464  104414                                                                     TRAP    C$PNTB
 (4)  025466  062706  000004                                                             ADD     #4,SP
      025472  000420                        BR      5$
      025474                        1$:
      025474  117701  154544                MOVB    @BSEL3,R1       ;SAVE THE RESULT OF THE FIRST MASTER CLEAR.
      025500                                CLEAR                   ;MASTER CLEAR AGAIN.
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  025500  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
 (1)                                                                ;****                ****

      025504                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  025504  104410                                                                     TRAP    C$ESCAPE
 (3)  025506  000026                                                                     .WORD   L10031-.
      025510  117702  154530                MOVB    @BSEL3,R2       ;SAVE THE RESULTS OF THE SECOND MASTER CLEAR
      025514  060102                        ADD     R1,R2           ;ADD THE RESULTS OF THE 2 CLEARS
                                                                    ;NOTE: ONE SHOULD BE 100 - MICRO TESTS NOT
                                                                    ;ENABLED AND ONE SHOULD BE 200 - MICRO TESTS
                                                                    ;SUCCESFULLY RUN.
```

SEQ 0100

```
                                        TEST 3 - MASTER CLEAR AND MICROTEST

5196  025516  122702  000300            CMPB    #300,R2         ;WAS THE MICROTEST COMPLETED?
5197  025522  001404                    BEQ     5$              ;IF YES - OK
5198  025524                            ERRDF   3,EMT3,ERRG3    ;MICROTEST NOT COMPLETED
 (4)  025524  104455                                                            TRAP    C$ERDF
 (5)  025526  000003                                                            .WORD   3
 (5)  025530  025536                                                            .WORD   EMT3
 (5)  025532  015204                                                            .WORD   ERRG3
5199  025534                    5$:
5200  025534                    ENDTST
 (3)  025534                                                          L10031:
 (3)  025534  104401                                                            TRAP    C$ETST
5201
5202  025536  044515  051103  052117  EMT3:   .ASCIZ  /MICROTEST NOT COMPLETED/
      025544  051505  020124  047516
      025552  020124  047503  050115
      025560  042514  042524  000104
5203                                    .EVEN
5204
5205
5206
5207
5208                      .SBTTL        TEST 4 - BASE IN COMMAND
5209
5210                      ;*****************************************************************************
5211                      ;*              TEST 4 - DMR-11
5212                      ;*  BASE IN COMMANDS
5213                      ;*
5214                      ;*  SUBTEST 1  - ISSUE A BASE IN  -  DMR MODE.
5215                      ;*               ENSURE THAT THE DMR MODE BIT (BIT 4) IS SET IN
5216                      ;*               THE MICROCODE SCRATCH PAD 7 AND THAT THE DDCMP
5217                      ;*               MESSAGE VARIABLES ARE PROPERLY INITIALIZED.
5218                      ;*  SUBTEST 2  - ISSUE A BASE IN  -  DMC MODE.
5219                      ;*               ENSURE THAT THE DMC MODE BIT (BIT 4) IS CLEAR IN
5220                      ;*               THE MICROCODE SCRATCH PAD 7 AND THAT THE DDCMP
5221                      ;*               MESSAGE VARIABLES ARE PROPERLY INITIALIZED.
5222                      ;*
5223                      ;*****************************************************************************
5224  025566              BGNTST
 (3)  025566                                                          T4::
5225  025566                 BGNSUB
 (3)  025566                                                          T4.1:
 (3)  025566  104402                                                            TRAP    C$BSUB
5226  025570                      CLEAR                 ;MACRO FOR MASTER CLEAR COMMAND
 (1)                                                   ;**** MACRO EXPANSION ****
 (1)  025570  004737  011064        JSR     PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
 (1)                                                   ;****                  ****
5227
5228
5229  025574                      ESCAPE  TST           ;IF ERROR, BR TO TEST END
 (3)  025574  104410                                                            TRAP    C$ESCAPE
 (3)  025576  000244                                                            .WORD   L10032-.
5230                                                   ;BASE IN COMMAND WITH NO MAINTENANCE,
5231  025600                      BASEIN  0,BASE,DMR    ;BASE=BASE TABLE ADDRESS, AND DMR-11 MODE
 (1)                                                   ;**** MACRO EXPANSION ****
 (1)  025600  004737  011262        JSR     PC, $BASEI ;CALL BASE IN ROUTINE
 (1)  025604  000000                .WORD   0          ;MAINTENANCE MODE BITS TO SET IN BSEL1
```

```
  (1)  025606  002630                          .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  025610  000522                          .WORD   DMR     ;MODE
  (1)                                          ;****                   ****
5232
5233  025612                          ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  025612  104410                                                             TRAP    C$ESCAPE
  (3)  025614  000226                                                             .WORD   L10032-.
5234  025616                          SHUTDN
  (1)                                          ;**** MACRO EXPANSION ****
  (1)  025616  004737  012560                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                          ;****                   ****
5235  025622  132737  000020  002722           BITB    #BIT4,BASE+ISP7 ;SEE IF THE DMR MODE BIT IS SET IN THE
5236                                           ;DMR SCRATCH PAD REGISTER 7 (BASE TABLE
5237                                           ;LOCATION CONTAINS AN IMAGE OF SP7)
5238  025630  001004                          BNE     10$             ;OK IF SET - BR
5239  025632                                  ERRDF   20,EMT4
  (4)  025632  104455                                                             TRAP    C$ERDF
  (5)  025634  000024                                                             .WORD   20
  (5)  025636  026264                                                             .WORD   EMT4
  (5)  025640  000000                                                             .WORD   0
5240  025642                  10$:
5241
5242                                           ;CHECK MESSAGE EXCHANGE VALUES
5243  025642  105737  002672                  TSTB    BASE+R          ; #R (MESSAGE RECEIVED) = 0?
5244  025646  001015                          BNE     20$             ;ERROR IF NON ZERO
5245  025650  105737  002673                  TSTB    BASE+N          ; #N (MESSAGE TRANSMITTED) = 0?
5246  025654  001012                          BNE     20$             ;ERROR IF NON ZERO
5247  025656  105737  002674                  TSTB    BASE+A          ; #A (MESSAGE ACKNOWLEDGED) = 0?
5248  025662  001007                          BNE     20$             ;ERROR IF NON ZERO
5249  025664  122737  000001  002675          CMPB    #1,BASE+T       ; #T (NEXT MESSAGE # TRANSMITTED) = 1?
5250  025672  001003                          BNE     20$             ;ERROR IF NOT EQUAL TO 1.
5251  025674  105737  002676                  TSTB    BASE+X          ; #X (LAST MESSAGE TRANSMITTED) = 0?
5252  025700  001404                          BEQ     30$
5253  025702                  20$:
5254  025702                          ERRDF   20,EMT5,ERRT1
  (4)  025702  104455                                                             TRAP    C$ERDF
  (5)  025704  000024                                                             .WORD   20
  (5)  025706  026311                                                             .WORD   EMT5
  (5)  025710  026044                                                             .WORD   ERRT1
5255  025712
5256  025712                  30$:
  (3)  025712                     ENDSUB
  (3)  025712  104403                                                     L10033:
                                                                                  TRAP    C$ESUB
5257
5258  025714                     BGNSUB
  (3)  025714                                                             T4.2:
  (3)  025714  104402                                                             TRAP    C$BSUB
5259  025716                          CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
  (1)                                          ;**** MACRO EXPANSION ****
  (1)  025716  004737  011064                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                          ;****                   ****
5260
5261  025722                          ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  025722  104410                                                             TRAP    C$ESCAPE
  (3)  025724  000116                                                             .WORD   L10032-.
5262
```

```
                                                        ;BASE IN COMMAND WITH NO MAINTENANCE
025726                                  BASEIN  0,BASE,0        ;AND DMC MODE.
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  025726  004737  011262            JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
 (1)  025732  000000                            .WORD   0       ;MAINTENANCE MODE BITS TO SET IN BSEL1
 (1)  025734  002630                            .WORD   BASE    ;BASE TABLE ADDRESS
 (1)  025736  000000                            .WORD   0       ;MODE
 (1)                                                    ;****                   ****
025740                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
 (3)  025740  104410                                                            TRAP    C$ESCAPE
 (3)  025742  000100                                                            .WORD   L10032-.
025744                                  SHUTDN
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  025744  004737  012560            JSR     PC, $HALT       ;DMR HALT ROUTINE.
 (1)                                                    ;****                   ****
025750  132737  000020  002722          BITB    #BIT4,BASE+ISP7 ;SEE IF THE DMR MODE BIT IS CLEAR IN THE
                                                        ;DMR SCRATCH PAD REGISTER 7 (BASETABLE
                                                        ;LOCATION CONTAINS AN IMAGE OF SP7)
025756  001404                          BEQ     10$             ;OK IF CLEAR - BR
025760                                  ERRDF   20,EMT6
 (4)  025760  104455                                                            TRAP    C$ERDF
 (5)  025762  000024                                                            .WORD   20
 (5)  025764  026357                                                            .WORD   EMT6
 (5)  025766  000000                                                            .WORD   0
025770                          10$:
                                                        ;CHECK MESSAGE EXCHANGE VALUES
                                                        ;IN THE BASE TABLE.
025770  105737  002672                  TSTB    BASE+R          ; #R (MESSAGE RECEIVED) = 0?
025774  001015                          BNE     20$             ;ERROR IF NON ZERO
025776  105737  002673                  TSTB    BASE+N          ; #N (MESSAGE TRANSMITTED) = 0?
026002  001012                          BNE     20$             ;ERROR IF NON ZERO
026004  105737  002674                  TSTB    BASE+A          ; #A (MESSAGE ACKNOWLEDGED) = 0?
026010  001007                          BNE     20$             ;ERROR IF NON ZERO
026012  122737  000001  002675          CMPB    #1,BASE+T       ; #T (NEXT MESSAGE # TRANSMITTED) = 1?
026020  001003                          BNE     20$             ;ERROR IF NOT EQUAL TO 1.
026022  105737  002676                  TSTB    BASE+X          ; #X (LAST MESSAGE TRANSMITTED) = 0?
026026  001404                          BEQ     30$
026030                          20$:
026030                                  ERRDF   20,EMT5,ERRT1
 (4)  026030  104455                                                            TRAP    C$ERDF
 (5)  026032  000024                                                            .WORD   20
 (5)  026034  026311                                                            .WORD   EMT5
 (5)  026036  026044                                                            .WORD   ERRT1
026040                          30$:
026040                             ENDSUB
 (3)  026040                                                                L10034:
 (3)  026040  104403                                                            TRAP    C$ESUB
026042                          ENDTST
 (3)  026042                                                                L10032:
 (3)  026042  104401                                                            TRAP    C$ETST
026044                          BGNMSG  ERRT1
 (3)  026044                                                                ERRT1::
026044  105737  002672                  TSTB    BASE+R          ;IS #R = 0?
```

```
 5295  026050  001413                          BEQ     1$                  ;OK - IF ZERO
 5296  026052                                  PRINTB  #FMT5,<B,BASE+R>    ;PRINT #R
  (8)  026052  005046                                                                    CLR     -(SP)
  (8)  026054  153716  002672                                                            BISB    BASE+R,(SP)
  (7)  026060  012746  026423                                                            MOV     #FMT5,-(SP)
  (6)  026064  012746  000002                                                            MOV     #2,-(SP)
  (3)  026070  010600                                                                    MOV     SP,R0
  (4)  026072  104414                                                                    TRAP    C$PNTB
  (4)  026074  062706  000006                                                            ADD     #6,SP
 5297  026100                          1$:
 5298  026100  105737  002673                  TSTB    BASE+N              ;IS #N = 0?
 5299  026104  001413                          BEQ     2$                  ;OK - IF ZERO
 5300  026106                                  PRINTB  #FMT6,<B,BASE+N>    ;PRINT #N
  (8)  026106  005046                                                                    CLR     -(SP)
  (8)  026110  153716  002632                                                            BISB    BASE+2,(SP)
  (7)  026114  012746  026454                                                            MOV     #FMT6,-(SP)
  (6)  026120  012746  000002                                                            MOV     #2,-(SP)
  (3)  026124  010600                                                                    MOV     SP,R0
  (4)  026126  104414                                                                    TRAP    C$PNTB
  (4)  026130  062706  000006                                                            ADD     #6,SP
 5301  026134                          2$:
 5302
 5303  026134  105737  002674                  TSTB    BASE+A              ;IS #A = 0?
 5304  026140  001413                          BEQ     3$                  ;OK - IF ZERO
 5305  026142                                  PRINTB  #FMT7,<B,BASE+A>    ;PRINT #A
  (8)  026142  005046                                                                    CLR     -(SP)
  (8)  026144  153716  002674                                                            BISB    BASE+A,(SP)
  (7)  026150  012746  026505                                                            MOV     #FMT7,-(SP)
  (6)  026154  012746  000002                                                            MOV     #2,-(SP)
  (3)  026160  010600                                                                    MOV     SP,R0
  (4)  026162  104414                                                                    TRAP    C$PNTB
  (4)  026164  062706  000006                                                            ADD     #6,SP
 5306  026170                          3$:
 5307  026170  122737  000001  002675          CMPB    #1,BASE+T           ;IS #T = 1?
 5308  026176  001413                          BEQ     4$                  ;OK - IF ONE
 5309  026200                                  PRINTB  #FMT8,<B,BASE+T>    ;PRINT #T
  (8)  026200  005046                                                                    CLR     -(SP)
  (8)  026202  153716  002675                                                            BISB    BASE+T,(SP)
  (7)  026206  012746  026536                                                            MOV     #FMT8,-(SP)
  (6)  026212  012746  000002                                                            MOV     #2,-(SP)
  (3)  026216  010600                                                                    MOV     SP,R0
  (4)  026220  104414                                                                    TRAP    C$PNTB
  (4)  026222  062706  000006                                                            ADD     #6,SP
 5310  026226                          4$:
 5311  026226  105737  002676                  TSTB    BASE+X              ;IS #X = 0?
 5312  026232  001413                          BEQ     5$                  ;OK - IF ZERO
 5313  026234                                  PRINTB  #FMT9,<B,BASE+X>    ;PRINT #X
  (8)  026234  005046                                                                    CLR     -(SP)
  (8)  026236  153716  002676                                                            BISB    BASE+X,(SP)
  (7)  026242  012746  026601                                                            MOV     #FMT9,-(SP)
  (6)  026246  012746  000002                                                            MOV     #2,-(SP)
  (3)  026252  010600                                                                    MOV     SP,R0
  (4)  026254  104414                                                                    TRAP    C$PNTB
  (4)  026256  062706  000006                                                            ADD     #6,SP
 5314  026262                          5$:
 5315  026262                          ENDMSG
```

```
 (3)  026262                                                           L10035:
 (3)  026262  104423                                                              TRAP     C$MSG
5316
5317  026264  046504  020122  047515  EMT4:   .ASCIZ  /DMR MODE BIT NOT SET/
      026272  042504  041040  052111
      026300  047040  052117  051440
      026306  052105     000
5318  026311     104  041504  050115  EMT5:   .ASCIZ  /DDCMP MESSAGE VARIABLE(S) NOT CORRECT/
      026316  046440  051505  040523
      026324  042507  053040  051101
      026332  040511  046102  024105
      026340  024523  047040  052117
      026346  041440  051117  042522
      026354  052103     000
5319  026357     104  041515  046440  EMT6:   .ASCIZ  /DMC MODE - DMR MODE BIT NOT CLEARED/
      026364  042117  020105  020055
      026372  046504  020122  047515
      026400  042504  041040  052111
      026406  047040  052117  041440
      026414  042514  051101  042105
      026422     000
5320
5321  026423     045  021501  020122  FMT5:   .ASCIZ  /%A#R (MSG. RCVD) = %D3%N/
      026430  046450  043523  020056
      026436  041522  042126  020051
      026444  020075  042045  022463
      026452  000116
5322  026454  040445  047043  024040  FMT6:   .ASCIZ  /%A#N (MSG. XMIT) = %D3%N/
      026462  051515  027107  054040
      026470  044515  024524  036440
      026476  022440  031504  047045
      026504     000
5323  026505     045  021501  020101  FMT7:   .ASCIZ  /%A#A (MSG. ACK)  = %D3%N/
      026512  046450  043523  020056
      026520  041501  024513  020040
      026526  020075  042045  022463
      026534  000116
5324  026536  040445  052043  024040  FMT8:   .ASCIZ  /%A#T (NEXT MSG TO XMIT)    - %D3%N/
      026544  042516  052130  046440
      026552  043523  052040  020117
      026560  046530  052111  020051
      026566  020040  036440  022440
      026574  031504  047045     000
5325  026601     045  021501  020130  FMT9:   .ASCIZ  /%A#X (LAST COMPLETED XMIT) - %D3%N/
      026606  046050  051501  020124
      026614  047503  050115  042514
      026622  042524  020104  046530
      026630  052111  020051  020075
      026636  042045  022463  000116
5326                                          .EVEN
5327
5328
5329
5330
5331
5332
```

```
                                .SBTTL          TEST 5 - DMR COMMANDS

                                ;*******************************************************************************
                                ;*              TEST 5 - DMR-11
                                ;* DMR COMMANDS
                                ;*  SUBTEST 1  - ISSUE AN ENABLE EXTENDED ERROR COMMAND AND CHECK THAT
                                ;*               THE EXT. ENABLE BIT IS SET IS SCRATCH PAD 13.  THEN
                                ;*               DISABLE EXTENDED ERROR AND CHECK THAT THE ENABLE BIT
                                ;*               IS CLEAR.
                                ;*  SUBTEST 2  - SET REP/SEL TIMER VALUE AND SET THE DMR THRESHOLD
                                ;*               VALUES.  CHECK THAT THE VALUES ARE CORRECT IN
                                ;*               THE BASE TABLE AFTER HALTING THE DMR.
                                ;*
                                ;*
                                ;*******************************************************************************
026644                          BGNTST
(3) 026644                                                                      T5::
026644                            BGNSUB
(3) 026644                                                                      T5.1:
(3) 026644  104402                                                                      TRAP    C$BSUB
026646                                  CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
(1)                                                             ;**** MACRO EXPANSION ****
(1) 026646  004737  011064              JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
(1)                                                             ;****                   ****
026652                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
(3) 026652  104410                                                                      TRAP    C$ESCAPE
(3) 026654  000330                                                                      .WORD   L10036-.
026656                                  BASEIN                  ;BASE IN COMMAND WITH  LINE UNIT LOOP,
(1)                                                             ;**** MACRO EXPANSION ****
(1) 026656  004737  011262              JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
(1) 026662  004000                      .WORD   LPLU            ;SET LINE UNIT LOOP
(1) 026664  002630                      .WORD   BASE            ;BASE TABLE ADDRESS
(1) 026666  000522                      .WORD   DMR             ;DMR-11 MODE
(1)                                                             ;****                   ****
026670                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
(3) 026670  104410                                                                      TRAP    C$ESCAPE
(3) 026672  000312                                                                      .WORD   L10036-.
026674                                  DMRIN   EXERR           ;ENABLE EXTENDED ERROR NOTIFICATION
(1)                                                             ;**** MACRO EXPANSION ****
(1) 026674  004737  012064              JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
(1) 026700  000006                      .WORD   EXERR           ;INPUT COMMAND
(1) 026702  000000                      .WORD   0               ;NO SEL4
(1) 026704  000000                      .WORD   0               ;NO SEL6
(1)                                                             ;****                   ****
026706                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
(3) 026706  104410                                                                      TRAP    C$ESCAPE
(3) 026710  000274                                                                      .WORD   L10036-.
026712                                  SHUTDN                  ;HALT THE DMR
(1)                                                             ;**** MACRO EXPANSION ****
(1) 026712  004737  012560              JSR     PC, $HALT       ;DMR HALT ROUTINE.
(1)                                                             ;****                   ****
026716                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
```

```
  (3)  026716  104410                                                                  TRAP    C$ESCAPE
  (3)  026720  000264                                                                  .WORD   L10036-.
5362   026722  132737  000001  002726          BITB    #BIT0,BASE+ISP13 ;CHECK EXT ENABLE BIT IN THE BASE TABLE.
5363                                                                   ;IMAGE OF SCRATCH PAD 13.
5364   026730  001005                          BNE     10$              ;BIT SET - OK.
5365   026732                                  ERRDF   24,EMT7          ;ERROR EXT ENABLE CLEAR
  (4)  026732  104455                                                                  TRAP    C$ERDF
  (5)  026734  000030                                                                  .WORD   24
  (5)  026736  027514                                                                  .WORD   EMT7
  (5)  026740  000000                                                                  .WORD   0
5366   026742  000430                          BR      20$
5367   026744                          10$:
5368   026744                          BASEIN  LPLU,BASE,RES!DMR ;BASE IN COMMAND WITH RESUME SET.
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  026744  004737  011262                JSR     PC, $BASEI       ;CALL BASE IN ROUTINE
  (1)  026750  004000                        .WORD   LPLU             ;MAINTENANCE MODE BITS TO SET IN BSEL1
  (1)  026752  002630                        .WORD   BASE             ;BASE TABLE ADDRESS
  (1)  026754  010522                        .WORD   RES!DMR          ;MODE
  (1)                                                                  ;****                    ****
5369
5370   026756                          DMRIN   DXERR                    ;DISABLE EXTENDED ERROR NOTIFICATION.
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  026756  004737  012064                JSR     PC, $DMRIN       ;CALL DMR MODE INPUT ROUTINE
  (1)  026762  000007                        .WORD   DXERR            ;INPUT COMMAND
  (1)  026764  000000                        .WORD   0                ;NO SEL4
  (1)  026766  000000                        .WORD   0                ;NO SEL6
  (1)                                                                  ;****                    ****
5371
5372   026770                          ESCAPE  TST                      ;IF ERROR, BR TO TEST END
  (3)  026770  104410                                                                  TRAP    C$ESCAPE
  (3)  026772  000212                                                                  .WORD   L10036-.
5373   026774                          SHUTDN                           ;HALT THE DMR
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  026774  004737  012560                JSR     PC, $HALT        ;DMR HALT ROUTINE.
  (1)                                                                  ;****                    ****
5374   027000                          ESCAPE  TST                      ;IF ERROR, BR TO TEST END.
  (3)  027000  104410                                                                  TRAP    C$ESCAPE
  (3)  027002  000202                                                                  .WORD   L10036-.
5375   027004  132737  000001  002726          BITB    #BIT0,BASE+ISP13 ;CHECK EXT ENABLE BIT IN THE BASE TABLE.
5376                                                                   ;IMAGE OF SCRATCH PAD 13.
5377   027012  001404                          BEQ     20$              ;IF CLEAR OK
5378   027014                                  ERRDF   24,EMT7          ;ERROR EXT ENABLE SET
  (4)  027014  104455                                                                  TRAP    C$ERDF
  (5)  027016  000030                                                                  .WORD   24
  (5)  027020  027514                                                                  .WORD   EMT7
  (5)  027022  000000                                                                  .WORD   0
5379   027024                          20$:
5380   027024                            ENDSUB
  (3)  027024                                                                L10037:
  (3)  027024  104403                                                                  TRAP    C$ESUB
5381
5382   027026                            BGNSUB
  (3)  027026                                                                T5.2:
  (3)  027026  104402                                                                  RAP     C$BSUB
5383   027030                                  CLEAR                    ;MACRO FOR MASTER CLEAR COMMAND
  (1)                                                                  ;**** MACRO EXPANSION ****
```

```
  (1)  027030  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                                  ;****                    ****
5384
5385  027034                                 ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  027034  104410                                                                TRAP    C$ESCAPE
  (3)  027036  000146                                                                .WORD   L10036-.
5386
5387  027040                                 BASEIN                  ;BASE IN COMMAND WITH  LINE UNIT LOOP,
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  027040  004737  011262                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  027044  004000                                .WORD   LPLU    ;SET LINE UNIT LOOP
  (1)  027046  002630                                .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  027050  000522                                .WORD   DMR     ;DMR-11 MODE
  (1)                                                                  ;****                    ****
5388
5389  027052                                 ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  027052  104410                                                                TRAP    C$ESCAPE
  (3)  027054  000130                                                                .WORD   L10036-.
5390  027056                                 DMRIN   TIMER,0,54      ;SET REP/SELECT TIMER VALUE
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  027056  004737  012064                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
  (1)  027062  000012                                .WORD   TIMER   ;INPUT COMMAND
  (1)  027064  000000                                .WORD   0       ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  027066  000054                                .WORD   54      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                                  ;****                    ****
5391
5392  027070                                 ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  027070  104410                                                                TRAP    C$ESCAPE
  (3)  027072  000112                                                                .WORD   L10036-.
5393
5394                                                                   ;SET THRESHOLD VALUES AS FOLLOWS:
5395                                                                   ;BSEL4 = NAKS RECEIVED (3)
5396                                                                   ;BSEL5 = NAKS TRANSMITTED (13)
5397                                                                   ;BSEL6 = REP/SEL SENT (15)
5398                                                                   ;BSEL7 = NO BUFFFER (4)
5399  027074                                 DMRIN   THRESH,5403,2015
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  027074  004737  012064                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
  (1)  027100  000013                                .WORD   THRESH  ;INPUT COMMAND
  (1)  027102  005403                                .WORD   5403    ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  027104  002015                                .WORD   2015    ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                                  ;****                    ****
5400
5401  027106                                 ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  027106  104410                                                                TRAP    C$ESCAPE
  (3)  027110  000074                                                                .WORD   L10036-.
5402  027112                                 SHUTDN                  ;HALT THE DMR.
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  027112  004737  012560                JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                                                  ;****                    ****
5403  027116                                 ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  027116  104410                                                                TRAP    C$ESCAPE
  (3)  027120  000064                                                                .WORD   L10036-.
5404  027122  122737  000054  002705          CMPB    #54,BASE+PRETIM ;CHECK REP/SEL TIME IN BASE TABLE.
5405  027130  001020                          BNE     10$             ;IF NOT 54, BR TO ERROR.
5406  027132  122737  000015  002714          CMPB    #15,BASE+TH3L   ;CHECK REP. THRESH. IN BASE TABLE.
```

```
 5407  027140  001014                        BNE     10$                 ;IF NOT 15, BR TO ERROR.
 5408  027142  122737  000003  002710        CMPB    #3,BASE+TH1L        ;CHECK NAK RCVD. THRESH. IN BASE TABLE.
 5409  027150  001010                        BNE     10$                 ;IF NOT 3, BR TO ERROR.
 5410  027152  122737  000013  002712        CMPB    #13,BASE+TH2L       ;CHECK NAK SENT THRESH. IN BASE TABLE.
 5411  027160  001004                        BNE     10$                 ;IF NOT 13, BR TO ERROR
 5412  027162  122737  000004  002716        CMPB    #4,BASE+TH4L        ;CHECK NO BUF. THRESH. IN BASE TABLE.
 5413  027170  001404                        BEQ     20$                 ;IF 4, ALL CHECKS OK - EXIT
 5414  027172                          10$:
 5415  027172                                ERRDF   24,EMT8,ERRT3
   (4) 027172  104455                                                                TRAP    C$ERDF
   (5) 027174  000030                                                                .WORD   24
   (5) 027176  027545                                                                .WORD   EMT8
   (5) 027200  027206                                                                .WORD   ERRT3
 5416  027202                          20$:
 5417  027202                            ENDSUB
   (3) 027202                                                                    L10040:
   (3) 027202  104403                                                                TRAP    C$ESUB
 5418  027204                          ENDTST
   (3) 027204                                                                    L10036:
   (3) 027204  104401                                                                TRAP    C$ETST
 5419
 5420  027206                          BGNMSG  ERRT3
   (3) 027206                                                                    ERRT3::
 5421  027206                                PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2
   (9) 027206  017746  153022                                                        MOV     @SEL2,-(SP)
   (8) 027212  017746  153014                                                        MOV     @SEL0,-(SP)
   (7) 027216  012746  016276                                                        MOV     #FMG1,-(SP)
   (6) 027222  012746  000003                                                        MOV     #3,-(SP)
   (3) 027226  010600                                                                MOV     SP,R0
   (4) 027230  104414                                                                TRAP    C$PNTB
   (4) 027232  062706  000010                                                        ADD     #10,SP
 5422  027236                                PRINTB  #FMT11,<B,BASE+ISP13> ;PRINT OUT THE IMAGE OF SCRATCH PAD 13.
   (8) 027236  005046                                                                CLR     -(SP)
   (8) 027240  153716  002726                                                        BISB    BASE+ISP13,(SP)
   (7) 027244  012746  027602                                                        MOV     #FMT11,-(SP)
   (6) 027250  012746  000002                                                        MOV     #2,-(SP)
   (3) 027254  010600                                                                MOV     SP,R0
   (4) 027256  104414                                                                TRAP    C$PNTB
   (4) 027260  062706  000006                                                        ADD     #6,SP
 5423  027264  122737  000054  002705        CMPB    #54,BASE+PRETIM ;IS REP/SEL TIME OK?
 5424  027272  001413                        BEQ     1$                  ;BR IF OK
 5425  027274                                PRINTB  #FMT12,<B,BASE+PRETIM> ;PRINT IT OUT.
   (8) 027274  005046                                                                CLR     -(SP)
   (8) 027276  153716  002705                                                        BISB    BASE+PRETIM,(SP)
   (7) 027302  012746  027633                                                        MOV     #FMT12,-(SP)
   (6) 027306  012746  000002                                                        MOV     #2,-(SP)
   (3) 027312  010600                                                                MOV     SP,R0
   (4) 027314  104414                                                                TRAP    C$PNTB
   (4) 027316  062706  000006                                                        ADD     #6 SP
 5426  027322                          1$:
 5427  027322  122737  000003  002710        CMPB    #3,BASE+TH1L        ;IS NAK RCVD OK?
 5428  027330  001413                        BEQ     2$                  ;BR IF OK.
 5429  027332                                PRINTB  #FMT13,<B,BASE+TH1L> ;PRINT IT OUT
   (8) 027332  005046                                                                CLR     -(SP)
   (8) 027334  153716  002710                                                        BISB    BASE+TH1L,(SP)
   (7) 027340  012746  027670                                                        MOV     #FMT13,-(SP)
```

```
 (6)  027344  012746  000002                                                    MOV     #2,-(SP)
 (3)  027350  010600                                                            MOV     SP,R0
 (4)  027352  104414                                                            TRAP    C$PNTB
 (4)  027354  062706  000006                                                    ADD     #6,SP
5430  027360                        2$:
5431  027360  122737  000013  002712        CMPB    #13,BASE+TH2L   ;IS NAK SENT OK?
5432  027366  001413                        BEQ     3$              ;BR IF OK.
5433  027370                        PRINTB  #FMT14,<B,BASE+TH2L> ;PRINT IT OUT
 (8)  027370  005046                                                            CLR     -(SP)
 (8)  027372  153716  002712                                                    BISB    BASE+TH2L,(SP)
 (7)  027376  012746  027725                                                    MOV     #FMT14,-(SP)
 (6)  027402  012746  000002                                                    MOV     #2,-(SP)
 (3)  027406  010600                                                            MOV     SP,R0
 (4)  027410  104414                                                            TRAP    C$PNTB
 (4)  027412  062706  000006                                                    ADD     #6,SP
5434  027416                        3$:
5435  027416  122737  000015  002714        CMPB    #15,BASE+TH3L   ;IS REP LEVEL OK?
5436  027424  001413                        BEQ     4$              ;BR IF OK.
5437  027426                        PRINTB  #FMT15,<B,BASE+TH3L> ;PRINT IT OUT
 (8)  027426  005046                                                            CLR     -(SP)
 (8)  027430  153716  002714                                                    BISB    BASE+TH3L,(SP)
 (7)  027434  012746  027762                                                    MOV     #FMT15,-(SP)
 (6)  027440  012746  000002                                                    MOV     #2,-(SP)
 (3)  027444  010600                                                            MOV     SP,R0
 (4)  027446  104414                                                            TRAP    C$PNTB
 (4)  027450  062706  000006                                                    ADD     #6,SP
5438  027454                        4$:
5439  027454  122737  000004  002716        CMPB    #4,BASE+TH4L    ;IS NO BUFFER LEVEL OK?
5440  027462  001413                        BEQ     5$              ;BR IF OK.
5441  027464                        PRINTB  #FMT16,<B,BASE+TH4L> ;PRINT IT OUT
 (8)  027464  005046                                                            CLR     -(SP)
 (8)  027466  153716  002716                                                    BISB    BASE+TH4L,(SP)
 (7)  027472  012746  030017                                                    MOV     #FMT16,-(SP)
 (6)  027476  012746  000002                                                    MOV     #2,-(SP)
 (3)  027502  010600                                                            MOV     SP,R0
 (4)  027504  104414                                                            TRAP    C$PNTB
 (4)  027506  062706  000006                                                    ADD     #6,SP
5442  027512                        5$:
5443  027512                        ENDMSG
 (3)  027512                                                            L10041:
 (3)  027512  104423                                                            TRAP    C$MSG
5444
5445
5446  027514  054105  027124  042440  EMT7:   .ASCIZ  /EXT. ERROR BIT INCORRECT/
      027522  051122  051117  041040
      027530  052111  044440  041516
      027536  051117  042522  052103
      027544     000
5447  027545     104  051115  046440  EMT8:   .ASCIZ  /DMR MODE INPUT COMMAND ERROR/
      027552  042117  020105  047111
      027560  052520  020124  047503
      027566  046515  047101  020104
      027574  051105  047522  000122
5448
5449  027602  040445  046511  043501  FMT11:  .ASCIZ  /%AIMAGE OF SP 13 = %D3%N/
      027610  020105  043117  051440
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```
      027616  020120  031461  036440
      027624  022440  031504  047045
      027632     000
      027633     045  051101  050105  FMT12:  .ASCIZ  /%AREP-SEL TIME VALUE = %D3%N/
      027640  051455  046105  052040
      027646  046511  020105  040526
      027654  052514  020105  020075
      027662  042045  022463  000116
      027670  040445  040516  020113  FMT13:  .ASCIZ  /%ANAK RCVD THRESHOLD = %D3%N/
      027676  041522  042126  052040
      027704  051110  051505  047510
      027712  042114  036440  022440
      027720  031504  047045     000
      027725     045  047101  045501  FMT14:  .ASCIZ  /%ANAK SENT THRESHOLD = %D3%N/
      027732  051440  047105  020124
      027740  044124  042522  044123
      027746  046117  020104  020075
      027754  042045  022463  000116
      027762  040445  042522  020120  FMT15:  .ASCIZ  /%AREP SENT THRESHOLD = %D3%N/
      027770  042523  052116  052040
      027776  051110  051505  047510
      030004  042114  036440  022440
      030012  031504  047045     000
      030017     045  047101  020117  FMT16:  .ASCIZ  /%ANO BUFFER THRESHOLD = %D3%N/
      030024  052502  043106  051105
      030032  052040  051110  051505
      030040  047510  042114  036440
      030046  022440  031504  047045
      030054     000
              030056                           .EVEN




                                       .SBTTL          TEST 6 - CONTROL IN COMMAND

                                       ;*************************************************************************
                                       ;*              TEST 6 - DMR-11
                                       ;*   CONTROL IN COMMAND TEST -
                                       ;*   SUBTEST 1  - CONTROL IN, FULL DUPLEX, DDCMP MODE.  ENSURE THAT
                                       ;*                THE HALF-DUPLEX BIT IS CLEAR IN THE MODEM STATUS WORD,
                                       ;*                ALSO ENSURE THAT DDCMP MODE BIT IS SET IN SCRATCH PAD 7.
                                       ;*   SUBTEST 2  - CONTROL IN, HALF DUPLEX.  ENSURE THAT THE HALF DUPLEX
                                       ;*                BIT IS SET.
                                       ;*   SUBTEST 3  - CONTROL IN, MAINTENANCE MODE.  ENSURE THAT MAINT. MODE
                                       ;*                BIT IS SET IN SCRATCH PAD 7.
                                       ;*   SUBTEST 4  - CONTROL IN USING SELECTED LOOPBACK.  ISSUE A CONTROL IN
                                       ;*                USING THE USER SELECTED LOOPBACK.  IF THE LOOPBACK IS
                                       ;*                NOT CORRECT, DMR RUN MODE ACKNOWLEDGE WILL NOT BE
                                       ;*                RECEIVED.
                                       ;*
                                       ;*
                                       ;*************************************************************************
      030056                           BGNTST
 (3)  030056                                                               T6::
```

```
5481 030056                      BGNSUB
 (3) 030056                                                                    T6.1:
 (3) 030056 104402                                                                    TRAP    C$BSUB
5482 030060                             CLEAR                        ;MACRO FOR MASTER CLEAR
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030060 004737 011064               JSR     PC, $MSCLR           ;ISSUE A DMR MASTER CLEAR
 (1)                                                                 ;****                 ****
5483
5484 030064                             ESCAPE  TST                  ;IF ERROR, BR TO TEST END.
 (3) 030064 104410                                                                    TRAP    C$ESCAPE
 (3) 030066 000404                                                                    .WORD   L10042-.
5485 030070                             BASEIN                       ;MACRO FOR BASE IN COMMAND
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030070 004737 011262               JSR     PC, $BASEI           ;CALL BASE IN ROUTINE WITH DEFAULTS
 (1) 030074 004000                              .WORD   LPLU         ;SET LINE UNIT LOOP
 (1) 030076 002630                              .WORD   BASF         ;BASE TABLE ADDRESS
 (1) 030100 000522                              .WORD   DMR          ;DMR-11 MODE
 (1)                                                                 ;****                 ****
5486
5487 030102                             ESCAPE  TST                  ;IF ERROR, BR TO TEST END.
 (3) 030102 104410                                                                    TRAP    C$ESCAPE
 (3) 030104 000366                                                                    .WORD   L10042-.
5488 030106                             CNTRIN                       ;MACRO FOR CONTROL IN (FULL DUPLEX)
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030106 004737 011516               JSR     PC, $CNTIN           ;CALL CONTROL IN ROUTINE WITH DEFAULT
 (1) 030112 000000                              .WORD   0            ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
 (1)                                                                 ;****                 ****
5489
5490 030114                             ESCAPE  TST                  ;IF ERROR, BR TO TEST END.
 (3) 030114 104410                                                                    TRAP    C$ESCAPE
 (3) 030116 000354                                                                    .WORD   L10042-.
5491 030120 052777 000057 152104        BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND
5492 030126                             WAIT    RDI                  ;WAIT FOR RDI TO BE SET
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030126 004737 010266               JSR     PC, $WAIT            ;CALL WAIT ROUTINE
 (1) 030132 000000                              .WORD   0            ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                                 ;****                 ****
5493 030134 032777 000020 152074        BIT     #BIT4,@SEL4          ;IS THE HDX BIT SET IN MODEM STATUS REG?
5494 030142 001404                      BEQ     10$                  ;OK - IF BIT CLEAR
5495 030144                             ERRDF   21,EMT9              ;ERROR HDX BIT SET
 (4) 030144 104455                                                                    TRAP    C$ERDF
 (5) 030146 000025                                                                    .WORD   21
 (5) 030150 030474                                                                    .WORD   EMT9
 (5) 030152 000000                                                                    .WORD   0
5496 030154                     10$:
5497 030154                             WAIT    RQI                  ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030154 004737 010702               JSR     PC, $CLRQI           ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                                 ;****                 ****
5498 030160                             SHUTDN                       ;HALT DMR
 (1)                                                                 ;**** MACRO EXPANSION ****
 (1) 030160 004737 012560               JSR     PC, $HALT            ;DMR HALT ROUTINE.
 (1)                                                                 ;****                 ****
5499 030164                             ESCAPE  TST                  ;IF ERROR, EXIT.
 (3) 030164 104410                                                                    TRAP    C$ESCAPE
 (3) 030166 000304                                                                    .WORD   L10042-.
```

```
 5500  030170  132737  000020  002722          BITB    #BIT4,BASE+ISP7 ;IS THE DDCMP RUN BIT SET IN IMAGE OF SP 7.
 5501  030176  001004                          BNE     20$
 5502  030200                                  ERRDF   21,EMT10                ;ERROR DDCMP RUN BIT NOT SET
   (4) 030200  104455                                                                      TRAP    C$ERDF
   (5) 030202  000025                                                                      .WORD   21
   (5) 030204  030524                                                                      .WORD   EMT10
   (5) 030206  000000                                                                      .WORD   0
 5503  030210                              20$:
 5504  030210                                ENDSUB
   (3) 030210                                                                  L10043:
   (3) 030210  1044C3                                                                    TRAP    C$ESUB
 5505
 5506  030212                                BGNSUB
   (3) 030212                                                                  T6.2:
   (3) 030212  104402                                                                    TRAP    C$BSUB
 5507  030214                                      BASEIN  LPLU,BASE,RES!DMR ;BASE IN WITH RESUME.
   (1)                                                                       ;**** MACRO EXPANSION ****
   (1) 030214  004737  011262                      JSR     PC, $BASEI        ;CALL BASE IN ROUTINE
   (1) 030220  004000                              .WORD   LPLU              ;MAINTENANCE MODE BITS TO SET IN BSEL1
   (1) 030222  002630                              .WORD   BASE              ;BASE TABLE ADDRESS
   (1) 030224  010522                              .WORD   RES!DMR           ;MODE
   (1)                                                                       ;****                    ****
 5508
 5509  030226                                      CNTRIN  HDX               ;CONTROL IN COMMAND WITH HDX.
   (1)                                                                       ;**** MACRO EXPANSION ****
   (1) 030226  004737  011516                      JSR     PC, $CNTIN        ;CALL CONTROL IN ROUTINE
   (1) 030232  002000                              .WORD   HDX               ;SEL6 - (DUPLEX, MODE)
   (1)                                                                       ;****                    ****
 5510
 5511  030234                                      ESCAPE  TST               ;IF ERROR, BR TO TEST END.
   (3) 030234  104410                                                                    TRAP    C$ESCAPE
   (3) 030236  000234                                                                    .WORD   L10042-.
 5512  030240  052777  000057  151764              BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND
 5513  030246                                      WAIT    RDI               ;WAIT FOR RDI TO BE SET
   (1)                                                                       ;**** MACRO EXPANSION ****
   (1) 030246  004737  010266                      JSR     PC, $WAIT         ;CALL WAIT ROUTINE
   (1) 030252  000000                              .WORD   0                 ;FLAG THAT WE'RE WAITING FOR RDI
   (1)                                                                       ;****                    ****
 5514  030254  032777  000020  151754              BIT     #BIT4,@SEL4       ;IS THE HDX BIT SET IN MODEM STATUS REG?
 5515  030262  001004                              BNE     10$               ;OK - IF BIT SET
 5516  030264                                      ERRDF   21,EMT11                  ;ERROR HDX BIT CLEAR.
   (4) 030264  104455                                                                    TRAP    C$ERDF
   (5) 030266  000025                                                                    .WORD   21
   (5) 030270  030552                                                                    .WORD   EMT11
   (5) 030272  000000                                                                    .WORD   0
 5517  030274                              10$:
 5518  030274                                      SHUTDN                    ;HALT THE DMR.
   (1)                                                                       ;**** MACRO EXPANSION ****
   (1) 030274  004737  012560                      JSR     PC, $HALT         ;DMR HALT ROUTINE.
   (1)                                                                       ;****                    ****
 5519
 5520  030300                                ENDSUB
   (3) 030300                                                                  L10044:
   (3) 030300  104403                                                                    TRAP    C$ESUB
 5521
 5522  030302                                BGNSUB
```

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  (3)  030302                                                                         T6.3:
  (3)  030302  104402                                                                         TRAP    C$BSUB
 5523  030304                            CLEAR                         ;MACRO FOR MASTER CLEAR
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  030304  004737  011064            JSR     PC, $MSCLR            ;ISSUE A DMR MASTER CLEAR
  (1)                                                                  ;****                 ****
 5524
 5525  030310                            ESCAPE  TST                   ;IF ERROR, BR TO TEST END.
  (3)  030310  104410                                                                         TRAP    C$ESCAPE
  (3)  030312  000160                                                                         .WORD   L10042-.
 5526  030314                            BASEIN                        ;MACRO FOR BASE IN COMMAND
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  030314  004737  011262            JSR     PC, $BASEI            ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  030320  004000                            .WORD   LPLU          ;SET LINE UNIT LOOP
  (1)  030322  002630                            .WORD   BASE          ;BASE TABLE ADDRESS
  (1)  030324  000522                            .WORD   DMR           ;DMR-11 MODE
  (1)                                                                  ;****                 ****
 5527
 5528  030326                            ESCAPE  TST                   ;IF ERROR, BR TO TEST END.
  (3)  030326  104410                                                                         TRAP    C$ESCAPE
  (3)  030330  000142                                                                         .WORD   L10042-.
 5529  030332                            CNTRIN  MAINT                 ;MACRO FOR CONTROL IN (MAINT. MODE)
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  030332  004737  011516            JSR     PC, $CNTIN            ;CALL CONTROL IN ROUTINE
  (1)  030336  000400                            .WORD   MAINT         ;SEL6 - (DUPLEX, MODE)
  (1)                                                                  ;****                 ****
 5530
 5531  030340                            ESCAPE  TST                   ;IF ERROR, BR TO TEST END.
  (3)  030340  104410                                                                         TRAP    C$ESCAPE
  (3)  030342  000130                                                                         .WORD   L10042-.
 5532  030344                            SHUTDN                        ;HALT
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  030344  004737  012560            JSR     PC, $HALT             ;DMR HALT ROUTINE.
  (1)                                                                  ;****                 ****
 5533  030350                            ESCAPE  TST                   ;IF ERROR, BR TO TEST END.
  (3)  030350  104410                                                                         TRAP    C$ESCAPE
  (3)  030352  000120                                                                         .WORD   L10042-.
 5534  030354  132737  000002  002722    BITB    #BIT1,BASE+ISP7 ;IS THE MAINTENANCE BIT SET IN IMAGE OF SP 7.
 5535  030362  001004                    BNE     10$
 5536  030364                            ERRDF   21,EMT12              ;ERROR - MAINT. BIT NOT SET.
  (4)  030364  104455                                                                         TRAP    C$ERDF
  (5)  030366  000025                                                                         .WORD   21
  (5)  030370  030606                                                                         .WORD   EMT12
  (5)  030372  000000                                                                         .WORD   0
 5537  030374                    10$:
 5538  030374                      ENDSUB
  (3)  030374                                                                         L10045:
  (3)  030374  104403                                                                         TRAP    C$ESUB
 5539
 5540  030376                      BGNSUB
  (3)  030376                                                                         T6.4:
  (3)  030376  104402                                                                         TRAP    C$BSUB
 5541
 5542  030400                            CLEAR                         ;MACRO FOR MASTER CLEAR
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  030400  004737  011064            JSR     PC, $MSCLR            ;ISSUE A DMR MASTER CLEAR
```

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 (1)                                                                  ;****                   ****

       030404                                  ESCAPE  TST            ;IF ERROR, BR TO TEST END.
 (3)   030404  104410                                                                               TRAP     C$ESCAPE
 (3)   030406  000064                                                                               .WORD    L10042-.
       030410  005737  002254                  TST     DMTURN         ;IS INTERNAL LOOPBACK REQUESTED?
       030414  001004                          BNE     1$             ;IF NOT, BR
       030416  052737  004000  030440          BIS     #LPLU,100$     ;SET LINE UNIT LOOPBACK.
       030424  000403                          BR      2$
       030426                          1$:
       030426  042737  004000  030440          BIC     #LPLU,100$     ;CLEAR LINE UNIT LOOPBACK.
       030434                          2$:
       030434                                  CALL    $BASEI         ;BASE IN COMMAND.
       030440  000000                  100$:           .WORD   0      ;MAINTENANCE BITS (L. U. LOOPBACK?)
       030442  002630                                  .WORD   BASE   ;BASE TABLE ADDRESS.
       030444  000522                                  .WORD   DMR    ;DMR MODE.
       030446                                  ESCAPE  TST            ;IF ERROR, BR TO TEST END.
 (3)   030446  104410                                                                               TRAP     C$ESCAPE
 (3)   030450  000022                                                                               .WORD    L10042-.
       030452                                  CALL    $LOOP          ;EXTENDED DMR COMMAND TO SET MAINT. BITS
                                                                      ;IF NEEDED. THIS WILL ALLOW MODEM LOOPBACK
                                                                      ;IF THE USER REQUESTED IT.
       030456                                  ESCAPE  TST            ;IF ERROR, BR TO TEST END.
 (3)   030456  104410                                                                               TRAP     C$ESCAPE
 (3)   030460  000012                                                                               .WORD    L10042-.
       030462                                  CNTRIN                 ;MACRO FOR CONTROL IN (FULL DUPLEX)
 (1)                                                                  ;**** MACRO EXPANSION ****
 (1)   030462  004737  011516                  JSR     PC, $CNTIN     ;CALL CONTROL IN ROUTINE WITH DEFAULT
 (1)   030466  000000                                  .WORD   0      ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
 (1)                                                                  ;****                   ****
       030470                            ENDSUB
 (3)   030470                                                                               L10046:
 (3)   030470  104403                                                                               TRAP     C$ESUB



       030472                          ENDTST
 (3)   030472                                                                               L10042:
 (3)   030472  104401                                                                               TRAP     C$ETST

       030474  042110  020130  044502  EMT9:   .ASCIZ  /HDX BIT SET WHEN IN FDX/
       030502  020124  042523  020124
       030510  044127  047105  044440
       030516  020116  042106  000130
       030524  042104  046503  020120  EMT10:  .ASCIZ  /DDCMP RUN BIT NOT SET/
       030532  052522  020116  044502
       030540  020124  047516  020124
       030546  042523  000124
       030552  042110  020130  044502  EMT11:  .ASCIZ  /HDX BIT NOT SET WHEN IN HDX/
       030560  020124  047516  020124
       030566  042523  020124  044127
       030574  047105  044440  020116
       030602  042110  000130
       030606  040515  047111  027124  EMT12:  .ASCIZ  /MAINT. MODE BIT NOT SET/
       030614  046440  042117  020105
       030622  044502  020124  047516
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        030630  020124  042523  000124
5572                                    .EVEN
5573
5574
5575
5576
5577
5578
5579                                .SBTTL          TEST 7 - MODEM WRITE COMMAND
5580
5581                                ;*************************************************************************
5582                                ;*              TEST 7 - DMR-11
5583                                ;* MODEM WRITE COMMAND
5584                                ;*  SUBTEST 1  - WRITE DATA PATTERNS INTO THE MODEM WRITE REGISTER.
5585                                ;*               ENSURE THAT ON THE NEXT MODEM READ THAT THE
5586                                ;*               MICROCODE RETURNS THE PATTERN WRITTEN INTO BSEL6.
5587                                ;*  SUBTEST 2  - ATTEMPT TO WRITE BOTH THE HALF-DUPLEX BIT AND THE
5588                                ;*               RTS HOLD BIT.  THE MICROCODE SHOULD NOT ALLOW THIS
5589                                ;*               TO HAPPEN.  WHEN READING THE MODEM STATUS, ONLY
5590                                ;*               THE HALF-DUPLEX SHOULD BE SET.
5591                                ;*
5592                                ;*************************************************************************
5593  030636                        BGNTST
 (3)  030636                                                                    T7::
5594
5595  030636                          BGNSUB
 (3)  030636                                                                    T7.1:
 (3)  030636  104402                                                                    TRAP    C$BSUB
5596  030640                                CLEAR                   ;MACRO FOR MASTER CLEAR
 (1)                                                              ;**** MACRO EXPANSION ****
 (1)  030640  004737  011064           JSR     PC, $MSCLR        ;ISSUE A DMR MASTER CLEAR
 (1)                                                              ;****                 ****
5597
5598  030644                          ESCAPE  TST               ;IF ERROR, BR TO TEST END.
 (3)  030644  104410                                                            TRAP    C$ESCAPE
 (3)  030646  000232                                                            .WORD   L10047-.
5599  030650                          BASEIN                    ;BASE IN COMMAND.
 (1)                                                              ;**** MACRO EXPANSION ****
 (1)  030650  004737  011262           JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
 (1)  030654  004000                           .WORD   LPLU      ;SET LINE UNIT LOOP
 (1)  030656  002630                           .WORD   BASE      ;BASE TABLE ADDRESS
 (1)  030660  000522                           .WORD   DMR       ;DMR-11 MODE
 (1)                                                              ;****                 ****
5600
5601  030662                          ESCAPE  TST               ;IF ERROR, BR TO TEST END.
 (3)  030662  104410                                                            TRAP    C$ESCAPE
 (3)  030664  000214                                                            .WORD   L10047-.
5602
5603  030666  012701  000005           MOV     #5,R1           ;COUNTER
5604  030672  012702  031102           MOV     #MODEM,R2       ;PATTERN TO WRITE INTO MODEM
5605  030676                  10$:
5606  030676  012237  030712           MOV     (R2)+,15$       ;WRITE PATTERN
5607  030702  004737  012064           JSR     PC,$DMRIN       ;ISSUE DMR MODE COMMAND
5608  030706  000005                           .WORD   WMODEM    ;WRITE MODEM COMMNAD
5609  030710  000377                           .WORD   377       ;CLEAR ALL BITS IN BSEL6
561C  030712  000000           15$:            .WORD   0         ;SET THE BITS IN BSEL6 (FROM PATTERN)
```

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5611  030714                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  030714  104410                                                    TRAP    C$ESCAPE
 (3)  030716  000162                                                    .WORD   L10047-.
5612
5613  030720  052777  000057  151304  BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ  MODEM COMMAND
5614  030726                          WAIT    RDI             ;WAIT FOR RDI TO BE SET.
 (1)                                                            ;**** MACRO EXPANSION ****
 (1)  030726  004737  010266          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)  030732  000000                          .WORD   0       ;FLAG THAT WE'RE WAITING FOR RDI
 (1)                                                            ;****                    ****
5615  030734                          ESCAPE  TST             ;IF ERROR, EXIT TEST.
 (3)  030734  104410                                                    TRAP    C$ESCAPE
 (3)  030736  000142                                                    .WORD   L10047-.
5616  030740                    20$:
5617  030740  127737  151274  030712  CMPB    @BSEL6,15$      ;DID THE MICROCODE COPY THE BITS?
5618  030746  001406                  BEQ     25$             ;IF YES CONTINUE
5619  030750  013703  030712          MOV     15$,R3          ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
5620  030754                          ERRDF   22,EMT13,ERRT2  ;WRITE MODEM ERROR
 (4)  030754  104455                                                    TRAP    C$ERDF
 (5)  030756  000026                                                    .WORD   22
 (5)  030760  031146                                                    .WORD   EMT13
 (5)  030762  031114                                                    .WORD   ERRT2
5621  030764                    25$:
5622  030764                          WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
 (1)                                                            ;**** MACRO EXPANSION ****
 (1)  030764  004737  010702          JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 (1)                                                            ;****                    ****
5623  030770                          ESCAPE  TST             ;IF ERROR, EXIT TEST.
 (3)  030770  104410                                                    TRAP    C$ESCAPE
 (3)  030772  000106                                                    .WORD   L10047-.
5624  030774  005301                  DEC     R1              ;DECREMENT COUNTER
5625  030776  001337                  BNE     10$             ;CONTINUE UNTIL ALL 5 PATTERNS TRIED.
5626  031000                    30$:
5627
5628  031000                          ENDSUB
 (3)  031000                                                    L10050:
 (3)  031000  104403                                                    TRAP    C$ESUB
5629
5630  031002                          BGNSUB
 (3)  031002                                                    T7.2:
 (3)  031002  104402                                                    TRAP    C$BSUB
5631
5632  031004                          DMRIN   WMODEM,377,21   ;ATTEMPT TO WRITE MODEM HDX AND RTS.
 (1)                                                            ;**** MACRO EXPANSION ****
 (1)  031004  004737  012064          JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
 (1)  031010  000005                          .WORD   WMODEM  ;INPUT COMMAND
 (1)  031012  000377                          .WORD   377     ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
 (1)  031014  000021                          .WORD   21      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
 (1)                                                            ;****                    ****
5633
5634  031016                          ESCAPE  TST             ;IF ERROR, BR TO END.
 (3)  031016  104410                                                    TRAP    C$ESCAPE
 (3)  031020  000060                                                    .WORD   L10047-.
5635  031022  052777  000057  151202  BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND.
5636  031030                          WAIT    RDI             ;WAIT FOR RDI TO BE SET
 (1)                                                            ;**** MACRO EXPANSION ****
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  (1)  031030  004737  010266                    JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  031034  000000                            .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
  (1)                                            ;****                   ****
 5637  031036                                    ESCAPE  TST             ;IF ERROR, EXIT TEST.
  (3)  031036  104410                                                                    TRAP    C$ESCAPE
  (3)  031040  000040                                                                    .WORD   L10047-.
 5638
 5639  031042  122777  000020  151170            CMPB    #20,@BSEL6      ;IS ONLY HDX SET?
 5640  031050  001406                            BEQ     10$             ;IF YES - OK
 5641  031052  012703  000021                    MOV     #21,R3          ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
 5642  031056                                    ERRDF   22,EMT13,ERRT2
  (4)  031056  104455                                                                    TRAP    C$ERDF
  (5)  031060  000026                                                                    .WORD   22
  (5)  031062  031146                                                                    .WORD   EMT13
  (5)  031064  031114                                                                    .WORD   ERRT2
 5643  031066                          10$:
 5644  031066                                    WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
  (1)                                            ;**** MACRO EXPANSION ****
  (1)  031066  004737  010702                    JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
  (1)                                            ;****                   ****
 5645  031072                                    SHUTDN
  (1)                                            ;**** MACRO EXPANSION ****
  (1)  031072  004737  012560                    JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                            ;****                   ****
 5646
 5647  031076                            ENDSUB
  (3)  031076                                                                    L10051:
  (3)  031076  104403                                                                    TRAP    C$ESUB
 5648
 5649  031100                          ENDTST
  (3)  031100                                                                    L10047:
  (3)  031100  104401                                                                    TRAP    C$ETST
 5650
 5651  031102  000000  000376  000001  MODEM:  .WORD   0,376,1,252,357 ;PATTERN TO WRITE INTO MODEM
       031110  000252  000357
 5652
 5653  031114                          BGNMSG  ERRT2
  (3)  031114                                                            ERRT2::
 5654  031114                                    PRINTB  #FMT19,R3,<B,@BSEL6>
  (9)  031114  005046                                                            CLR     -(SP)
  (9)  031116  157716  151116                                                    BISB    @BSEL6,(SP)
  (8)  031122  010346                                                            MOV     R3,-(SP)
  (7)  031124  012746  031172                                                    MOV     #FMT19,-(SP)
  (6)  031130  012746  000003                                                    MOV     #3,-(SP)
  (3)  031134  010600                                                            MOV     SP,R0
  (4)  031136  104414                                                            TRAP    C$PNTB
  (4)  031140  062706  000010                                                    ADD     #10,SP
 5655  031144                          ENDMSG
  (3)  031144                                                            L10052:
  (3)  031144  104423                                                            TRAP    C$MSG
 5656
 5657
 5658  031146  051127  052111  020105  EMT13:  .ASCIZ  /WRITE MODEM ERROR /
       031154  047515  042504  020115
       031162  051105  047522  020122
       031170     000
```

```
 5659          031172                                  .EVEN
 5660
 5661  031172  040445  051127  052117  FMT19:  .ASCIZ  /%AWROTE IN BSEL6: %03%A  MODEM FORMAT IN BSEL6: %03%N/
       031200  020105  047111  041040
       031206  042523  033114  020072
       031214  047445  022463  020101
       031222  046440  042117  046505
       031230  043040  051117  040515
       031236  020124  047111  041040
       031244  042523  033114  020072
       031252  047445  022463  000116
 5662                                  .EVEN
 5663
 5664
 5665
 5666
 5667
 5668
 5669                          .SBTTL          TEST 8 - NO BUFFER ERROR
 5670
 5671                          ;*********************************************************************
 5672                          ;*                TEST 8 - DMR-11
 5673                          ;*  SUBTEST 1  - TRANSMIT A BUFFER THREE TIMES WIHOUT ASSIGNING A
 5674                          ;*               RECEIVE BUFFER.  BY ASSIGNING A NO BUFFER THRESHOLD
 5675                          ;*               OF THREE, ENSURE THAT A NO BUFFER ERROR IS RECEIVED
 5676                          ;*               AFTER THE THIRD THRANSMISSION.
 5677                          ;*  SUBTEST 2  - TRANSMIT A BUFFER WITHOUT A RECEIVE BUFFER.
 5678                          ;*               ASSIGN THE NAKS THRESHOLD OF 3 AND A NO BUFFER
 5679                          ;*               THRESHOLD OF 7.  CHECK THAT THE NAKS ERROR COUNT IS
 5680                          ;*               THREE AFTER SHUTDOWN.
 5681                          ;*********************************************************************
 5682  031260                  BGNTST
  (3)  031260                                                                     T8::
 5683  031260                    BGNSUB
  (3)  031260                                                                     T8.1:
  (3)  031260  104402                                                                     TRAP    C$BSUB
 5684  031262                          CLEAR                   ;MACRO FOR MASTER CLEAR
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  031262  004737  011064             JSR     PC, $MSCLR  ;ISSUE A DMR MASTER CLEAR
  (1)                                                         ;****                 ****
 5685
 5686  031266                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  031266  104410                                                             TRAP    C$ESCAPE
  (3)  031270  000416                                                             .WORD   L10053-.
 5687  031272                          BASEIN                  ;MACRO FOR BASE IN COMMAND
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  031272  004737  011262             JSR     PC, $BASEI  ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  031276  004000                             .WORD   LPLU    ;SET LINE UNIT LOOP
  (1)  031300  002630                             .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  031302  000522                             .WORD   DMR     ;DMR-11 MODE
  (1)                                                         ;****                 ****
 5688
 5689  031304                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  031304  104410                                                             TRAP    C$ESCAPE
  (3)  031306  000400                                                             .WORD   L10053-.
 5690  031310                          CNTRIN  MAINT           ;MACRO FOR CONTROL IN (FULL DUPLEX AND MAINT)
```

```
  (1)
  (1)  031310  004737  011516                JSR     PC, $CNTIN      ;**** MACRO EXPANSION ****
  (1)  031314  000400                                .WORD   MAINT   ;CALL CONTROL IN ROUTINE
  (1)                                                               ;SEL6 - (DUPLEX, MODE)
                                                                    ;****                 ****
5691
5692  031316                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  031316  104410                                                           TRAP    C$ESCAPE
  (3)  031320  000366                                                           .WORD   L10053-.
5693
5694                                                                ;SET THRESHOLDS:
5695                                                                ;NAKS RCVD = 377
5696                                                                ;NAKS SENT = 377
5697                                                                ;REP SENT = 377
5698                                                                ;NO BUFFER = 3
5699  031322                                DMRIN   THRESH,177777,1777
  (1)                                                               ;**** MACRO EXPANSION ****
  (1)  031322  004737  012064                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
  (1)  031326  000013                                .WORD   THRESH  ;INPUT COMMAND
  (1)  031330  177777                                .WORD   177777  ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  031332  001777                                .WORD   1777    ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                               ;****                 ****
5700
5701  031334                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  031334  104410                                                           TRAP    C$ESCAPE
  (3)  031336  000350                                                           .WORD   L10053-.
5702  031340  012700  000003                MOV     #3,R0           ;SET UP A COUNTER
5703  031344                        1$:
5704  031344                                BACCIT                  ;BA/CC IN COMMAND FOR TRANSMIT
  (1)                                                               ;**** MACRO EXPANSION ****
  (1)  031344  004737  012274                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  031350  000040                                .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
  (1)  031352  002512                                .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
  (1)  031354  000044                                .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
  (1)                                                               ;****                 ****
5705
5706  031356                                WAIT    RDO             ;WAIT FOR RDO TO BE SET
  (1)                                                               ;**** MACRO EXPANSION ****
  (1)  031356  004737  010266                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  031362  000001                                .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                               ;****                 ****
5707  031364                                ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
  (3)  031364  104410                                                           TRAP    C$ESCAPE
  (3)  031366  000320                                                           .WORD   L10053-.
5708  031370  005300                        DEC     R0              ;DEC COUNTER
5709  031372  001404                        BEQ     10$             ;TRANSMIT FOR 3 TIMES.
5710  031374  042777  000207  150632        BIC     #RDO!CMD,@SEL2  ;CLEAR BACC OUT TRANSMIT.
5711  031402  000760                        BR      1$              ;TRANSMIT AGAIN
5712  031404                        10$:
5713  031404  032777  000001  150622        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
5714  031412  001005                        BNE     20$             ;IF YES, PROCEED.
5715  031414                                ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
  (4)  031414  104455                                                           TRAP    C$ERDF
  (5)  031416  000010                                                           .WORD   8
  (5)  031420  020072                                                           .WORD   EMG8
  (5)  031422  015070                                                           .WORD   ERRG2
5716  031424  000410                        BR      30$             ;EXIT
```

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5717  031426                          20$:
5718  031426  032777  000004  150604          BIT     #NOBFR,@SEL6    ;IS THE NO BUFFER FLAG SET?
5719  031434  001004                          BNE     30$             ;IF YES - OK, PROCEED.
5720  031436                          ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
 (4)  031436  104455                                                          TRAP    C$ERDF
 (5)  031440  000011                                                          .WORD   9
 (5)  031442  020136                                                          .WORD   EMG9
 (5)  031444  015070                                                          .WORD   ERRG2
5721                                                    ;(EITHER CONTROL OUT OR NOBUF/NAKS)
5722  031446                          30$:
5723  031446  042777  000207  150560          BIC     #RDO!CMD,@SEL2  ;CLEAR CONTROL OUT
5724  031454                          WAIT    RDO             ;EXPECT ANOTHER BACC OUT.
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  031454  004737  010266          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)  031460  000001                  .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
 (1)                                                    ;****                   ****
5725  031462                          ESCAPE  TST             ;IF ERROR, BR TO END.
 (3)  031462  104410                                                          TRAP    C$ESCAPE
 (3)  031464  000222                                                          .WORD   L10053-.
5726  031466  042777  000207  150540          BIC     #RDO!CMD,@SEL2  ;CLEAR BACC OUT.
5727  031474                          SHUTDN                  ;HALT DMR
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  031474  004737  012560          JSR     PC, $HALT       ;DMR HALT ROUTINE.
 (1)                                                    ;****                   ****
5728  031500                    50$:
5729  031500                      ENDSUB
 (3)  031500                                                                L10054:
 (3)  031500  104403                                                          TRAP    C$ESUB
5730
5731  031502                    BGNSUB
 (3)  031502                                                                T8.2:
 (3)  031502  104402                                                          TRAP    C$BSUB
5732  031504                          CLEAR                   ;MACRO FOR MASTER CLEAR
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  031504  004737  011064          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
 (1)                                                    ;****                   ****
5733
5734  031510                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  031510  104410                                                          TRAP    C$ESCAPE
 (3)  031512  000174                                                          .WORD   L10053-.
5735  031514                          BASEIN                  ;MACRO FOR BASE IN COMMAND
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  031514  004737  011262          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
 (1)  031520  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
 (1)  031522  002630                  .WORD   BASE            ;BASE TABLE ADDRESS
 (1)  031524  000522                  .WORD   DMR             ;DMR-11 MODE
 (1)                                                    ;****                   ****
5736
5737  031526                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  031526  104410                                                          TRAP    C$ESCAPE
 (3)  031530  000156                                                          .WORD   L10053-.
5738  031532                          CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
 (1)                                                    ;**** MACRO EXPANSION ****
 (1)  031532  004737  011516          JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
 (1)  031536  000000                  .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
 (1)                                                    ;****                   ****
```

```
5739
5740  031540                                    ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  031540  104410                                                                    TRAP    C$ESCAPE
 (3)  031542  000144                                                                    .WORD   L10053-.
5741
5742                                                                    ;SET THRESHOLDS:
5743                                                                    ;NAKS RCVD = 3
5744                                                                    ;NAKS SENT = 3
5745                                                                    ;REP SENT = 377
5746                                                                    ;NO BUFFER = 7
5747  031544                                    DMRIN   THRESH,1403,3777
 (1)                                                                    ;**** MACRO EXPANSION ****
 (1)  031544  004737  012064                   JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
 (1)  031550  000013                           .WORD   THRESH          ;INPUT COMMAND
 (1)  031552  001403                           .WORD   1403            ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
 (1)  031554  003777                           .WORD   3777            ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
 (1)                                                                    ;****                   ****
5748
5749  031556                                    ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  031556  104410                                                                    TRAP    C$ESCAPE
 (3)  031560  000126                                                                    .WORD   L10053-.
5750  031562                                    BACCIT                  ;BA/CC IN COMMAND FOR TRANSMIT
 (1)                                                                    ;**** MACRO EXPANSION ****
 (1)  031562  004737  012274                   JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
 (1)  031566  000040                           .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
 (1)  031570  002512                           .WORD   TBUF            ;TRANSMIT BUFFER ADDRESS
 (1)  031572  000044                           .WORD   TCOUNT          ;TRANSMIT CHARACTER COUNT
 (1)                                                                    ;****                   ****
5751  031574                        10$:
5752  031574                                    WAIT    RDO             ;WAIT FOR RDO TO BE SET
 (1)                                                                    ;**** MACRO EXPANSION ****
 (1)  031574  004737  010266                   JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)  031600  000001                           .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
 (1)                                                                    ;****                   ****
5753  031602                                    ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
 (3)  031602  104410                                                                    TRAP    C$ESCAPE
 (3)  031604  000102                                                                    .WORD   L10053-.
5754  031606  032777  000001  150420            BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
5755  031614  001005                           BNE     20$             ;IF YES, PROCEED.
5756  031616                                    ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
 (4)  031616  104455                                                                    TRAP    C$ERDF
 (5)  031620  000010                                                                    .WORD   8
 (5)  031622  020072                                                                    .WORD   EMG8
 (5)  031624  015070                                                                    .WORD   ERRG2
5757  031626  000410                           BR      30$             ;EXIT
5758  031630                        20$:
5759  031630  032777  000004  150402            BIT     #NOBFR,@SEL6    ;IS THE NO BUFFER FLAG SET?
5760  031636  001004                           BNE     30$             ;IF YES - OK, PROCEED.
5761  031640                                    ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
 (4)  031640  104455                                                                    TRAP    C$ERDF
 (5)  031642  000011                                                                    .WORD   9
 (5)  031644  020136                                                                    .WORD   EMG9
 (5)  031646  015070                                                                    .WORD   ERRG2
5762                                                                    ;(EITHER CONTROL OUT OR NOBUF/NAKS)
5763  031650                        30$:
5764  031650                                    SHUTDN
```

```
  (1)
  (1)  031650  004737  012560                    JSR     PC, $HALT       ;**** MACRO EXPANSION ****
  (1)                                                                     ;DMR HALT ROUTINE.
  (1)                                                                     ;****                 ****
 5765  031654  123727  002633  000003            CMPB    BASE+3,#3       ;NAKS REC. - NO BUFFER = 3?
 5766  031662  001004                            BNE     35$             ;IF NOT ERROR
 5767  031664  123727  002636  000003            CMPB    BASE+6,#3       ;NAKS SENT - NO BUFFER = 3?
 5768  031672  001404                            BEQ     40$             ;IF OK - SKIP.
 5769  031674                            35$:
 5770  031674                                    ERRDF   23,EMT20,ERRT4
  (4)  031674  104455                                                                       TRAP    C$ERDF
  (5)  031676  000027                                                                       .WORD   23
  (5)  031700  031746                                                                       .WORD   EMT20
  (5)  031702  031710                                                                       .WORD   ERRT4
 5771
 5772  031704                            40$:
 5773  031704                              ENDSUB
  (3)  031704                                                                       L10055:
  (3)  031704  104403                                                                       TRAP    C$ESUB
 5774  031706                            ENDTST
  (3)  031706                                                                       L10053:
  (3)  031706  104401                                                                       TRAP    C$ETST
 5775
 5776
 5777  031710                            BGNMSG  ERRT4
  (3)  031710                                                                       ERRT4::
 5778  031710                                    PRINTB  #FMG7,<B,BASE+3>,<B,BASE+6>
  (9)  031710  005046                                                                       CLR     -(SP)
  (9)  031712  153716  002636                                                               BISB    BASE+6,(SP)
  (8)  031716  005046                                                                       CLR     -(SP)
  (8)  031720  153716  002633                                                               BISB    BASE+3,(SP)
  (7)  031724  012746  016557                                                               MOV     #FMG7,-(SP)
  (6)  031730  012746  000003                                                               MOV     #3,-(SP)
  (3)  031734  010600                                                                       MOV     SP,R0
  (4)  031736  104414                                                                       TRAP    C$PNTB
  (4)  031740  062706  000010                                                               ADD     #10,SP
 5779  031744                            ENDMSG
  (3)  031744                                                                       L10056:
  (3)  031744  104423                                                                       TRAP    C$MSG
 5780
 5781  031746  040516  051513  042440  EMT20:  .ASCIZ  /NAKS ERROR/
       031754  051122  051117     000
 5782          031762                            .EVEN
 5783
 5784
 5785
 5786
 5787
 5788                                    .SBTTL          TEST 9 - NON-EXISTENT MEMORY ERROR
 5789
 5790                                    ;*************************************************************************
 5791                                    ;*                TEST 9 - DMR-11
 5792                                    ;* NON-EXISTENT MEMORY (NXM) ERROR CHECK
 5793                                    ;* PERFORM DMR COMMANDS USING NXM ADDRESSES; VERIFY THAT NXM ERROR IS
 5794                                    ;* REPORTED IN EACH OF THE FOLLOWING SUBTESTS:
 5795                                    ;*  SUBTEST 1  -  BASE IN RESUME COMMAND - BASE TABLE ADDRESS IS NXM
 5796                                    ;*  SUBTEST 2  -  BA/CC IN RECEIVE COMMAND - BA/CC IN ADDRESS IS NXM
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 5797                                   ;*  SUBTEST 3  -  BA/CC IN TRANSMIT COMMAND - BA/CC IN ADDRESS IS NXM
 5798                                   ;*
 5799                                   ;*****************************************************************************
 5800  031762                           BGNTST
  (3)  031762                                                                              T9::
 5801  031762                             BGNSUB
  (3)  031762                                                                              T9.1:
  (3)  031762  104402                                                                          TRAP    C$BSUB
 5802  031764                                   CLEAR                     ;MASTER CLEAR MACRO
  (1)                                                                     ;**** MACRO EXPANSION ****
  (1)  031764  004737  011064              JSR     PC, $MSCLR           ;ISSUE A DMR MASTER CLEAR
  (1)                                                                     ;****                 ****
 5803
 5804  031770                                   ESCAPE  TST               ;IF ERROR, BR TO TEST END
  (3)  031770  104410                                                                          TRAP    C$ESCAPE
  (3)  031772  000500                                                                          .WORD   L10057-.
 5805  031774                                   BASEIN                    ;BASE IN COMMAND - DMR MODE
  (1)                                                                     ;**** MACRO EXPANSION ****
  (1)  031774  004737  011262              JSR     PC, $BASEI           ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  032000  004000                              .WORD   LPLU          ;SET LINE UNIT LOOP
  (1)  032002  002630                              .WORD   BASE          ;BASE TABLE ADDRESS
  (1)  032004  000522                              .WORD   DMR           ;DMR-11 MODE
  (1)                                                                     ;****                 ****
 5806
 5807  032006                                   ESCAPE  TST               ;IF ERROR, BR TO TEST END
  (3)  032006  104410                                                                          TRAP    C$ESCAPE
  (3)  032010  000462                                                                          .WORD   L10057-.
 5808  032012                                   SHUTDN                    ;HALT
  (1)                                                                     ;**** MACRO EXPANSION ****
  (1)  032012  004737  012560              JSR     PC, $HALT            ;DMR HALT ROUTINE.
  (1)                                                                     ;****                 ****
 5809  032016                                   ESCAPE  TST               ;IF ERROR, BR TO TEST END.
  (3)  032016  104410                                                                          TRAP    C$ESCAPE
  (3)  032020  000452                                                                          .WORD   L10057-.
 5810  032022  012737  000001  002360     MOV     #CNTRL,ERROR          ;THIS FLAG WILL INHIBIT CONTROL OUT
 5811                                                                     ;ERROR REPORTING - BECAUSE WE EXPECT ONE.
 5812
 5813                                                                     ;BASE IN RESUME COMMAND WITH NXM BASE TABLE.
 5814  032030                           BASEIN  0,160000,BIT15!BIT14!RES!DMR
  (1)                                                                     ;**** MACRO EXPANSION ****
  (1)  032030  004737  011262              JSR     PC, $BASEI           ;CALL BASE IN ROUTINE
  (1)  032034  000000                              .WORD   0             ;MAINTENANCE MODE BITS TO SET IN BSEL1
  (1)  032036  160000                              .WORD   160000        ;BASE TABLE ADDRESS
  (1)  032040  150522                              .WORD   BIT15!BIT14!RES!DMR     ;MODE
  (1)                                                                     ;****                 ****
 5815
 5816  032042                           WAIT    RDO                       ;WAIT FOR RDO TO BE SET
  (1)                                                                     ;**** MACRO EXPANSION ****
  (1)  032042  004737  010266              JSR     PC, $WAIT            ;CALL WAIT ROUTINE
  (1)  032046  000001                              .WORD   1             ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                                     ;****                 ****
 5817  032050  032777  000001  150156     BIT     #CNTRL,@SEL2          ;IS THERE A CONTROL OUT REPORTED ?
 5818  032056  001005                     BNE     10$                   ;IF YES, PROCEED.
 5819  032060                           ERRDF   8,EMG8,ERRG2              ;EXPECTED CONTROL OUT
  (4)  032060  104455                                                                          TRAP    C$ERDF
  (5)  032062  000010                                                                          .WORD   8
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  (5)  032064  020072                                                          .WORD   EMG8
  (5)  032066  015070                                                          .WORD   ERRG2
5820   032070  000410                    BR      20$             ;EXIT
5821   032072                    10$:
5822   032072  032777  000400  150140    BIT     #NXM,@SEL6      ;IS THE NXM FLAG SET?
5823   032100  001004                    BNE     20$             ;IF YES - ERROR REPORTED CORRECTLY
5824   032102                            ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  032102  104455                                                          TRAP    C$ERDF
  (5)  032104  000011                                                          .WORD   9
  (5)  032106  020136                                                          .WORD   EMG9
  (5)  032110  015070                                                          .WORD   ERRG2
5825   032112                    20$:
5826   032112  042777  000207  150114    BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
5827   032120  005037  002360            CLR     ERROR           ;ALLOW ERROR REPORTING
5828   032124              ENDSUB
  (3)  032124                                                                L10060:
  (3)  032124  104403                                                          TRAP    C$ESUB
5829
5830   032126              BGNSUB
  (3)  032126                                                                T9.2:
  (3)  032126  104402                                                          TRAP    C$BSUB
5831   032130                    CLEAR                           ;MACRO FOR MASTER CLEAR
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  032130  004737  011064       JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                         ;****                 ****
5832
5833   032134                    ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
  (3)  032134  104410                                                          TRAP    C$ESCAPE
  (3)  032136  000334                                                          .WORD   L10057-.
5834   032140                    BASEIN                          ;MACRO FOR BASE IN COMMAND
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  032140  004737  011262       JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  032144  004000               .WORD   LPLU            ;SET LINE UNIT LOOP
  (1)  032146  002630               .WORD   BASE            ;BASE TABLE ADDRESS
  (1)  032150  000522               .WORD   DMR             ;DMR-11 MODE
  (1)                                                         ;****                 ****
5835
5836   032152                    ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
  (3)  032152  104410                                                          TRAP    C$ESCAPE
  (3)  032154  000316                                                          .WORD   L10057-.
5837   032156                    CNTRIN                          ;MACRO FOR CONTROL IN (FULL DUPLEX)
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  032156  004737  011516       JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
  (1)  032162  000000               .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
  (1)                                                         ;****                 ****
5838
5839   032164                    ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
  (3)  032164  104410                                                          TRAP    C$ESCAPE
  (3)  032166  000304                                                          .WORD   L10057-.
5840   032170  012737  000001  002360    MOV     #CNTRL,ERROR    ;INHIBIT CONTROL OUT ERROR REPORTING AGAIN.
5841
5842                                                        ;BA/CC IN REC. COMMAND WITH NXM
5843                                                        ;ADDR = 760000 AND A CHARACTER COUNT = 3.
5844   032176                    BACCIR  160000,BIT15!BIT14!RCOUNT
  (1)                                                         ;**** MACRO EXPANSION ****
  (1)  032176  004737  012274       JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
```

```
  (1)  032202  000044                                    .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
  (1)  032204  160000                                    .WORD   160000  ;BUFFER ADDRESS BITS 0-15
  (1)  032206  140044                                    .WORD   BIT15!BIT14!RCOUNT      ;BA BITS 16/17 AND CHAR. COUNT
  (1)                                                                    ;****                  ****
 5845
 5846  032210                                  BACCIT                   ;BA/CC IN XMIT
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  032210  004737  012274                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  032214  000040                                    .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
  (1)  032216  002512                                    .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
  (1)  032220  000044                                    .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
  (1)                                                                    ;****                  ****
 5847
 5848  032222                                  WAIT    RDO              ;WAIT FOR RDO
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  032222  004737  010266                    JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  032226  000001                                    .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                                    ;****                  ****
 5849  032230  032777  000001  147776            BIT     #CNTRL,@SEL2    ;IS THERE A CONTROL OUT REPORTED ?
 5850  032236  001005                            BNE     10$             ;IF YES, PROCEED.
 5851  032240                                    ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
  (4)  032240  104455                                                                    TRAP    C$ERDF
  (5)  032242  000010                                                                    .WORD   8
  (5)  032244  020072                                                                    .WORD   EMG8
  (5)  032246  015070                                                                    .WORD   ERRG2
 5852  032250  000410                            BR      20$             ;EXIT
 5853  032252                          10$:
 5854  032252  032777  000400  147760            BIT     #NXM,@SEL6      ;IS THE NXM FLAG SET?
 5855  032260  001004                            BNE     20$             ;IF YES - ERROR REPORTED CORRECTLY
 5856  032262                                    ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  032262  104455                                                                    TRAP    C$ERDF
  (5)  032264  000011                                                                    .WORD   9
  (5)  032266  020136                                                                    .WORD   EMG9
  (5)  032270  015070                                                                    .WORD   ERRG2
 5857
 5858  032272                          20$:
 5859  032272  042777  000207  147734            BIC     #RDO.CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
 5860  032300  005037  002360                    CLR     ERROR           ;ENABLE ERROR REPORTING
 5861  032304                          ENDSUB
  (3)  032304                                                                    L10061:
  (3)  032304  104403                                                                    TRAP    C$ESUB
 5862
 5863  032306                          BGNSUB
  (3)  032306                                                                    T9.3:
  (3)  032306  104402                                                                    TRAP    C$BSUB
 5864  032310                                  CLEAR                    ;MACRO FOR MASTER CLEAR
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  032310  004737  011064                    JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                                    ;****                  ****
 5865
 5866  032314                                  ESCAPE  TST              ;IF ERROR, BR TO TEST END.
  (3)  032314  104410                                                                    TRAP    C$ESCAPE
  (3)  032316  000154                                                                    .WORD   L10057-.
 5867  032320                                  BASEIN                   ;MACRO FOR BASE IN COMMAND
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  032320  004737  011262                    JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
```

```
 (1) 032324 004000                          .WORD   LPLU    ;SET LINE UNIT LOOP
 (1) 032326 002630                          .WORD   BASE    ;BASE TABLE ADDRESS
 (1) 032330 000522                          .WORD   DMR     ;DMR-11 MODE
 (1)                                        ;****                   ****
5868
5869 032332                         ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3) 032332 104410                                                          TRAP    C$ESCAPE
 (3) 032334 000136                                                          .WORD   L10057-.
5870 032336                         CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
 (1)                                        ;**** MACRO EXPANSION ****
 (1) 032336 004737 011516           JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
 (1) 032342 000000                          .WORD   0       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
 (1)                                        ;****                   ****
5871
5872 032344                         ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3) 032344 104410                                                          TRAP    C$ESCAPE
 (3) 032346 000124                                                          .WORD   L10057-.
5873 032350                         BACCIR                  ;BA/CC IN RCV
 (1)                                        ;**** MACRO EXPANSION ****
 (1) 032350 004737 012274           JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
 (1) 032354 000044                          .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
 (1) 032356 002562                          .WORD   RBUF    ;RECEIVE BUFFER
 (1) 032360 000044                          .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
 (1)                                        ;****                   ****
5874
5875 032362                         ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3) 032362 104410                                                          TRAP    C$ESCAPE
 (3) 032364 000106                                                          .WORD   L10057-.
5876 032366 012737 000001 002360   MOV     #CNTRL,ERROR    ;INHIBIT CONTROL OUT ERROR REPORTING AGAIN.
5877
5878                                        ;BA/CC IN XMIT COMMAND WITH NXM BUFFER
5879                                        ;ADDRESS (760000) AND A CHAR. COUNT = 1
5880 032374                         BACCIT  160000,BIT15!BIT14!1
 (1)                                        ;**** MACRO EXPANSION ****
 (1) 032374 004737 012274           JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
 (1) 032400 000040                          .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
 (1) 032402 160000                          .WORD   160000  ;BUFFER ADDRESS BITS 0-15
 (1) 032404 140001                          .WORD   BIT15!BIT14!1   ;BA BITS 16 & 17 AND CHAR. COUNT
 (1)                                        ;****                   ****
5881
5882 032406                         WAIT    RDO             ;WAIT FOR RDO TO BE SET.
 (1)                                        ;**** MACRO EXPANSION ****
 (1) 032406 004737 010266           JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1) 032412 000001                          .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
 (1)                                        ;****                   ****
5883 032414 032777 000001 147612   BIT     #CNTRL,@SEL2    ;IS THERE A CONTROL OUT REPORTED ?
5884 032422 001005                 BNE     10$             ;IF YES, PROCEED.
5885 032424                        ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
 (4) 032424 104455                                                          TRAP    C$ERDF
 (5) 032426 000010                                                          .WORD   8
 (5) 032430 020072                                                          .WORD   EMG8
 (5) 032432 015070                                                          .WORD   ERRG2
5886 032434 000410                 BR      20$             ;EXIT
5887 032436                    10$:
5888 032436 032777 000400 147574   BIT     #NXM,@SEL6      ;IS THE NXM FLAG SET?
5889 032444 001004                 BNE     20$             ;IF YES - ERROR REPORTED CORRECTLY
```

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5890  032446                                    ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
 (4)  032446  104455                                                                  TRAP    C$ERDF
 (5)  032450  000011                                                                  .WORD   9
 (5)  032452  020136                                                                  .WORD   EMG9
 (5)  032454  015070                                                                  .WORD   ERRG2
5891  032456                                 20$:
5892  032456  042777  000207  147550          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
5893  032464  005037  002360                  CLR     ERROR           ;DON'T INHIBIT CONTROL OUT ERRORS
5894  032470                                   ENDSUB
 (3)  032470                                                                  L10062:
 (3)  032470  104403                                                                  TRAP    C$ESUB
5895
5896  032472                                 ENDTST
 (3)  032472                                                                  L10057:
 (3)  032472  104401                                                                  TRAP    C$ETST
5897
5898
5899
5900
5901
5902
5903
5904
5905                                     .SBTTL          TEST 10 - TIME OUT ERROR
5906
5907                                     ;*****************************************************************************
5908                                     ;*              TEST  10 - DMR-11
5909                                     ;* TIME OUT - FORCE A TIMEOUT AND VERIFY THAT THE ERROR IS REPORTED
5910                                     ;*
5911                                     ;*****************************************************************************
5912  032474                             BGNTST
 (3)  032474                                                                  T10::
5913  032474                                     CLEAR                   ;MACRO FOR MASTER CLEAR
 (1)                                                                     ;**** MACRO EXPANSION ****
 (1)  032474  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
 (1)                                                                     ;****                 ****
5914
5915  032500                                     ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  032500  104410                                                                  TRAP    C$ESCAPE
 (3)  032502  000172                                                                  .WORD   L10063-.
5916  032504                                     BASEIN                  ;MACRO FOR BASE IN COMMAND
 (1)                                                                     ;**** MACRO EXPANSION ****
 (1)  032504  004737  011262                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
 (1)  032510  004000                                .WORD   LPLU    ;SET LINE UNIT LOOP
 (1)  032512  002630                                .WORD   BASE    ;BASE TABLE ADDRESS
 (1)  032514  000522                                .WORD   DMR     ;DMR-11 MODE
 (1)                                                                     ;****                 ****
5917
5918                                                                     ;SET THRESHOLD VALUES AS FOLLOWS:
5919                                                                     ;BSEL4 = NAKS RECEIVED (377)
5920                                                                     ;BSEL5 = NAKS TRANSMITTED (377)
5921                                                                     ;BSEL6 = REP/SEL SENT (1)
5922                                                                     ;BSEL7 = NO BUFFFER (377)
5923  032516                                     DMRIN   THRESH,177777,177401
 (1)                                                                     ;**** MACRO EXPANSION ****
 (1)  032516  004737  012064                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
```

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  (1)  032522  000013                        .WORD   THRESH  ;INPUT COMMAND
  (1)  032524  177777                        .WORD   177777  ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  032526  177401                        .WORD   177401  ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                       ;****                    ****
 5924
 5925  032530                       ESCAPE  TST             ;IF ERROR, BR TO TEST END
  (3)  032530  104410                                                   TRAP    C$ESCAPE
  (3)  032532  000142                                                   .WORD   L10063-.
 5926  032534                       DMRIN   TIMER,0,1       ;SET REP/SEL TIMER TO MINIMUM (100 MSECS)
  (1)                                                       ;**** MACRO EXPANSION ****
  (1)  032534  004737  012064      JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
  (1)  032540  000012                      .WORD   TIMER   ;INPUT COMMAND
  (1)  032542  000000                      .WORD   0       ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  032544  000001                      .WORD   1       ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                       ;****                    ****
 5927
 5928  032546                       ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  032546  104410                                                   TRAP    C$ESCAPE
  (3)  032550  000124                                                   .WORD   L10063-.
 5929  032552                       CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
  (1)                                                       ;**** MACRO EXPANSION ****
  (1)  032552  004737  011516      JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
  (1)  032556  000000                      .WORD   0       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
  (1)                                                       ;****                    ****
 5930
 5931  032560                       ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  032560  104410                                                   TRAP    C$ESCAPE
  (3)  032562  000112                                                   .WORD   L10063-.
 5932
 5933                                                       ;BLIND THE RECEIVER BY GOING INTO HDX.
 5934  032564                       DMRIN   WMODEM,0,BIT4   ;USE WRITE MODEM COMMAND TO SET HALF DUPLEX.
  (1)                                                       ;**** MACRO EXPANSION ****
  (1)  032564  004737  012064      JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
  (1)  032570  000005                      .WORD   WMODEM  ;INPUT COMMAND
  (1)  032572  000000                      .WORD   0       ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
  (1)  032574  000020                      .WORD   BIT4    ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
  (1)                                                       ;****                    ****
 5935
 5936  032576                       BACCIT                  ;BA/CC IN XMIT BUFFER
  (1)                                                       ;**** MACRO EXPANSION ****
  (1)  032576  004737  012274      JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  032602  000040                      .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
  (1)  032604  002512                      .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
  (1)  032606  000044                      .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
  (1)                                                       ;****                    ****
 5937
 5938  032610                       ESCAPE  TST             ;IF ERROR, EXIT
  (3)  032610  104410                                                   TRAP    C$ESCAPE
  (3)  032612  000062                                                   .WORD   L10063-.
 5939  032614                       WAIT    RDO             ;WAIT FOR THE READY OUT.
  (1)                                                       ;**** MACRO EXPANSION ****
  (1)  032614  004737  010266      JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  032620  000001                      .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                       ;****                    ****
 5940  032622                       ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  032622  104410                                                   TRAP    C$ESCAPE
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  (3)  032624  000050                                                                          .WORD   L10063-.
5941   032626  032777  000001  147400          BIT     #CNTRL,@SEL2    ,IS THIS A CONTROL OUT
5942   032634  001005                          BNE     10$             ;IF YES, PROCEED.
5943   032636                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED A CONTROL OUT.
  (4)  032636  104455                                                                          TRAP    C$ERDF
  (5)  032640  000010                                                                          .WORD   8
  (5)  032642  020072                                                                          .WORD   EMG8
  (5)  032644  015070                                                                          .WORD   ERRG2
5944   032646  000410                          BR      20$             ;EXIT
5945   032650                          10$:
5946   032650  032777  000002  147362          BIT     #TOUT,@SEL6     ;WAS THE TIME OUT REPORTED?
5947   032656  001004                          BNE     20$             ;IF YES, EXIT
5948   032660                                  ERRDF   9,EMG9,ERRG2    ;UNEXPECTED ERROR.
  (4)  032660  104455                                                                          TRAP    C$ERDF
  (5)  032662  000011                                                                          .WORD   9
  (5)  032664  020136                                                                          .WORD   EMG9
  (5)  032666  015070                                                                          .WORD   ERRG2
5949   032670                          20$:
5950   032670                                  SHUTDN
  (1)                                                           ;**** MACRO EXPANSION ****
  (1)  032670  004737  012560                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                                           ;****                   ****
5951
5952   032674                          ENDTST
  (3)  032674                                                                                   L10063:
  (3)  032674  104401                                                                          TRAP    C$ETST
5953
5954
5955
5956
5957                                    .SBTTL          TEST 11 - MESSAGE TOO LONG ERROR
5958
5959                                    ;*****************************************************************************
5960                                    ;*              TEST 11 - DMR-11
5961                                    ;*  MESSAGE TOO LONG - TRANSMIT A MESSAGE THAT IS TOO LONG FOR THE
5962                                    ;*  RECEIVE BUFFER AND VERIFY THAT THE 'TOO LONG'' ERROR IS RECEIVED.
5963                                    ;*
5964                                    ;*****************************************************************************
5965   032676                           BGNTST
  (3)  032676                                                                                   T11::
5966   032676                                  CLEAR                   ;MACRO FOR MASTER CLEAR
  (1)                                                           ;**** MACRO EXPANSION ****
  (1)  032676  004737  011064                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                           ;****                   ****
5967
5968   032702                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
  (3)  032702  104410                                                                          TRAP    C$ESCAPE
  (3)  032704  000150                                                                          .WORD   L10064-.
5969   032706                                  BASEIN                  ;MACRO FOR BASE IN COMMAND
  (1)                                                           ;**** MACRO EXPANSION ****
  (1)  032706  004737  011262                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  032712  004000                                  .WORD   LPLU    ;SET LINE UNIT LOOP
  (1)  032714  002630                                  .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  032716  000522                                  .WORD   DMR     ;DMR-11 MODE
  (1)                                                           ;****                   ****
5970
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5971  032720                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  032720  104410                                                                    TRAP    C$ESCAPE
 (3)  032722  000132                                                                    .WORD   L10064-.
5972  032724                                CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  032724  004737  011516                JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
 (1)  032730  000000                        .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
 (1)                                                                ;****                   ****
5973
5974  032732                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
 (3)  032732  104410                                                                    TRAP    C$ESCAPE
 (3)  032734  000120                                                                    .WORD   L10064-.
5975  032736                                BACCIR  RBUF,RCOUNT/2   ;SET UP THE RECEIVE BUFFER WITH 1/2 BUF. SPACE
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  032736  004737  012274                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
 (1)  032742  000044                        .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
 (1)  032744  002562                        .WORD   RBUF    ;BUFFER ADDRESS BITS 0-15
 (1)  032746  000022                        .WORD   RCOUNT/2        ;BA BITS 16/17 AND CHAR. COUNT
 (1)                                                                ;****                   ****
5976
5977  032750  012737  000001  002360        MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
5978                                                                ;REPORTING BECAUSE WE ARE INTENTIONALLY
5979                                                                ;CAUSING ONE IN THIS TEST.
5980  032756                                BACCIT                  ;BA/CC IN XMIT COMMAND
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  032756  004737  012274                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
 (1)  032762  000040                        .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
 (1)  032764  002512                        .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
 (1)  032766  000044                        .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
 (1)                                                                ;****                   ****
5981  032770                        10$:
5982  032770                                WAIT    RDO             ;WAIT FOR RDO TO BE SET
 (1)                                                                ;**** MACRO EXPANSION ****
 (1)  032770  004737  010266                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
 (1)  032774  000001                        .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
 (1)                                                                ;****                   ****
5983  032776                                ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
 (3)  032776  104410                                                                    TRAP    C$ESCAPE
 (3)  033000  000054                                                                    .WORD   L10064-.
5984  033002  032777  000001  147224        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
5985  033010  001005                        BNE     20$             ;IF YES, PROCEED
5986  033012                                ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT.
 (4)  033012  104455                                                                    TRAP    C$ERDF
 (5)  033014  000010                                                                    .WORD   8
 (5)  033016  020072                                                                    .WORD   EMG8
 (5)  033020  015070                                                                    .WORD   ERRG2
5987  033022  000410                        BR      40$             ;EXIT
5988  033024                        20$:
5989  033024  032777  000020  147206        BIT     #TOLONG,@SEL6   ;IS THE TOO LONG BIT SET?
5990  033032  001004                        BNE     40$             ;IF YES, TEST OK - FINISH UP.
5991  033034                        30$:
5992  033034                                ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
 (4)  033034  104455                                                                    TRAP    C$ERDF
 (5)  033036  000011                                                                    .WORD   9
 (5)  033040  020136                                                                    .WORD   EMG9
 (5)  033042  015070                                                                    .WORD   ERRG2
```

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 5993
 5994  033044                          40$:
 5995  033044  005037  002360                CLR     ERROR           ;RESTORE ERROR FLAG TO NORMAL STATE.
 5996  033050                                SHUTDN                  ;HALT THE DMR.
  (1)                                                                ;**** MACRO EXPANSION ****
  (1)  033050  004737  012560                JSR     PC. $HALT       ;DMR HALT ROUTINE.
  (1)                                                                ;****                 ****
 5997
 5998
 5999
 6000  033054                          ENDTST
  (3)  033054                                                                    L10064:
  (3)  033054  104401                                                                   TRAP    C$ETST
 6001
 6002
 6003
 6004
 6005
 6006                                  .SBTTL          TEST 12 - PROCEDURE ERRORS
 6007
 6008                                  ;*****************************************************************************
 6009                                  ;*              TEST 12 - DMR-11
 6010                                  ;*  PROCEDURE ERRORS -
 6011                                  ;*  THE FOLLOWING SHOULD CAUSE THE DMR-11 TO HALT AND RESPOND WITH
 6012                                  ;*  A PROCEDURE ERROR:
 6013                                  ;*  SUBTEST 1  -  A SECOND BASE IN COMMAND
 6014                                  ;*  SUBTEST 2  -  A CONTROL IN BEFORE A BASE IN
 6015                                  ;*  SUBTEST 3  -  A BA/CC IN BEFORE A BASE IN
 6016                                  ;*  SUBTEST 4  -  A BA/CC IN RCV WITH A BUFFER LENGTH OF 0
 6017                                  ;*  SUBTEST 5  -  A BA/CC IN XMIT. WITH A BUFFER LENGTH OF 0
 6018                                  ;*
 6019                                  ;*****************************************************************************
 6020  033056                          BGNTST
  (3)  033056                                                                    T12::
 6021  033056                            BGNSUB
  (3)  033056                                                                    T12.1:
  (3)  033056  104402                                                                   TRAP    C$BSUB
 6022
 6023  033060                                CLEAR                   ;MASTER CLEAR MACRO
  (1)                                                               ;**** MACRO EXPANSION ****
  (1)  033060  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                               ;****                 ****
 6024
 6025  033064                                BASEIN
  (1)                                                               ;**** MACRO EXPANSION ****
  (1)  033064  004737  011262                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  033070  004000                                .WORD   LPLU    ;SET LINE UNIT LOOP
  (1)  033072  002630                                .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  033074  000522                                .WORD   DMR     ;DMR-11 MODE
  (1)                                                               ;****                 ****
 6026
 6027  033076  012737  000001  002360        MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
 6028                                                               ;REPORTING BECAUSE WE ARE INTENTIONALLY
 6029                                                               ;CAUSING ONE IN THIS TEST.
 6030  033104                                BASEIN                  ;SECOND BASE IN
  (1)                                                               ;**** MACRO EXPANSION ****
```

```
  (1)  033104  004737  011262                    JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  033110  004000                            .WORD   LPLU            ;SET LINE UNIT LOOP
  (1)  033112  002630                            .WORD   BASE            ;BASE TABLE ADDRESS
  (1)  033114  000522                            .WORD   DMR             ;DMR-11 MODE
  (1)                                            ;****                   ****
 6031
 6032  033116                                    WAIT    RDO             ;WAIT FOR RDO TO BE SET
  (1)                                            ;**** MACRO EXPANSION ****
  (1)  033116  004737  010266                    JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  033122  000001                            .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                            ;****                   ****
 6033  033124                                    ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
  (3)  033124  104410                                                                    TRAP    C$ESCAPE
  (3)  033126  000632                                                                    .WORD   L10065-.
 6034  033130  032777  000001  147076            BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
 6035  033136  001005                            BNE     10$             ;IF YES, PROCEED.
 6036  033140                                    ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
  (4)  033140  104455                                                                    TRAP    C$ERDF
  (5)  033142  000010                                                                    .WORD   8
  (5)  033144  020072                                                                    .WORD   EMG8
  (5)  033146  015070                                                                    .WORD   ERRG2
 6037  033150  000410                            BR      15$             ;EXIT
 6038  033152                              10$:
 6039  033152  032777  001000  147060            BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
 6040  033160  001004                            BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
 6041  033162                                    ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  033162  104455                                                                    TRAP    C$ERDF
  (5)  033164  000011                                                                    .WORD   9
  (5)  033166  020136                                                                    .WORD   EMG9
  (5)  033170  015070                                                                    .WORD   ERRG2
 6042  033172                              15$:
 6043  033172  042777  000207  147034            BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
 6044  033200  005037  002360                    CLR     ERROR           ;RESTORE FLAG
 6045  033204                              ENDSUB
  (3)  033204                                                                    L10066:
  (3)  033204  104403                                                                    TRAP    C$ESUB
 6046
 6047  033206                              BGNSUB
  (3)  033206                                                                    T12.2:
  (3)  033206  104402                                                                    TRAP    C$BSUB
 6048
 6049  033210                                    CLEAR                   ;MASTER CLEAR MACRO
  (1)                                            ;**** MACRO EXPANSION ****
  (1)  033210  004737  011064                    JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                            ;****                   ****
 6050
 6051  033214  012737  000001  002360            MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
 6052                                            ;REPORTING BECAUSE WE ARE INTENTIONALLY
 6053                                            ;CAUSING ONE IN THIS TEST.
 6054  033222  005037  002260                    CLR     DMRFLG          ;CLEAR FLAG THAT IS SET IN BASEIN IN ORDER
 6055                                            ;TO FLAG THAT A CONTROL OUT-DMR RUN MODE
 6056                                            ;COMMAND IS EXPECTED (THIS FLAG WAS SET IN
 6057                                            ;THE PREVIOUS SUBTEST BASEIN)
 6058  033226                                    CNTRIN                  ;CONTROL IN
  (1)                                            ;**** MACRO EXPANSION ****
  (1)  033226  004737  011516                    JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
```

```
(1)  033232  000000                            .WORD   0          ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1)                                                               ;****                     ****

     033234                              WAIT    RDO              ;WAIT FOR RDO TO BE SET
(1)                                                               ;**** MACRO EXPANSION ****
(1)  033234  004737  010266              JSR     PC, $WAIT        ;CALL WAIT ROUTINE
(1)  033240  000001                              .WORD   1        ;FLAG THAT WE'RE WAITING FOR RDO
(1)                                                               ;****                     ****
     033242                              ESCAPE  TST              ;IF RDO NOT SET, BR TO TEST END.
(3)  033242  104410                                                                 TRAP    C$ESCAPE
(3)  033244  000514                                                                 .WORD   L10065-.
     033246  032777  000001  146760      BIT     #CNTRL,@SEL2     ;IS THIS A CONTROL OUT?
     033254  001005                      BNE     10$              ;IF YES - PROCEED.
     033256                              ERRDF   8,EMG8,ERRG2     ;EXPECTED CONTROL OUT
(4)  033256  104455                                                                 TRAP    C$ERDF
(5)  033260  000010                                                                 .WORD   8
(5)  033262  020072                                                                 .WORD   EMG8
(5)  033264  015070                                                                 .WORD   ERRG2
     033266  000410                      BR      15$              ;EXIT
     033270                      10$:
     033270  032777  001000  146742      BIT     #HALTC,@SEL6     ;IS THE HALT - PROCEDURE ERROR BIT SET?
     033276  001004                      BNE     15$              ;IF YES - ERROR REPORTED CORRECTLY
     033300                              ERRDF   9,EMG9,ERRG2     ;UNEXPECTED CONTROL OUT RECEIVED
(4)  033300  104455                                                                 TRAP    C$ERDF
(5)  033302  000011                                                                 .WORD   9
(5)  033304  020136                                                                 .WORD   EMG9
(5)  033306  015070                                                                 .WORD   ERRG2
     033310                      15$:
     033310  042777  000207  146716      BIC     #RDO!CMD,@SEL2   ;CLEAR RDO AND THE COMMAND BITS.
     033316  005037  002360              CLR     ERROR            ;RESTORE FLAG
     033322                      ENDSUB
(3)  033322                                                                 L10067:
(3)  033322  104403                                                                 TRAP    C$ESUB

     033324                      BGNSUB
(3)  033324                                                                 T12.3:
(3)  033324  104402                                                                 TRAP    C$BSUB

     033326                              CLEAR                    ;MASTER CLEAR MACRO
(1)                                                               ;**** MACRO EXPANSION ****
(1)  033326  004737  011064              JSR     PC, $MSCLR       ;ISSUE A DMR MASTER CLEAR
(1)                                                               ;****                     ****

     033332  012737  000001  002360      MOV     #CNTRL,ERROR     ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
                                                                  ;REPORTING BECAUSE WE ARE INTENTIONALLY
                                                                  ;CAUSING ONE IN THIS TEST.
     033340                              BACCIR                   ;BA/CC IN RCV. COMMAND
(1)                                                               ;**** MACRO EXPANSION ****
(1)  033340  004737  012274              JSR     PC, $BACC        ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1)  033344  000044                              .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
(1)  033346  002562                              .WORD   RBUF     ;RECEIVE BUFFER
(1)  033350  000044                              .WORD   RCOUNT   ;RECEIVE CHARACTER COUNT
(1)                                                               ;****                     ****

     033352                              WAIT    RDO              ;WAIT FOR RDO TO BE SET
(1)                                                               ;**** MACRO EXPANSION ****
```

```
  (1)  033352  004737  010266                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  033356  000001                        .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                                 ;****                    ****
 6085  033360                               ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
  (3)  033360  104410                                                                TRAP    C$ESCAPE
  (3)  033362  000376                                                                .WORD   L10065-.
 6086  033364  032777  000001  146642        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
 6087  033372  001005                        BNE     10$             ;IF YES - PROCEED.
 6088  033374                               ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
  (4)  033374  104455                                                                TRAP    C$ERDF
  (5)  033376  000010                                                                .WORD   8
  (5)  033400  020072                                                                .WORD   EMG8
  (5)  033402  015070                                                                .WORD   ERRG2
 6089  033404  000410                        BR      15$             ;EXIT
 6090  033406                          10$:
 6091  033406  032777  001000  146624        BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
 6092  033414  001004                        BNE     15$             ;IF YES -- ERROR REPORTED CORRECTLY
 6093  033416                               ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  033416  104455                                                                TRAP    C$ERDF
  (5)  033420  000011                                                                .WORD   9
  (5)  033422  020136                                                                .WORD   EMG9
  (5)  033424  015070                                                                .WORD   ERRG2
 6094  033426                          15$:
 6095  033426  042777  000207  146600        BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
 6096  033434  005037  002360                CLR     ERROR           ;RESTORE FLAG
 6097  033440                           ENDSUB
  (3)  033440                                                                    L10070:
  (3)  033440  104403                                                                TRAP    C$ESUB
 6098
 6099  033442                           BGNSUB
  (3)  033442                                                                    T12.4:
  (3)  033442  104402                                                                TRAP    C$BSUB
 6100  033444                               CLEAR                   ;MASTER CLEAR
  (1)                                                                ;**** MACRO EXPANSION ****
  (1)  033444  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                                ;****                    ****
 6101
 6102  033450                               ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  033450  104410                                                                TRAP    C$ESCAPE
  (3)  033452  000306                                                                .WORD   L10065-.
 6103  033454                               BASEIN                  ;BASE IN COMMAND
  (1)                                                                ;**** MACRO EXPANSION ****
  (1)  033454  004737  011262                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  033460  004000                        .WORD   LPLU            ;SET LINE UNIT LOOP
  (1)  033462  002630                        .WORD   BASE            ;BASE TABLE ADDRESS
  (1)  033464  000522                        .WORD   DMR             ;DMR-11 MODE
  (1)                                                                ;****                    ****
 6104
 6105  033466                               ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  033466  104410                                                                TRAP    C$ESCAPE
  (3)  033470  000270                                                                .WORD   L10065-.
 6106  033472                               BACCIR                  ;ASSIGN A BA/CC IN RECEIVE BUFFER
  (1)                                                                ;**** MACRO EXPANSION ****
  (1)  033472  004737  012274                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  033476  000044                        .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
  (1)  033500  002562                        .WORD   RBUF            ;RECEIVE BUFFER
```

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  (1)  033502  000044                          .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
  (1)                                                          ;****                ****
6107
6108  033504                                   ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  033504  104410                                                                TRAP    C$ESCAPE
  (3)  033506  000252                                                                .WORD   L10065-.
6109  033510  012737  000001  002360           MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT
6110                                                       ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY
6111                                                       ;CAUSING ONE.
6112  033516                                   BACCIT  TBUF,0          ;ASSIGN A BA/CC IN XMIT BUFFER LENGTH = 0.
  (1)                                                      ;**** MACRO EXPANSION ****
  (1)  033516  004737  012274                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
  (1)  033522  000040                        .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
  (1)  033524  002512                        .WORD   TBUF    ;BUFFER ADDRESS BITS 0-15
  (1)  033526  000000                        .WORD   0       ;BA BITS 16 & 17 AND CHAR. COUNT
  (1)                                                      ;****                ****
6113
6114  033530                                   WAIT    RDO             ;WAIT FOR RDO TO BE SET
  (1)                                                      ;**** MACRO EXPANSION ****
  (1)  033530  004737  010266                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  033534  000001                        .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                      ;****                ****
6115  033536                                   ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
  (3)  033536  104410                                                                TRAP    C$ESCAPE
  (3)  033540  000220                                                                .WORD   L10065-.
6116  033542  032777  000001  146464           BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
6117  033550  001005                           BNE     10$             ;IF YES - PROCEED.
6118  033552                                   ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
  (4)  033552  104455                                                                TRAP    C$ERDF
  (5)  033554  000010                                                                .WORD   8
  (5)  033556  020072                                                                .WORD   EMG8
  (5)  033560  015070                                                                .WORD   ERRG2
6119  033562  000410                           BR      15$             ;EXIT
6120  033564                                10$:
6121  033564  032777  001000  146446           BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
6122  033572  001004                           BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
6123  033574                                   ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  033574  104455                                                                TRAP    C$ERDF
  (5)  033576  000011                                                                .WORD   9
  (5)  033600  020136                                                                .WORD   EMG9
  (5)  033602  015070                                                                .WORD   ERRG2
6124  033604                                15$:
6125  033604  042777  000207  146422           BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
6126  033612  005037  002360                   CLR     ERROR           ;RESTORE FLAG
6127  033616                                ENDSUB
  (3)  033616                                                                      L10071:
  (3)  033616  104403                                                                TRAP    C$ESUB
6128
6129  033620                                BGNSUB
  (3)  033620                                                                      T12.5:
  (3)  033620  104402                                                                TRAP    C$BSUB
6130  033622                                   CLEAR                   ;MASTER CLEAR
  (1)                                                      ;**** MACRO EXPANSION ****
  (1)  033622  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                      ;****                ****
6131
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```
 6132  033626                                    ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  033626  104410                                                                    TRAP    C$ESCAPE
  (3)  033630  000130                                                                    .WORD   L10065-.
 6133  033632                                    BASEIN                  ;BASE IN COMMAND
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  033632  004737  011262                    JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  033636  004000                                    .WORD   LPLU    ;SET LINE UNIT LOOP
  (1)  033640  002630                                    .WORD   BASE    ;BASE TABLE ADDRESS
  (1)  033642  000522                                    .WORD   DMR     ;DMR-11 MODE
  (1)                                                                    ;****                   ****
 6134
 6135  033644                                    ESCAPE  TST             ;IF ERROR, EXIT.
  (3)  033644  104410                                                                    TRAP    C$ESCAPE
  (3)  033646  000112                                                                    .WORD   L10065-.
 6136  033650  012737  000001  00236C            MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT
 6137                                                                    ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY
 6138                                                                    ;CAUSING ONE.
 6139  033656                                    BACCIR  RBUF,0          ;ASSIGN A BA/CC IN REC. BUFFER LENGTH = 0
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  033656  004737  012274                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
  (1)  033662  000044                                    .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
  (1)  033664  002562                                    .WORD   RBUF    ;BUFFER ADDRESS BITS 0-15
  (1)  033666  000000                                    .WORD   0       ;BA BITS 16/17 AND CHAR. COUNT
  (1)                                                                    ;****                   ****
 6140
 6141  033670                                    WAIT    RDO             ;WAIT FOR RDO TO BE SET
  (1)                                                                    ;**** MACRO EXPANSION ****
  (1)  033670  004737  010266                    JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  033674  000001                                    .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                                    ;****                   ****
 6142  033676                                    ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
  (3)  033676  104410                                                                    TRAP    C$ESCAPE
  (3)  033700  000060                                                                    .WORD   L10065-.
 6143  033702  032777  000001  146324            BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
 6144  033710  001005                            BNE     10$             ;IF YES - PROCEED.
 6145  033712                                    ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
  (4)  033712  104455                                                                    TRAP    C$ERDF
  (5)  033714  000010                                                                    .WORD   8
  (5)  033716  020072                                                                    .WORD   EMG8
  (5)  033720  015070                                                                    .WORD   ERRG2
 6146  033722  000410                            BR      15$             ;EXIT
 6147  033724                              10$:
 6148  033724  032777  001000  146306            BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
 6149  033732  001004                            BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
 6150  033734                                    ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  033734  104455                                                                    TRAP    C$ERDF
  (5)  033736  000011                                                                    .WORD   9
  (5)  033740  020136                                                                    .WORD   EMG9
  (5)  033742  015070                                                                    .WORD   ERRG2
 6151  033744                              15$:
 6152  033744  042777  000207  146262            BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
 6153  033752  005037  002360                    CLR     ERROR           ;RESTORE FLAG
 6154  033756                                ENDSUB
  (3)  033756                                                                    L10072:
  (3)  033756  104403                                                                    TRAP    C$ESUB
 6155
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```
 6156  033760                          ENDTST
  (3)  033760                                                              L10065:
  (3)  033760  104401                                                              TRAP    C$ETST
 6157
 6158
 6159
 6160
 6161
 6162                                  .SBTTL          TEST 13 - DATA TEST
 6163
 6164                                  ;*************************************************************************
 6165                                  ;*              TEST 13 - DMR-11
 6166                                  ;* FREE RUNNING FLAG MODE DATA TEST
 6167                                  ;* TRANSMIT A MESSAGE AND VERIFY THE RECEIVED DATA IS CORRECT.
 6168                                  ;* IN THIS TEST NO INTERRUPTS ARE USED AND THE LINE UNIT IS IN
 6169                                  ;* INTERNAL (TTL) LOOPBACK.  THIS TEST IS THE FIRST TEST IN WHICH
 6170                                  ;* THE DMR IS USED IN A DATA TRANSMISSION MODE.
 6171                                  ;*************************************************************************
 6172  033762                          BGNTST
  (3)  033762                                                                      T13::
 6173  033762  013700  000044                  MOV     RCOUNT,R0       ;BYTE COUNT FOR RECEIVE BUFFER
 6174  033766  062700  000002                  ADD     #2,R0           ;2 ADDITIONAL BYTES AT END OF BUFFER ARE
 6175                                                                   ;USED FOR DELIMITOR
 6176  033772  012701  002562                  MOV     #RBUF,R1        ;ADDRESS OF RECEIVE BUFFER
 6177  033776                          10$:
 6178  033776  105021                          CLRB    (R1)+           ;CLEAR A BYTE IN THE BUFFER
 6179  034000  005300                          DEC     R0              ;CONTINUE - UNTIL ENTIRE BUFFER DONE
 6180  034002  001375                          BNE     10$
 6181
 6182  034004  005037  002510          CLR     TFLAG                   ;CLEAR TRANSMIT FLAG
 6183  034010  005037  002560          CLR     RFLAG                   ;CLEAR RECEIVER FLAG
 6184  034014                          CLEAR                           ;MACRO FOR MASTER CLEAR
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  034014  004737  011064          JSR     PC, $MSCLR              ;ISSUE A DMR MASTER CLEAR
  (1)                                                                  ;****                 ****
 6185
 6186  034020                          ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
  (3)  034020  104410                                                              TRAP    C$ESCAPE
  (3)  034022  000432                                                              .WORD   L10073-.
 6187  034024                          BASEIN                          ;MACRO FOR BASE IN COMMAND
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  034024  004737  011262          JSR     PC, $BASEI              ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  034030  004000                          .WORD   LPLU            ;SET LINE UNIT LOOP
  (1)  034032  002630                          .WORD   BASE            ;BASE TABLE ADDRESS
  (1)  034034  000522                          .WORD   DMR             ;DMR-11 MODE
  (1)                                                                  ;****                 ****
 6188
 6189  034036                          ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
  (3)  034036  104410                                                              TRAP    C$ESCAPE
  (3)  034040  000414                                                              .WORD   L10073-.
 6190  034042                          CNTRIN                          ;MACRO FOR CONTROL IN (FULL DUPLEX)
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  034042  004737  011516          JSR     PC, $CNTIN              ;CALL CONTROL IN ROUTINE WITH DEFAULT
  (1)  034046  000000                          .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
  (1)                                                                  ;****                 ****
 6191  034050                          ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
```

```
  (3)  034050  104410                                                          TRAP    C$ESCAPE
  (3)  034052  000402                                                          .WORD   L10073-.
6192
6193  034054                                BACCIR                           ;BUFFER ADDRESS/CHARACTER COUNT REC. IN
  (1)                                                                        ;**** MACRO EXPANSION ****
  (1)  034054  004737  012274      *       JSR     PC, $BACC                ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  034060  000044                      .WORD   RQI.BACCR                ;BA/CC IN RECEIVE COMMAND
  (1)  034062  002562                      .WORD   RBUF                     ;RECEIVE BUFFER
  (1)  034064  000044                      .WORD   RCOUNT                   ;RECEIVE CHARACTER COUNT
  (1)                                                                        ;****                    ****
6194
6195  034066                                ESCAPE  TST                      ;IF ERROR (I.E. RDI NOT SET), ESCAPE
  (3)  034066  104410                                                          TRAP    C$ESCAPE
  (3)  034070  000364                                                          .WORD   L10073-.
6196
6197  034072                                BACCIT                           ;BUFFER ADDRESS/CHARACTER COUNT XMIT. IN
  (1)                                                                        ;**** MACRO EXPANSION ****
  (1)  034072  004737  012274              JSR     PC, $BACC                ;CALL BA/CC IN ROUTINE WITH DEFAULTS
  (1)  034076  000040                      .WORD   RQI!BACCT                ;BA/CC IN TRANSMIT COMMAND
  (1)  034100  002512                      .WORD   TBUF                     ;TRANSMIT BUFFER ADDRESS
  (1)  034102  000044                      .WORD   TCOUNT                   ;TRANSMIT CHARACTER COUNT
  (1)                                                                        ;****                    ****
6198
6199  034104                                ESCAPE  TST                      ;IF ERROR (I.E. RDI NOT SET), ESCAPF
  (3)  034104  104410                                                          TRAP    C$ESCAPE
  (3)  034106  000346                                                          .WORD   L10073-.
6200
6201  034110                          20$:
6202  034110                                WAIT    RDO                      ;WAIT FOR RDO
  (1)                                                                        ;**** MACRO EXPANSION ****
  (1)  034110  004737  010266              JSR     PC, $WAIT                ;CALL WAIT ROUTINE
  (1)  034114  000001                      .WORD   1                        ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                                                        ;****                    ****
6203  034116                                BERROR  52$                      ;IF ERROR - RDO NOT SET, END TEST
  (2)  034116  103552                                                          BCS     52$
6204  034120  032777  000001  146106       BIT     #CNTRL,@SEL2             ;IS THIS A CONTROL OUT COMMAND ?
6205  034126  001405                       BEQ     25$                      ;IF NOT - PROCEED
6206  034130                                ERRDF   9,EMG9,ERRG2             ;UNEXPECTED CONTROL OUT RECEIVED
  (4)  034130  104455                                                          TRAP    C$ERDF
  (5)  034132  000011                                                          .WORD   9
  (5)  034134  020136                                                          .WORD   EMG9
  (5)  034136  015070                                                          .WORD   ERRG2
6207  034140  000541                       BR      52$
6208  034142                          25$:
6209  034142  032777  000004  146064       BIT     #RCV,@SEL2               ;TRANSMIT OR RECEIVE ?
6210  034150  001035                       BNE     40$                      ;BR FOR RECEIVE
6211
6212                                  ;CHECK TRANSMIT
6213
6214  034152  005737  002510               TST     TFLAG                    ;IS THIS THE FIRST TRANSMIT DONE?
6215  034156  001405                       BEQ     30$                      ;YES - OK
6216  034160                                ERRDF   10,EMG10,ERRG2           ;ERROR MULTIPLE TRANSMITS
  (4)  034160  104455                                                          TRAP    C$ERDF
  (5)  034162  000012                                                          .WORD   10
  (5)  034164  020165                                                          .WORD   EMG10
  (5)  034166  015070                                                          .WORD   ERRG2
```

```
6217  034170  000525                          BR      52$
6218  034172                          30$:
6219  034172  012737  177777  002510          MOV     #-1,TFLAG       ;FLAG THAT TRANSMIT CHECK IS DONE.
6220  034200  022777  002512  146030          CMP     #TBUF,@SEL4     ;TRANSMIT BUFFER ADDRESS CORRECT?
6221  034206  001405                          BEQ     32$             ;YES - PROCEED
6222  034210                                  ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
  (4) 034210  104455                                                          TRAP    C$ERDF
  (5) 034212  000013                                                          .WORD   11
  (5) 034214  020214                                                          .WORD   EMG11
  (5) 034216  015070                                                          .WORD   ERRG2
6223  034220  000511                          BR      52$
6224  034222                          32$:
6225  034222  022777  000044  146010          CMP     #TCOUNT,@SEL6   ;COUNT CORRECT ?
6226  034230  001470                          BEQ     50$             ;YES - PROCEED
6227  034232                                  ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR
  (4) 034232  104455                                                          TRAP    C$ERDF
  (5) 034234  000014                                                          .WORD   12
  (5) 034236  020241                                                          .WORD   EMG12
  (5) 034240  015070                                                          .WORD   ERRG2
6228  034242  000500                          BR      52$
6229
6230                                    ;CHECK RECEIVE
6231
6232  034244                          40$:
6233  034244  005737  002560                  TST     RFLAG           ;IS THIS THE FIRST RECEIVE DONE ?
6234  034250  001405                          BEQ     41$             ;YES - PROCEED
6235  034252                                  ERRDF   13,EMG13,ERRG2  ;MULTIPLE RECEIVES
  (4) 034252  104455                                                          TRAP    C$ERDF
  (5) 034254  000015                                                          .WORD   13
  (5) 034256  020267                                                          .WORD   EMG13
  (5) 034260  015070                                                          .WORD   ERRG2
6236  034262  000470                          BR      52$
6237  034264                          41$:
6238  034264  012737  177777  002560          MOV     #-1,RFLAG       ;FLAG THAT RECEIVE CHECK HAS BEEN DONE.
6239  034272  022777  002562  145736          CMP     #RBUF,@SEL4     ;IS THE RECEIVE BUFFER ADDRESS CORRECT?
6240  034300  001405                          BEQ     43$             ;YES - PROCEED
6241  034302                                  ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
  (4) 034302  104455                                                          TRAP    C$ERDF
  (5) 034304  000013                                                          .WORD   11
  (5) 034306  020214                                                          .WORD   EMG11
  (5) 034310  015070                                                          .WORD   ERRG2
6242  034312  000454                          BR      52$
6243  034314                          43$:
6244  034314  022777  000044  145716          CMP     #RCOUNT,@SEL6   ;IS THE BUFFER COUNT CORRECT?
6245  034322  001405                          BEQ     44$             ;YES - PROCEED
6246  034324                                  ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR
  (4) 034324  104455                                                          TRAP    C$ERDF
  (5) 034326  000014                                                          .WORD   12
  (5) 034330  020241                                                          .WORD   EMG12
  (5) 034332  015070                                                          .WORD   ERRG2
6247
6248  034334  000443                          BR      52$
6249  034336                          44$:
6250  034336  012700  000044                  MOV     #RCOUNT,R0      ;SET UP FOR DATA CHECK (CHARCATER COUNT)
6251  034342  012701  002512                  MOV     #TBUF,R1        ;GOOD DATA POINTER
6252  034346  012702  002562                  MOV     #RBUF,R2        ;RECEIVE DATA POINTER
```

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6253  034352
6254  034352  122122                  45$:
6255  034354  001011                          CMPB    (R1)+,(R2)+     ;IS THE DATA THE SAME ?
6256  034356  005300                          BNE     46$             ;IF NOT, BRANCH TO DATA ERROR MESSAGE
6257  034360  001374                          DEC     R0              ;CONTINUE CHECKING UNTIL DONE WITH BUFFER.
6258  034362  005712                          BNE     45$
6259                                          TST     @R2             ;THIS SHOULD BE 0 - REMEMBER WE CLEARED
                                                                        ;2 EXTRA BYTES DURING BUFFER INIT.
6260  034364  001412                          BEQ     50$             ;IF OK - PROCEED
6261  034366                                  ERRDF   14,EMG14,ERRG2  ;RECEIVED EXTRA DATA
  (4) 034366  104455                                                                      TRAP    C$ERDF
  (5) 034370  000016                                                                      .WORD   14
  (5) 034372  020315                                                                      .WORD   EMG14
  (5) 034374  015070                                                                      .WORD   ERRG2
6262  034376  000422                          BR      52$
6263  034400                          46$:
6264  034400                                  ERRDF   15,EMG15,ERRG2  ;DATA ERROR
  (4) 034400  104455                                                                      TRAP    C$ERDF
  (5) 034402  000017                                                                      .WORD   15
  (5) 034404  020341                                                                      .WORD   EMG15
  (5) 034406  015070                                                                      .WORD   ERRG2
6265  034410  000415                          BR      52$
6266
6267                                    ; TRANSMIT OR RECEIVE CHECK DONE
6268
6269  034412                            50$:
6270  034412  042777  000213  145614          BIC     #RDO+RCV+CMD,@SEL2 ;CLEAR RDO, RCV & COMMMAND BITS (0,1)
6271  034420  005737  002560                  TST     RFLAG           ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1)
6272  034424  001002                          BNE     51$             ;YES - SEE IF TRANSMIT DONE
6273  034426  000137  034110                  JMP     20$             ;NO - GO BACK AND DO IT.
6274  034432                            51$:
6275  034432  005737  002510                  TST     TFLAG           ;IS THE TRANSMIT DONE ?
6276  034436  001002                          BNE     52$             ;YES - BR TO SHUTDOWN
6277  034440  000137  034110                  JMP     20$             ;NO - DO IT
6278  034444                            52$:
6279  034444                                  SHUTDN                  ;SHUTDOWN DMR
  (1)                                                                   ;**** MACRO EXPANSION ****
  (1) 034444  004737  012560                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                                                   ;****                   ****
6280
6281  034450                                  CALL    $ERROR          ;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS
6282
6283  034454                          ENDTST
  (3) 034454                                                                      L10073:
  (3) 034454  104401                                                                      TRAP    C$ETST
6284
6285
6286
6287
6288
6289
6290                                    .SBTTL          TEST 14 - EXTENDED ADDRESSING DATA TEST
6291
6292                                    ;*****************************************************************************
6293                                    ;*              TEST  14 - DMR-11
6294                                    ;* IN THIS TEST - SEE IF WE HAVE MEMORY MANAGEMENT, IF SO SEE IF WE
6295                                    ;* HAVE THE MEMORY TO CHECK BITS 16 & 17 IN SEL6.  THIS WILL ALLOW
```

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                                          ;* US TO TRANSFER DATA USING THOSE EXTENDED ADDRESSING BITS. AS IN
                                          ;* TEST 13 THE TEST IS NON-INTERRUPT AND INTERNAL (TTL) LOOPBACK IS
                                          ;* USED.
                                          ;*
                                          ;*******************************************************************
     034456                               BGNTST
(3)  034456                                                                       T14::
                                                .ENABL  LSB               ;ENABLE LOCAL BLOCK - NEEDED BECAUSE OF
                                                                          ;USE  OF SYMBOLIC LABELS 'RSEL4'' ETC.
     034456                                     SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP VECTOR 4
(7)  034456  012746  000340                                                                 MOV     #PRI07,-(SP)
(6)  034462  012746  023512                                                                 MOV     #NOXMEM,-(SP)
(5)  034466  012746  000004                                                                 MOV     #4,-(SP)
(4)  034472  012746  000003                                                                 MOV     #3,-(SP)
(3)  034476  104437                                                                         TRAP    C$SVEC
(2)  034500  062706  000010                                                                 ADD     #10,SP
     034504  005037  002340                     CLR     FLAG              ;CLEAR FLAG - SET IF TRAP TO 4.
     034510  005737  177572                     TST     @#177572          ;ADDRESS MEMORY MANAGEMENT REGISTER.
     034514                                     CLRVEC  #4                ;RESTORE TRAP VECTOR 4.
(3)  034514  012700  000004                                                                 MOV     #4,R0
(3)  034520  104436                                                                         TRAP    C$CVEC
     034522  005737  002340                     TST     FLAG              ;IS THE FLAG STILL CLEARED?
                                                                          ;NOTE: THE FLAG WILL BE SET BY TRAP 4
                                                                          ;IF THERE IS NO MEMORY MANAGEMENT.
     034526  001404                             BEQ     10$               ;IF FLAG IS CLEARED, PROCEED WITH TEST.
     034530  005037  002340                     CLR     FLAG              ;RESTORE FLAG
     034534  000137  036044                     JMP     85$               ;EXIT - CAN'T TEST WITHOUT MEM. MANAG.
     034540                               10$:
                                                                          ;NOTE: L$HIMEM IS SIZE OF TOTAL MEMORY IN
                                                                          ;PAGE ADDRESS REGISTER FORM - DETERMINED BY
                                                                          ;BY DIAGNOSTIC SUPERVISOR AT STARTUP.
     034540  023727  002120  002200             CMP     L$HIMEM,#2200     ;DO WE HAVE ENOUGH MEMORY TO ADDRESS BIT 16?
     034546  002002                             BGE     15$               ;IF YES - PROCEED WITH TEST
     034550  000137  036044                     JMP     85$               ;IF NOT - EXIT
     034554                               15$:
     034554                                     SETPRI  #PRI07            ;MAKE SURE WE ARE IN KERNEL MODE.
(3)  034554  012700  000340                                                                 MOV     #PRI07,R0
(3)  034560  104441                                                                         TRAP    C$SPRI
                                                                          ;SETTING PRI SHOULD ALSO CLEAR BITS 14 &15
                                                                          ;IN PSW WHICH PLACES PROCESSOR IN KERNEL MODE.
     034562  012701  172300                     MOV     #172300,R1        ;GET ADDRESS OF KERNEL PDR  REG 0
     034566  012700  000010                     MOV     #8.,R0            ;GOING TO WRITE PDR REG 0-7
     034572                               20$:
     034572  012721  077406                     MOV     #77406,(R1)+      ;WRITE BITS FOR THE FOLLOWING PAGE DESCRIPTION
                                                                          ;READ/WRITE ACCESS, 128. BLOCK PAGE LENGTH.
     034576  005300                             DEC     R0                ;WRITE ALL PDRS
     034600  001374                             BNE     20$
     034602  012701  172340                     MOV     #172340,R1        ;GET ADDRESS OF KERNAL PAR 0
     034606  005011                             CLR     (R1)              ;PAR 0, ADDRS      0   -  17776
     034610  012761  000200  000002             MOV     #200,2(R1)        ;PAR 1, ADDRS  20000   -  37776
     034616  012761  000400  000004             MOV     #400,4(R1)        ;PAR 2, ADDRS  40000   -  57776
     034624  012761  000600  000006             MOV     #600,6(R1)        ;PAR 3, ADDRS  60000   -  77776
     034632  012761  001000  000010             MOV     #1000,10(R1)      ;PAR 4, ADDRS 100000   - 117776
     034640  012761  002000  000012             MOV     #2000,12(R1)      ;PAR 5, ADDRS 200000   - 217776
     034646  012761  004000  000014             MOV     #4000,14(R1)      ;PAR 6, ADDRS 400000   - 417776
     034654  012761  007600  000016             MOV     #7600,16(R1)      ;PAR 7, ADDRS 160000   - 177776 (I/O PAGE)
```

TEST 14 - EXTENDED ADDRESSING DATA TEST SEQ 0142

```
6341
6342  034662  012703  000100                MOV     #64.,R3         ;COUNTER FOR OUTER LOOP OF TEST PATTERN GEN.
6343  034666  012704  120000                MOV     #120000,R4      ;USE VIRTUAL ADDRESS TO MAP TO PAR 5
6344                                                                  ;GENERATE A TEST PATTERN IN THE 1ST 4K
6345                                                                  ;BYTES OF PAR 5 (VIRTUAL ADDR 120000 - 127776)
6346  034672  005037  002340                CLR     FLAG            ;ENSURE FLAG IS CLEARED
6347  034676                                SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP VECTOR 4 (WILL SET FLAG)
  (7) 034676  012746  000340                                                      MOV     #PRI07,-(SP)
  (6) 034702  012746  023512                                                      MOV     #NOXMEM,-(SP)
  (5) 034706  012746  000004                                                      MOV     #4,-(SP)
  (4) 034712  012746  000003                                                      MOV     #3,-(SP)
  (3) 034716  104437                                                              TRAP    C$SVEC
  (2) 034720  062706  000010                                                      ADD     #10,SP
6348  034724  012737  000001  177572        MOV     #1,@#177572     ;ENABLE MEMORY MANAGEMENT
6349  034732                          30$:
6350  034732  012701  000040                MOV     #32.,R1         ;COUNTER FOR INNER LOOP OF TEST PATTERN GEN.
6351  034736  012702  002410                MOV     #$CCITT,R2      ;ADDRESS FOR 32. WORD TEST PATTERN
6352  034742                          31$:
6353  034742  012224                        MOV     (R2)+,(R4)+     ;WRITE TEST PATTERN INTO 4K BYTES
6354                                                                  ;(PHYSICAL ADDRESS 200000 - 207776)
6355  034744  005737  002340                TST     FLAG            ;NXM TRAP 4?
6356  034750  001014                        BNE     33$             ;IF YES - EXIT
6357  034752  005301                        DEC     R1              ;DO THE INNER LOOP 32. TIMES
6358  034754  001372                        BNE     31$
6359  034756  005303                        DEC     R3              ;DO THE OUTER LOOP 128. TIMES
6360  034760  001364                        BNE     30$
6361  034762  012701  004000                MOV     #4000,R1        ;COUNTER TO CLEAR THE NEXT 4K BYTES.
6362  034766                          32$:
6363  034766  005024                        CLR     (R4)+           ;CLEAR OUT THE ENTIRE PAR
6364                                                                  ;(PHYSICAL ADDRESS 210000 - 217776)
6365  034770  005737  002340                TST     FLAG            ;NXM TRAP 4?
6366  034774  001002                        BNE     33$             ;IF YES - EXIT
6367  034776  005301                        DEC     R1
6368  035000  001372                        BNE     32$
6369  035002                          33$:
6370  035002  005037  177572                CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
6371  035006                                CLRVEC  #4              ;RESTORE TRAP 4 TO SUPERVISOR
  (3) 035006  012700  000004                                                      MOV     #4,R0
  (3) 035012  104436                                                              TRAP    C$CVEC
6372  035014  005737  002340                TST     FLAG            ;WAS THIS AN ERROR EXIT
6373  035020  001417                        BEQ     34$             ;IF NOT, PROCEED.
6374  035022                                ERRDF   19,EMT22
  (4) 035022  104455                                                              TRAP    C$ERDF
  (5) 035024  000023                                                              .WORD   19
  (5) 035026  036046                                                              .WORD   EMT22
  (5) 035030  000000                                                              .WORD   0
6375  035032                                PRINTB  #FMT25,R4
  (8) 035032  010446                                                              MOV     R4,-(SP)
  (7) 035034  012746  036104                                                      MOV     #FMT25,-(SP)
  (6) 035040  012746  000002                                                      MOV     #2,-(SP)
  (3) 035044  010600                                                              MOV     SP,R0
  (4) 035046  104414                                                              TRAP    C$PNTB
  (4) 035050  062706  000006                                                      ADD     #6,SP
6376  035054  000137  036044                JMP     85$
6377  035060                          34$:
6378  035060                                CLEAR                   ;MACRO FOR MASTER CLEAR
```

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  (1)
  (1)  035060  004737  011064                 JSR     PC, $MSCLR      ;**** MACRO EXPANSION ****
  (1)                                                                  ;ISSUE A DMR MASTER CLEAR
  (1)                                                                  ;****                    ****
6379
6380  035064                                 ESCAPE  TST              ;IF ERROR, BR TO TEST END.
  (3)  035064  104410                                                                 TRAP    C$ESCAPE
  (3)  035066  000756                                                                 .WORD   L10074-.
6381  035070                                 BASEIN                   ;MACRO FOR BASE IN COMMAND
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  035070  004737  011262                 JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
  (1)  035074  004000                         .WORD   LPLU            ;SET LINE UNIT LOOP
  (1)  035076  002630                         .WORD   BASE            ;BASE TABLE ADDRESS
  (1)  035100  000522                         .WORD   DMR             ;DMR-11 MODE
  (1)                                                                  ;****                    ****
6382
6383  035102                                 ESCAPE  TST              ;IF ERROR, BR TO TEST END.
  (3)  035102  104410                                                                 TRAP    C$ESCAPE
  (3)  035104  000740                                                                 .WORD   L10074-.
6384  035106                                 CNTRIN                   ;MACRO FOR CONTROL IN (FULL DUPLEX)
  (1)                                                                  ;**** MACRO EXPANSION ****
  (1)  035106  004737  011516                 JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
  (1)  035112  000000                         .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
  (1)                                                                  ;****                    ****
6385  035114                                 ESCAPE  TST              ;IF ERROR, BR TO TEST END.
  (3)  035114  104410                                                                 TRAP    C$ESCAPE
  (3)  035116  000726                                                                 .WORD   L10074-.
6386
6387  035120  005037  002510                 CLR     TFLAG           ;CLEAR TRANSMIT FLAG
6388  035124  005037  002560                 CLR     RFLAG           ;CLEAR RECEIVE FLAG
6389  035130  005037  002342                 CLR     SFLAG           ;CLEAR SECOND LOOP FLAG
6390                                                                  ;IF SFLAG = 0, THEN THIS IS A TEST OF BIT 16
6391                                                                  ;IF SFLAG = -1, THEN THIS IS A TEST OF BIT 17
6392  035134  012737  010000  035170         MOV     #10000,RSEL4    ;RECEIVE BUFFER ADDRESS (BITS 0-15)
6393  035142  012737  050000  035172         MOV     #BIT14!10000,RSEL6 ;REC BUFFER ADDR BIT 16 SET AND 4K
6394                                                                  ;BYTE RECEIVE CHARACTER COUNT
6395  035150  005037  035206                 CLR     TSEL4           ;TRANSMIT BUFFER ADDRESS (BITS 0-15)
6396  035154  012737  050000  035210         MOV     #BIT14!10000,TSEL6 ;XMIT BUFFER ADDR BIT 16 SET AND 4K
6397                                                                  ;BYTE XMIT CHARACTER COUNT
6398  035162                         35$:
6399  035162                                 CALL    $BACC           ;ISSUE THE BUFFER ADDR/ CHAR COUNT COMMAND
6400  035166  000044                         .WORD   RQI!BACCR       ;COMMAND FOR BA/CC IN RECEIVE
6401  035170  000000                 RSEL4:  .WORD   0               ;BUFFER ADDRESS BITS 0-15
6402  035172  000000                 RSEL6:  .WORD   0               ;BUFFER ADDR BIT 16 + CHAR. COUNT
6403  035174                                 ESCAPE  TST              ;IF ERROR, END TEST
  (3)  035174  104410                                                                 TRAP    C$ESCAPE
  (3)  035176  000646                                                                 .WORD   L10074-.
6404
6405  035200                                 CALL    $BACC           ;ISSUE THE BUFFER ADDR/ CHAR COUNT COMMAND
6406  035204  000040                         .WORD   RQI!BACCT       ;COMMAND FOR BA/CC IN TRANSMIT
6407  035206  000000                 TSEL4:  .WORD   0               ;BUFFER ADDRESS BITS 0-15
6408  035210  000000                 TSEL6:  .WORD   0               ;BUFFER ADDR BIT 16 + CHAR. COUNT
6409  035212                                 ESCAPE  TST              ;IF ERROR, END TEST
  (3)  035212  104410                                                                 TRAP    C$ESCAPE
  (3)  035214  000630                                                                 .WORD   L10074-.
6410  035216                         40$:
6411  035216                                 WAIT    RDO             ;WAIT FOR RDO TO BE SET
```

```
  (1)
  (1)  035216  004737  010266                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
  (1)  035222  000001                        .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
  (1)                                        ;****                   ****
 6412  035224                        ESCAPE  TST                     ;IF RDO NOT SET BEFORE TIMEOUT, END TEST
  (3)  035224  104410                                                                TRAP    C$ESCAPE
  (3)  035226  000616                                                                .WORD   L10074-.
 6413
 6414  035230  032777  000001  144776        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT COMMAND?
 6415  035236  001406                        BEQ     50$             ;NO - PROCEED
 6416  035240                                ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT.
  (4)  035240  104455                                                                TRAP    C$ERDF
  (5)  035242  000011                                                                .WORD   9
  (5)  035244  020136                                                                .WORD   EMG9
  (5)  035246  015070                                                                .WORD   ERRG2
 6417  035250  000137  036034                JMP     80$             ;EXIT
 6418  035254                        50$:
 6419  035254  032777  000004  144752        BIT     #RCV,@SEL2      ;IS THIS A TRANSMIT OR RECEIVE?
 6420  035262  001040                        BNE     60$             ;BR FOR RECEIVE
 6421  035264  005737  002510                TST     TFLAG           ;IS THIS THE 1ST TRANSMIT DONE
 6422  035270  001406                        BEQ     55$             ;IF YES, PROCEED
 6423  035272                                ERRDF   10,EMG10,ERRG2  ;MULTIPLE TRANSMITS
  (4)  035272  104455                                                                TRAP    C$ERDF
  (5)  035274  000012                                                                .WORD   10
  (5)  035276  020165                                                                .WORD   EMG10
  (5)  035300  015070                                                                .WORD   ERRG2
 6424  035302  000137  036034                JMP     80$             ;EXIT
 6425  035306                        55$:
 6426  035306  012737  177777  002510        MOV     #-1,TFLAG       ;FLAG THAT THE TRANSMIT IS DONE.
 6427  035314  023777  035206  144714        CMP     TSEL4,@SEL4     ;IS THE BUFFER ADDRESS CORRECT?
 6428  035322  001406                        BEQ     56$             ;IF OK, PROCEED WITH CHECK.
 6429  035324                                ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
  (4)  035324  104455                                                                TRAP    C$ERDF
  (5)  035326  000013                                                                .WORD   11
  (5)  035330  020214                                                                .WORD   EMG11
  (5)  035332  015070                                                                .WORD   ERRG2
 6430  035334  000137  036034                JMP     80$             ;EXIT
 6431  035340                        56$:
 6432  035340  023777  035210  144672        CMP     TSEL6,@SEL6     ;IS THE CHAR. COUNT CORRECT?
 6433  035346  001502                        BEQ     70$             ;IF OK, PROCEED
 6434  035350                                ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR - OR EXT MEM PROBLEM
  (4)  035350  104455                                                                TRAP    C$ERDF
  (5)  035352  000014                                                                .WORD   12
  (5)  035354  020241                                                                .WORD   EMG12
  (5)  035356  015070                                                                .WORD   ERRG2
 6435  035360  000137  036034                JMP     80$             ;EXIT
 6436  035364                        60$:
 6437  035364  005737  002560                TST     RFLAG           ;IS THIS THE 1ST RECEIVE DONE
 6438  035370  001406                        BEQ     61$             ;IF YES, PROCEED
 6439  035372                                ERRDF   13,EMG13,ERRG2  ;MULTIPLE RECEIVES
  (4)  035372  104455                                                                TRAP    C$ERDF
  (5)  035374  000015                                                                .WORD   13
  (5)  035376  020267                                                                .WORD   EMG13
  (5)  035400  015070                                                                .WORD   ERRG2
 6440  035402  000137  036034                JMP     80$             ;EXIT
 6441  035406                        61$:
```

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 6442  035406  012737  177777  002560          MOV     #-1,RFLAG       ;FLAG THAT THE RECEIVE IS DONE.
 6443  035414  023777  035170  144614          CMP     RSEL4,@SEL4     ;IS THE BUFFER ADDRESS CORRECT?
 6444  035422  001405                          BEQ     62$             ;IF OK, PROCEED WITH CHECK.
 6445  035424                                  ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
   (4) 035424  104455                                                          TRAP    C$ERDF
   (5) 035426  000013                                                          .WORD   11
   (5) 035430  020214                                                          .WORD   EMG11
   (5) 035432  015070                                                          .WORD   ERRG2
 6446  035434  000577                          BR      80$             ;EXIT
 6447  035436                          62$:
 6448  035436  023777  035172  144574          CMP     RSEL6,@SEL6     ;IS THE CHAR. COUNT CORRECT?
 6449  035444  001404                          BEQ     63$             ;IF OK, PROCEED
 6450  035446                                  ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR
   (4) 035446  104455                                                          TRAP    C$ERDF
   (5) 035450  000014                                                          .WORD   12
   (5) 035452  020241                                                          .WORD   EMG12
   (5) 035454  015070                                                          .WORD   ERRG2
 6451  035456                          63$:
 6452  035456  005737  002342                  TST     SFLAG           ;WHICH EXTENDED ADDRESS ARE WE CHECKING?
 6453  035462  001007                          BNE     65$             ;BR FOR BIT 17 CHECK
 6454  035464  012700  004000                  MOV     #4000,R0        ;IN THE TEST OF BIT 16 WE SENT 4K BYTES
 6455  035470  012701  120000                  MOV     #120000,R1      ;THE XMIT BUFFER BEGAN AT THIS VIRTUAL ADDR
 6456                                                                  ;WHICH WILL MAP TO 200000
 6457  035474  012702  130000                  MOV     #130000,R2      ;THE REC BUF. MAPS TO 210000
 6458  035500  000406                          BR      66$             ;GO COMPARE THE XMIT AND REC BUFFERS
 6459  035502                          65$:
 6460  035502  012700  010000                  MOV     #10000,R0       ;IN THE TEST OF BIT 17 WE SENT 8K BYTES
 6461  035506  012701  120000                  MOV     #120000,R1      ;THE XMIT BUFFER MAPS TO 200000
 6462  035512  012702  140000                  MOV     #140000,R2      ;THE REC BUF. MAPS TO 400000
 6463  035516                          66$:
 6464  035516  012737  000001  177572          MOV     #1,@#177572     ;TURN MEMORY MANAGEMENT BACK ON.
 6465  035524                          67$:
 6466  035524  022122                  CMP     (R1)+,(R2)+     ;IS THE DATA THE SAME?
 6467  035526  001003                  BNE     68$             ;IF NOT THERE IS A DATA ERROR.
 6468  035530  005300                  DEC     R0              ;CHECK ENTIRE BUFFER
 6469  035532  001374                  BNE     67$
 6470  035534  000407                  BR      70$             ;IF DATA OK, PROCEED WITH TEST.
 6471  035536                          68$:
 6472  035536  005037  177572          CLR     @#177572        ;TURN MEMORY MANAGEMENT OFF.
 6473  035542                          ERRDF   15,EMG15,ERRG2  ;DATA ERROR
   (4) 035542  104455                                                          TRAP    C$ERDF
   (5) 035544  000017                                                          .WORD   15
   (5) 035546  020341                                                          .WORD   EMG15
   (5) 035550  015070                                                          .WORD   ERRG2
 6474  035552  000530                          BR      80$             ;EXIT
 6475  035554                          70$:
 6476  035554  005037  177572          CLR     @#177572        ;TURN MEMORY MANAGEMENT OFF.
 6477  035560  042777  000213  144446          BIC     #RDO+RCV+CMD,@SEL2 ;CLEAR RDO, RCV & COMMMAND BITS (0,1)
 6478  035566  005737  002560                  TST     RFLAG           ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1)
 6479  035572  001002                          BNE     71$             ;YES - SEE IF TRANSMIT DONE
 6480  035574  000137  035216                  JMP     40$             ;NO - GO BACK AND DO IT.
 6481  035600                          71$:
 6482  035600  005737  002510                  TST     TFLAG           ;IS THE TRANSMIT DONE ?
 6483  035604  001002                          BNE     72$             ;YES - SEE IF THERE IS MORE
 6484  035606  000137  035216                  JMP     40$             ;NO - DO IT
 6485  035612                          72$:
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 6486  035612  005737  002342          TST     SFLAG           ;HAVE WE ALREADY TESTED BIT 17
 6487  035616  001106                  BNE     80$             ;IF SO - END OF TEST
 6488
 6489  035620  012737  177777  002342  MOV     #-1,SFLAG       ;FLAG SO WE DON'T COME THIS WAY AGAIN.
 6490  035626  023727  002120  004200  CMP     L$HIMEM,#4200   ;IS THERE ENOUGH MEMORY TO TEST BIT 17?
 6491  035634  002477                  BLT     80$             ;IF NOT - END OF TEST.
 6492  035636  005037  002510          CLR     TFLAG           ;CLEAR FLAGS FOR NEXT TEST
 6493  035642  005037  002560          CLR     RFLAG
 6494                                  ;
 6495                                  ;SET UP TO TEST BIT 17, IF THERE IS ENOUGH MEMORY.
 6496                                  ;THIS TEST WILL TRANSMIT 8K BYTES STARTING AT PHYSICAL ADDRESS 200000
 6497                                  ;TO PHYSICAL ADDRESS 400000.  THE TRANSMITTED BUFFER STILL CONTAINS
 6498                                  ;THE TEST PATTERN GENERATED IN THE BIT 16 TEST.
 6499                                  ;
 6500  035646  005037  035170          CLR     RSEL4           ;RECEIVE BUFFER ADDRESS (BITS 0-15)
 6501  035652  012737  120000  035172  MOV     #BIT15!20000,RSEL6 ;REC BUFFER ADDR BIT 17 SET AND 8K
 6502                                                          ;BYTE RECEIVE CHARACTER COUNT
 6503  035660  005037  035206          CLR     TSEL4           ;TRANSMIT BUFFER ADDRESS (BITS 0-15)
 6504  035664  012737  060000  035210  MOV     #BIT14!20000,TSEL6 ;XMIT BUFFER ADDR BIT 16 SET AND 8K
 6505                                                          ;BYTE XMIT CHARACTER COUNT
 6506  035672  012701  010000          MOV     #10000,R1       ;COUNTER TO CLEAR 8K BYTES
 6507  035676  012704  140000          MOV     #140000,R4      ;VIRTUAL ADDRESS THAT WILL MAP INTO PAR 6
 6508                                                          ;WITH THE PHYSICAL ADDRESS 400000
 6509  035702  005037  002340          CLR     FLAG            ;ENSURE FLAG IS CLEAR
 6510  035706                          SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP TO VECTOR 4 (WILL SET FLAG)
   (7) 035706  012746  000340                                                  MOV     #PRI07,-(SP)
   (6) 035712  012746  023512                                                  MOV     #NOXMEM,-(SP)
   (5) 035716  012746  000004                                                  MOV     #4,-(SP)
   (4) 035722  012746  000003                                                  MOV     #3,-(SP)
   (3) 035726  104437                                                          TRAP    C$SVEC
   (2) 035730  062706  000010                                                  ADD     #10,SP
 6511  035734  012737  000001  177572  MOV     #1,@#177572     ;TURN ON MEMORY MANAGEMENT
 6512  035742                  74$:
 6513  035742  005024          CLR     (R4)+           ;CLEAR 400000 - 417776
 6514  035744  005737  002340  TST     FLAG            ;DOES A NXM TRAP 4 OCCUR?
 6515  035750  001002          BNE     75$             ;IF YES, EXIT
 6516  035752  005300          DEC     R0
 6517  035754  001372          BNE     74$
 6518  035756                  75$:
 6519  035756  005037  177572  CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
 6520  035762                  CLRVEC  #4              ;RESTORE TRAP 4
   (3) 035762  012700  000004                                                  MOV     #4,R0
   (3) 035766  104436                                                          TRAP    C$CVEC
 6521  035770  005737  002340          TST     FLAG            ;WAS THIS AN ERROR EXIT?
 6522  035774  001002          BNE     76$             ;IF YES - REPORT ERROR
 6523  035776  000137  035162          JMP     35$             ;START THE SECOND TEST
 6524  036002                  76$:
 6525  036002                  ERRDF   19,EMT22
   (4) 036002  104455                                                          TRAP    C$ERDF
   (5) 036004  000023                                                          .WORD   19
   (5) 036006  036046                                                          .WORD   EMT22
   (5) 036010  000000                                                          .WORD   0
 6526  036012                  PRINTB  #FMT25,R4
   (8) 036012  010446                                                          MOV     R4,-(SP)
   (7) 036014  012746  036104                                                  MOV     #FMT25,-(SP)
   (6) 036020  012746  000002                                                  MOV     #2,-(SP)
```

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  (3)  036024  010600                                                                  MOV     SP,R0
  (4)  036026  104414                                                                  TRAP    C$PNTB
  (4)  036030  062706  000006                                                          ADD     #6,SP
6527   036034                          80$:
6528   036034                                  SHUTDN                  ;SHUTDOWN DMR
  (1)                                                                   ;**** MACRO EXPANSION ****
  (1)  036034  004737  012560                    JSR     PC, $HALT       ;DMR HALT ROUTINE.
  (1)                                                                   ;****                ****
6529   036040                                  CALL    $ERROR          ;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS
6530
6531   036044                          85$:
6532                                           .DSABL  LSB             ;DISABLE LOCAL SYMBOL BLOCK
6533   036044                          ENDTST
  (3)  036044                                                                                  L10074:
  (3)  036044  104401                                                                  TRAP    C$ETST
6534
6535
6536   036046  040503  023516  020124  EMT22:  .ASCIZ  /CAN'T ADDRESS EXTENDED MEMORY/
       036054  042101  051104  051505
       036062  020123  054105  042524
       036070  042116  042105  046440
       036076  046505  051117  000131
6537   036104  040445  042515  047515  FMT25:  .ASCIZ  /%AMEMORY ADDRESS %06% DOES NOT RESPOND - TRAP 4%N/
       036112  054522  040440  042104
       036120  042522  051523  022440
       036126  033117  020045  047504
       036134  051505  047040  052117
       036142  051040  051505  047520
       036150  042116  026440  052040
       036156  040522  020120  022464
       036164  000116
6538                                           .EVEN
6539
6540
6541
6542
6543                                    .SBTTL          TEST 15 - DMC MODE (RESUME) INTERRUPT TEST
6544
6545                                    ;*******************************************************************************
6546                                    ;*              TEST 15 - DMR-11
6547                                    ;* RESUME BASE IN - DMC MODE
6548                                    ;* **  WILL NOT RUN IF MODEM LOOPBACK IS SELECTED  **
6549                                    ;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
6550                                    ;* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
6551                                    ;* FOLLOWING MANNER:
6552                                    ;*      BASE IN
6553                                    ;*      CONTROL IN
6554                                    ;*      HALT    -       BASE IN RESUME
6555                                    ;*      2 BA/CC IN RECEIVE
6556                                    ;*      HALT    -       BASE IN RESUME
6557                                    ;*      2 BA/CC IN RECEIVE
6558                                    ;*      HALT    -       BASE IN RESUME
6559                                    ;*      2 BA/CC IN RECEIVE
6560                                    ;*      HALT    -       BASE IN RESUME
6561                                    ;*      1 BA/CC IN RECEIVE
6562                                    ;*      HALT    -       BASE IN RESUME
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                        ;*      2 BA/CC IN TRANSMIT
                        ;*      HALT    -       BASE IN RESUME
                        ;*      2 BA/CC IN TRANSMIT
                        ;*      HALT    -       BASE IN RESUME
                        ;*      2 BA/CC IN TRANSMIT
                        ;*      HALT    -       BASE IN RESUME
                        ;*      1 BA/CC IN TRANSMIT
                        ;*      HALT    -       BASE IN RESUME
                        ;*
                        ;*      ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
                        ;*      THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
                        ;*      THE RECEIVE/TRANSMIT TABLE.
                        ;*
                        ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
                        ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
                        ;*      SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
                        ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
                        ;*      HIERARCHY:
                        ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
                        ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
                        ;*                 THAN 2K BYTES, USE THAT MEMORY
                        ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
                        ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
                        ;*
                        ;*****************************************************************************
036166                  BGNTST
(3) 036166                                                                      T15::
036166  005737  002306          TST     WMAINT          ;DO WE NEED TO WRITE MODEM
                                                        ;MAINTENACE 1 OR 2?
036172  001036          BNE     40$             ;IF YES WE CAN'T RUN THIS TEST
                                                        ;(NOTE: CAN'T WRITE MODEM IN DMC MODE)
036174  012737  000007  002322  MOV     #7,BUFNUM       ;# OF RCV & XMIT BUFFERS.
036202  012737  000001  002274  MOV     #1,RESUME       ;FLAG SET TO REQUEST USE OF RESUME.
036210  012737  000001  002276  MOV     #1,DMCMDE       ;FLAG SET TO REQUEST DMC MODE.
036216  005037  002300          CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.

036222                          CALL    $BUFFS          ;DETERMINE 7 RCV &  7 XMIT BUFFERS

036226                          CLEAR                   ;MASTER CLEAR
(1)                                                     ;**** MACRO EXPANSION ****
(1) 036226  004737  011064      JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
(1)                                                     ;****                   ****

036232                  ESCAPE  TST                     ;IF ERROR, EXIT TEST
(3) 036232  104410                                                      TRAP    C$ESCAPE
(3) 036234  000034                                                      .WORD   L10075-.

                                                        ;ISSUE A DMR MODE BASEIN
                                                        ;IN DMR MODE, IF A INTERFACE IS REQUIRED
036236                  BASEIN                          ;TO BE WRITTEN - IT WILL BE DONE.
(1)                                                     ;**** MACRO EXPANSION ****
(1) 036236  004737  011262      JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
(1) 036242  004000                      .WORD   LPLU    ;SET LINE UNIT LOOP
(1) 036244  002630                      .WORD   BASE    ;BASE TABLE ADDRESS
(1) 036246  000522                      .WORD   DMR     ;DMR-11 MODE
(1)                                                     ;****                   ****
```

```
6607
6608  036250                                    ESCAPE  TST             ;IF ERROR, EXIT TEST
 (3)  036250  104410                                                                  TRAP    C$ESCAPE
 (3)  036252  000016                                                                  .WORD   L10075-.
6609  036254                                    SHUTDN                  ;HALT
 (1)                                                                    ;**** MACRO EXPANSION ****
 (1)  036254  004737  012560                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
 (1)                                                                    ;****                 ****
6610  036260                                    ESCAPE  TST             ;IF ERROR, EXIT TEST.
 (3)  036260  104410                                                                  TRAP    C$ESCAPE
 (3)  036262  000006                                                                  .WORD   L10075-.
6611                                                                    ;AFTER SETTING INTERFACE OR LOOPBACK MAINT.
6612                                                                    ;(CAN'T BE DONE IN DMC MODE), START IN
6613                                                                    ;DMC MODE.
6614
6615
6616  036264                                    CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
6617                                                                    ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
6618                                                                    ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
6619                                                                    ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
6620                                                                    ;ROUTINE WILL ALSO CHECK THAT BUFFER
6621                                                                    ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
6622                                                                    ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
6623
6624  036270                                40$:
6625  036270                                ENDTST
 (3)  036270                                                                  L10075:
 (3)  036270  104401                                                                  TRAP    C$ETST
6626
6627
6628
6629
6630
6631
6632                                        .SBTTL          TEST 16 - DMR MODE (RESUME) INTERRUPT TEST
6633
6634                                        ;*************************************************************************
6635                                        ;*              TEST 16 - DMR-11
6636                                        ;* RESUME BASE IN - DMR MODE
6637                                        ;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
6638                                        ;* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
6639                                        ;* FOLLOWING MANNER:
6640                                        ;*      BASE IN
6641                                        ;*      CONTROL IN
6642                                        ;*      HALT    -       BASE IN RESUME
6643                                        ;*      2 BA/CC IN RECEIVE
6644                                        ;*      HALT    -       BASE IN RESUME
6645                                        ;*      2 BA/CC IN RECEIVE
6646                                        ;*      HALT    -       BASE IN RESUME
6647                                        ;*      2 BA/CC IN RECEIVE
6648                                        ;*      HALT    -       BASE IN RESUME
6649                                        ;*      1 BA/CC IN RECEIVE
6650                                        ;*      HALT    -       BASE IN RESUME
6651                                        ;*      2 BA/CC IN TRANSMIT
6652                                        ;*      HALT    -       BASE IN RESUME
6653                                        ;*      2 BA/CC IN TRANSMIT
```

```
                                ;*      HALT    -       BASE IN RESUME
                                ;*      2 BA/CC IN TRANSMIT
                                ;*      HALT    -       BASE IN RESUME
                                ;*      1 BA/CC IN TRANSMIT
                                ;*      HALT    -       BASE IN RESUME
                                ;*
                                ;*      ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
                                ;*      THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
                                ;*      THE RECEIVE/TRANSMIT TABLE.
                                ;*
                                ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
                                ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
                                ;*      SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
                                ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
                                ;*      HIERARCHY:
                                ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
                                ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
                                ;*                 THAN 2K BYTES, USE THAT MEMORY
                                ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
                                ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
                                ;*
                                ;*
                                ;*****************************************************************************
036272                          BGNTST
(3) 036272                                                                      T16::
036272  012737  000007 ,002322          MOV     #7,BUFNUM       ;# OF RCV & XMIT BUFFERS.
036300  012737  000001  002274          MOV     #1,RESUME       ;FLAG SET TO REQUEST USE OF RESUME.
036306  005037  002276                  CLR     DMCMDE          ;FLAG CLEARED - DMR MODE.
036312  005037  002300                  CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.

036316                                  CALL    $BUFFS          ;DETERMINE 7 RCV &  7 XMIT BUFFERS

036322                                  CLEAR                   ;MASTER CLEAR
(1)                                                             ;**** MACRO EXPANSION ****
(1) 036322  004737  011064              JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
(1)                                                             ;****                    ****

036326                                  ESCAPE  TST             ;IF ERROR, EXIT TEST
(3) 036326  104410                                                      TRAP    C$ESCAPE
(3) 036330  000006                                                      .WORD   L10076-.

036332                                  CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
                                                                ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
                                                                ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
                                                                ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
                                                                ;ROUTINE WILL ALSO CHECK THAT BUFFER
                                                                ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
                                                                ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS

036336                          ENDTST
(3) 036336                                                              L10076:
(3) 036336  104401                                                      RAP     C$ETST
```

```
                                        .SBTTL          TEST 17 - DMR MODE INTERRUPT EXERCISE

                                        ;*************************************************************************
                                        ;*              TEST 17 - DMR-11
                                        ;* INTERRUPT DRIVEN EXERCISE
                                        ;* IN THIS TEST 64 BUFFERS WILL BE TRANSMITTED AND RECEIVED
                                        ;*
                                        ;* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
                                        ;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
                                        ;* THE RECEIVE/TRANSMIT TABLE.
                                        ;*
                                        ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
                                        ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
                                        ;*      64 RECEIVE AND 64 TRANSMIT BUFFERS.  THE ROUTINE WILL
                                        ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
                                        ;*      HIERARCHY:
                                        ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
                                        ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
                                        ;*                 THAN 2K BYTES, USE THAT MEMORY
                                        ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
                                        ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
                                        ;*
                                        ;*************************************************************************
 6727  036340                           BGNTST
  (3)  036340                                                                                    T17::
 6728  036340  012737  000100  002322          MOV     #64.,BUFNUM     ;# OF RCV & XMIT BUFFERS.
 6729
 6730  036346  005037  002274                  CLR     RESUME          ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
 6731  036352  005037  002276                  CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
 6732  036356  005037  002300                  CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.
 6733
 6734  036362                                  CALL    $BUFFS          ;DETERMINE 64 RCV &  64 XMIT BUFFERS
 6735
 6736  036366                                  CLEAR                   ;MASTER CLEAR
  (1)                                                                   ;**** MACRO EXPANSION ****
  (1)  036366  004737  011064                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                                   ;****                    ****
 6737
 6738  036372                                  ESCAPE  TST             ;IF ERROR, EXIT TEST
  (3)  036372  104410                                                                    TRAP    C$ESCAPE
  (3)  036374  000012                                                                    .WORD   L10077-.
 6739
 6740  036376                                  CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
 6741                                                                   ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
 6742                                                                   ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
 6743                                                                   ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
 6744                                                                   ;ROUTINE WILL ALSO CHECK THAT BUFFER
 6745                                                                   ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
 6746                                                                   ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
 6747
 6748  036402                                  CALL    $ERROR          ;CHECK BASE TABLE FOR SOFT ERRORS
 6749
 6750
 6751  036406                           ENDTST
```

```
  (3)  036406                                                                    L10077:
  (3)  036406  104401                                                                    TRAP    C$ETST
6752
6753
6754
6755
6756                                .SBTTL          TEST 18 - DMR MODE LARGE MESSAGE
6757
6758                                ;*************************************************************************
6759                                ;*              TEST  18 - DMR-11
6760                                ;* LARGE MESSAGE
6761                                ;* IN THIS MODE TRANSMIT AND RECEIVE 1 LARGE BUFFER
6762                                ;*
6763                                ;* THE BA/CC OUT RECEIVE AND TRANSMIT WILL BE ACCOUNTED FOR AND
6764                                ;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
6765                                ;* THE RECEIVE/TRANSMIT TABLE.
6766                                ;*
6767                                ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
6768                                ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
6769                                ;*      ONE RECEIVE AND ONE TRANSMIT BUFFER.  THE ROUTINE WILL
6770                                ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
6771                                ;*      HIERARCHY:
6772                                ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
6773                                ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
6774                                ;*                 THAN 2K BYTES, USE THAT MEMORY
6775                                ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
6776                                ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
6777                                ;*
6778                                ;*************************************************************************
6779  036410                        BGNTST
  (3)  036410                                                                    T18::
6780
6781  036410  012737  000001  002322        MOV     #1,BUFNUM       ;# OF RCV & XMIT BUFFERS.
6782
6783  036416  005037  002274              CLR     RESUME          ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
6784  036422  005037  002276              CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
6785  036426  005037  002300              CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.
6786
6787  036432                              CALL    $BUFFS          ;DETERMINE 1 RCV &  1 XMIT BUFFER
6788
6789  036436                              CLEAR                   ;MASTER CLEAR
  (1)                                                           ;**** MACRO EXPANSION ****
  (1)  036436  004737  011064           JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
  (1)                                                           ;****                    ****
6790
6791  036442                              ESCAPE  TST             ;IF ERROR, EXIT TEST
  (3)  036442  104410                                                            TRAP    C$ESCAPE
  (3)  036444  000012                                                            .WORD   L10100-.
6792
6793  036446                              CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
6794                                                            ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
6795                                                            ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
6796                                                            ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
6797                                                            ;ROUTINE WILL ALSO CHECK THAT BUFFER
6798                                                            ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
6799                                                            ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
```

```
                                        CALL    $ERROR          ;CHECK BASE TABLE FOR SOFT ERRORS
                                                                ;NOTE: NORMALLY ANY NON-ZERO ERROR COUNT IS
                                                                ;REPORTED; HOWEVER IN THIS TEST A REP COUNT
                                                                ;OF 1 IS ALLOWED, BECAUSE AT LOW BAUD RATES
                                                                ;WE WOULD EXPECT 1 REP.


                                ENDTST
                                                                                L10100:
                                                                                        TRAP    C$ETST


                                .SBTTL          TEST 19 - DMR MAINTENANCE MODE MESSAGE

                                ;*******************************************************************************
                                ;*              TEST 19 - DMR-11
                                ;* MAINTENANCE MODE OPERATION
                                ;*
                                ;* THE BA/CC OUT RECEIVE AND TRANSMIT WILL BE ACCOUNTED FOR AND
                                ;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
                                ;* THE RECEIVE/TRANSMIT TABLE.
                                ;*
                                ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
                                ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
                                ;*      ONE RECEIVE AND ONE TRANSMIT BUFFER.  THE ROUTINE WILL
                                ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
                                ;*      HIERARCHY:
                                ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
                                ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
                                ;*                 THAN 2K BYTES, USE THAT MEMORY
                                ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE; USE
                                ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
                                ;*
                                ;*******************************************************************************
                                BGNTST
                                                                                T19::
                                        MOV     #1,BUFNUM       ;# OF RCV & XMIT BUFFERS.

                                        CLR     RESUME          ;DON'T ALLOW RESUME
                                        CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
                                        MOV     #1,MNTMDE       ;FLAG SET TO REQUEST MAINTENANCE MODE.

                                        CALL    $BUFFS          ;DETERMINE 1 RCV &  1 XMIT BUFFER

                                        CLEAR                   ;MASTER CLEAR
                                                                ;**** MACRO EXPANSION ****
                                        JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                ****

                                        ESCAPE  TST             ;IF ERROR, EXIT TEST
                                                                                TRAP    C$ESCAPE
                                                                                .WORD   L10101-.
```

```
 6848  036520                                  CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
 6849                                                                  ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
 6850                                                                  ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
 6851                                                                  ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
 6852                                                                  ;ROUTINE WILL ALSO CHECK THAT BUFFER
 6853                                                                  ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
 6854                                                                  ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
 6855
 6856  036524                                  CALL    $ERROR          ;CHECK BASE TABLE FOR SOFT ERRORS
 6857
 6858
 6859  036530                          ENDTST
  (3)  036530                                                                  L10101:
  (3)  036530  104401                                                                 TRAP    C$ETST
 6860
 6861
 6862
 6863
 6864
 6865
 6866                                   .SBTTL  HARDWARE PARAMETER CODING SECTION
 6867
 6868
 6869                                   ;*****************************************************************************
 6870                                   ;  THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
 6871                                   ;  THAT ARE USED BY THER SUPERVISOR TO BUILD P-TABLES.  THE
 6872                                   ;  MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 6873                                   ;  INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 6874                                   ;  MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 6875                                   ;  WITH THE OPERATOR.
 6876                                   ;*****************************************************************************
 6877
 6878  036532                                   BGNHRD
  (3)  036532  000015                                                                 .WORD L10102-L$HARD/2
  (3)  036534                                                                  L$HARD::
 6879
 6880  036534                                   GPRMA   P1,2,0,160000,177776,YES
  (4)  036534  001031                                                                 .WORD   T$CODE
  (4)  036536  036566                                                                 .WORD   P1
  (4)  036540  160000                                                                 .WORD   T$LOLIM
  (4)  036542  177776                                                                 .WORD   T$HILIM
 6881  036544                                   GPRMA   P2,4,0,0,776,YES
  (4)  036544  002031                                                                 .WORD   T$CODE
  (4)  036546  036604                                                                 .WORD   P2
  (4)  036550  000000                                                                 .WORD   T$LOLIM
  (4)  036552  000776                                                                 .WORD   T$HILIM
 6882  036554                                   GPRMD   P3,20,0,7,0,7,YES
  (4)  036554  010032                                                                 .WORD   T$CODE
  (4)  036556  036625                                                                 .WORD   P3
  (4)  036560  000007                                                                 .WORD   7
  (4)  036562  000000                                                                 .WORD   T$LOLIM
  (4)  036564  000007                                                                 .WORD   T$HILIM
 6883
 6884  036566                                   ENDHRD
  (2)                                                                                 .EVEN
  (3)  036566                                                                  L10102:
```

```
 6885
 6886  036566  051503  020122  042101  P1:     .ASCIZ  /CSR ADDRESS: /
       036574  051104  051505  035123
       036602  000040
 6887  036604  042526  052103  051117  P2:     .ASCIZ  /VECTOR ADDRESS: /
       036612  040440  042104  042522
       036620  051523  020072     000
 6888  036625     124  051505  020124  P3:     .ASCII  /TEST CONFIGURATION -/<CR><LF>
       036632  047503  043116  043511
       036640  051125  052101  047511
       036646  020116  006455     012
 6889  036653     040  030040  036440          .ASCII  /  0 = INTERNAL (NO CONNECTOR)/<CR><LF>
       036660  044440  052116  051105
       036666  040516  020114  047050
       036674  020117  047503  047116
       036702  041505  047524  024522
       036710  005015
 6890  036712  020040  020061  020075          .ASCII  /  1 = H3254 - V.35      (NOTE:  MODE 1-4 ALLOWS/<CR><LF>
       036720  031510  032462  020064
       036726  020055  027126  032463
       036734  020040  020040  020040
       036742  047050  052117  035105
       036750  020040  047515  042504
       036756  030440  032055  040440
       036764  046114  053517  006523
       036772     012
 6891  036773     040  031040  036440          .ASCII  /  2 = H3254 - INTEGRAL   PROGRAM INTERFACE SELECTION)/
       037000  044040  031063  032065
       037006  026440  044440  052116
       037014  043505  040522  020114
       037022  020040  051120  043517
       037030  040522  020115  047111
       037036  042524  043122  041501
       037044  020105  042523  042514
       037052  052103  047511  024516
 6892  037060  005015  020040  020063          .ASCII  <CR><LF>/  3 = H3255 - RS232C/<57>/423/<CR><LF>
       037066  020075  031510  032462
       037074  020065  020055  051522
       037102  031462  041462  032057
       037110  031462  005015
 6893
 6894  037114  020040  020064  020075          .ASCII  /  4 = H3255 - RS422/<CR><LF>
       037122  031510  032462  020065
       037130  020055  051522  031064
       037136  006462     012
 6895  037141     040  032440  036440          .ASCII  /  5 = CABLE AND SW PACK INTERFACE SELECTED/<CR><LF>
       037146  041440  041101  042514
       037154  040440  042116  051440
       037162  020127  040520  045503
       037170  044440  052116  051105
       037176  040506  042503  051440
       037204  046105  041505  042524
       037212  006504     012
 6896  037215     040  020040  020040          .ASCII  /      (V.35-H3250, INTEGRAL-BC55A-10,/
       037222  024040  027126  032463
       037230  044055  031063  030065
```

```
                037236  020054  047111  042524
                037244  051107  046101  041055
                037252  032503  040465  030455
                037260  026060
 6897           037262  051040  031123  031063          .ASCII  / RS232C-H325, RS423/<57>/422-H3251)/<CR><LF>
                037270  026503  031510  032462
                037276  020054  051522  031064
                037304  027463  031064  026462
                037312  031510  032462  024461
                037320  005015
 6898           037322  020052  042523  042514          .ASCII  /* SELECT THE FOLLOWING ONLY IF THE MODEM SUPPORTS LOOPBACK */
                037330  052103  052040  042510
                037336  043040  046117  047514
                037344  044527  043516  047440
                037352  046116  020131  043111
                037360  052040  042510  046440
                037366  042117  046505  051440
                037374  050125  047520  052122
                037402  020123  047514  050117
                037410  040502  045503  025040
 6899           037416  005015  020040  020066          .ASCII  <CR><LF>/  6 = LOCAL LOOP/<CR><LF>
                037424  020075  047514  040503
                037432  020114  047514  050117
                037440  005015
 6900           037442  020040  020067  020075          .ASCIZ  /  7 = REMOTE LOOP/<CR><LF>
                037450  042522  047515  042524
                037456  046040  047517  006520
                037464  000012
 6901                                                    .EVEN
 6902
 6903
 6904
 6905
 6906                                   .SBTTL  SOFTWARE PARAMETER CODING SECTION
 6907
 6908
 6909                                   ;*************************************************************************
 6910                                   ;  THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
 6911                                   ;  THAT ARE USED BY THER SUPERVISOR TO BUILD P-TABLES.  THE
 6912                                   ;  MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 6913                                   ;  INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 6914                                   ;  MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 6915                                   ;  WITH THE OPERATOR.
 6916                                   ;*************************************************************************
 6917
 6918   037466                                          BGNSFT
  (3)   037466  000005                                                                    .WORD L10103-L$SOFT/2
  (3)   037470                                                                  L$SOFT::
 6919
 6920   037470                                          GPRMD   S1,0,0,7,1,5,YES
  (4)   037470  000032                                                          .WORD   T$CODE
  (4)   037472  037502                                                          .WORD   S1
  (4)   037474  000007                                                          .WORD   7
  (4)   037476  000001                                                          .WORD   T$LOLIM
  (4)   037500  000005                                                          .WORD   T$HILIM
 6921
```

```
      037502                                              ENDSFT
 (2)
 (3)  037502                                                                                        L10103:  .EVEN

      037502  042523  042514  052103   S1:       .ASCII  /SELECTABLE PROGRAM LOOP TIME-OUT VARIABLF/<CR><LF>
      037510  041101  042514  050040
      037516  047522  051107  046501
      037524  046040  047517  020120
      037532  044524  042515  047455
      037540  052125  053040  051101
      037546  040511  046102  006505
      037554     012
      037555     133  042522  042506             .ASCIZ  /[REFER TO LISTING 6.3.13]   (MAX=5; MIN=1) /
      037562  020122  047524  046040
      037570  051511  044524  043516
      037576  033040  031456  030456
      037604  056463  020040  024040
      037612  040515  036530  035465
      037620  046440  047111  030475
      037626  020051     000
              037632                                 .EVEN

                                       ;********************        PATCH AREA       *******************************
      037632                           PATCH:
              037732                                 .=.+100
      037732  000240                                 NOP
      037734  000240                                 NOP
      037736  000240                                 NOP
                                       ;***************************************************************************
      037740                           ENDMOD

      037740                                         LASTAD
 (2)                                                                                                .EVEN
 (4)  037740  000000                                                                                .WORD   0
 (4)  037742  000000                                                                                .WORD   0
 (3)  037744                           L$LAST::
              000001                   .END
```

```
A       = 000044          2456#  5247   5280   5303   5305
ADR     = 000020 G        2343#
ASSEMB= 000010            2209
AX3       002304          2538#  3268   4358*  4362*  4367*  4372*  4377*  4383*  4512
BACCR   = 000004          2428#  4491   4701   5844   5873   5975   6082   6106   6139   6193   6400
BACCT   = 000000          2424#  4493   4721   5704   5750   5846   5880   5936   5980   6112   6197   6406
BASE      002630          2657#  3526   4107   4109   4112   4114   4116   4119   4121   4123   4126   4128   4130
                          4133   4546   5231   5235   5243   5245   5247   5249   5251   5264   5268   5276   5278
                          5280   5282   5284   5294   5296   5298   5300   5303   5305   5307   5309   5311   5313
                          5354   5362   5368   5375   5387   5404   5406   5408   5410   5412   5422   5423   5425
                          5427   5429   5431   5433   5435   5437   5439   5441   5485   5500   5507   5526   5534
                          5554   5599   5687   5735   5765   5767   5778   5805   5834   5867   5916   5969   6025
                          6030   6103   6133   6187   6381   6606
BASEI   = 000003          2427#  3232   3955   4495   4653   4659
BASEUP= 020000            2392#
BIGBUF    004230          2669#  3829
BIT0    = 000001 G        2343#  2417   3156   3826   3897   4688   4708   5123   5362   5375
BIT00   = 000001 G        2343#
BIT01   = 000002 G        2343#
BIT02   = 000004 G        2343#
BIT03   = 000010 G        2343#
BIT04   = 000020 G        2343#
BIT05   = 000040 G        2343#
BIT06   = 000100 G        2343#
BIT07   = 000200 G        2343#
BIT08   = 000400 G        2343#
BIT09   = 001000 G        2343#
BIT1    = 000002 G        2343#  2416   5534
BIT10   = 002000 G        2343#  2374   2399   2400
BIT11   = 004000 G        2343#  2373   2397
BIT12   = 010000 G        2343#  2372   2394   2396
BIT13   = 020000 G        2343#  2371   2392   4604   4614
BIT14   = 040000 G        2343#  2370   4593   4610   4614   4767   4774   5814   5844   5880   6393   6396   6504
BIT15   = 100000 G        2343#  2369   4774   5814   5844   5880   6501
BIT2    = 000004 G        2343#  2385   2414   2415
BIT3    = 000010 G        2343#  2412   2413   4367
BIT4    = 000020 G        2343#  2382   2411   4362   5235   5268   5493   5500   5514   5934
BIT5    = 000040 G        2343#  2381   2410
BIT6    = 000100 G        2343#  2379   2389   2408   2409   4372
BIT7    = 000200 G        2343#  2378   2388   2407   4377
BIT8    = 000400 G        2343#  2376   2402   2403   2406
BIT9    = 001000 G        2343#  2375   2401
BOE     = 000400 G        2343#
BSEL0   = 002232          2499#  3232*  3265*  3314*  3401*  3471*  3955*  4670*  4675*  4681*  4696*  4701*  4716*
                          4721*
BSEL1     002242          2500#  4295*  4296*
BSEL2   = 002234          2501#
BSEL3     002244          2502#  3149*  4078   4083   4091   4095   4299*  4300*  5182   5187   5191
BSEL4   = 002236          2503#
BSEL5     002246          2504#  4303*  4304*
BSEL6   = 002240          2505#  3248   4977   5016   5020   5102   5617   5639   5654
BSEL7     002250          2506#  3268*  4307*  4308*  4512*  4978   5017   5021   5106
BUFNUM    002322          2562#  3800   3805   3835   3837   3878   3889   3940   3941   3942   3943   3981   4046
                          4052   4053   4054   4055   6593*  6678*  6728*  6781*  6836*
BUFSIZ    002320          2561#  3802*  3807*  3810*  3850*  3851*  3853*  3881   3882   3893   3895   4047
CD      = 002000          2400#
```

```
CHIPNO  002406          2608#
CLRNO   002372          2598#  3156  3169* 4254*
CMD     = 000007        2445#  3346  3599  4828  5710  5723  5726  5826  5859  5892  6043  6071  6095
                        6125   6152  6270  6477
CNTRL   = 000001        2425#  3009  3012  3259  3314  3336  3590  4497  4681  4743  5713  5754  5810
                        5817   5840  5849  5876  5883  5941  5977  5984  6027  6034  6051  6062  6079
                        6086   6109  6116  6136  6143  6204  6414
CR      = 000015        2475#  6888  6889  6890  6892  6894  6895  6897  6899  6900  6924
CSR     002232          2494#  2498  2499  4294* 4423  4924
CTS     = 010000        2396#
C$AU    = 000052        2209#
C$AUTO= 000061          2209#  4439
C$BRK   = 000022        2209#  2996  3085  3177  3959
C$BSEG= 000004          2209#
C$BSUB= 000002          2209#  4967  4993  5096  5225  5258  5349  5382  5481  5506  5522  5540  5595
                        5630   5683  5731  5801  5830  5863  6021  6047  6075  6099  6129
C$CEFG= 000045          2209#
C$CLCK= 000062          2209#
C$CLEA= 000012          2209#  4461
C$CLOS= 000035          2209#
C$CLP1= 000006          2209#
C$CVEC= 000036          2209#  3817  4262  4432  4911  6307  6371  6520
C$DCLN= 000044          2209#  4436  4908
C$DODU= 000051          2209#  4435  4907
C$DRPT= 000024          2209#
C$DU    = 000053        2209#  4858
C$EDIT= 000003          2209#  2251
C$ERDF= 000055          2209#  3003  3014  3091  3183  3338  3343  3592  3597  3973  3995  4010  4505
                        4740   4751  4762  4771  4802  4807  4813  4921  5072  5084  5116  5198  5239
                        5254   5272  5287  5365  5378  5415  5495  5502  5516  5536  5620  5642  5715
                        5720   5756  5761  5770  5819  5824  5851  5856  5885  5890  5943  5948  5986
                        5992   6036  6041  6064  6069  6088  6093  6118  6123  6145  6150  6206  6216
                        6222   6227  6235  6241  6246  6261  6264  6374  6416  6423  6429  6434  6439
                        6445   6450  6473  6525
C$ERHR= 000056          2209#
C$ERRO= 000060          2209#
C$ERSF= 000054          2209#
C$ERSO= 000057          2209#  3546
C$ESCA= 000010          2209#  5181  5190  5229  5233  5261  5266  5352  5356  5359  5361  5372  5374
                        5385   5389  5392  5401  5403  5484  5487  5490  5499  5511  5525  5528  5531
                        5533   5544  5556  5560  5598  5601  5611  5615  5623  5634  5637  5686  5689
                        5692   5701  5707  5725  5734  5737  5740  5749  5753  5804  5807  5809  5833
                        5836   5839  5866  5869  5872  5875  5915  5925  5928  5931  5938  5940  5968
                        5971   5974  5983  6033  6061  6085  6102  6105  6108  6115  6132  6135  6142
                        6186   6189  6191  6195  6199  6380  6383  6385  6403  6409  6412  6602  6608
                        6610   6687  6738  6791  6846
C$ESEG= 000005          2209#
C$ESUB= 000003          2209#  4990  5094  5129  5256  5289  5380  5417  5504  5520  5538  5562  5628
                        5647   5729  5773  5828  5861  5894  6045  6073  6097  6127  6154
C$ETST= 000001          2209#  4913  5131  5200  5291  5418  5566  5649  5774  5896  5952  6000  6156
                        6283   6533  6625  6699  6751  6808  6859
C$EXIT= 000032          2209#
C$GETB= 000026          2209#
C$GETW= 000027          2209#
C$GMAN= 000043          2209#
C$GPHR= 000042          2209#  4285
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C$GPLO= 000030          2209#
C$GPRI= 000040          2209#
C$INIT= 000011          2209#   4399
C$INLP= 000020          2209#
C$MANI= 000050          2209#
C$MEM = 000031          2209#   3818
C$MSG = 000023          2209#   4058    4068    4099    4135    4143    4149    4154    4158    4164    5315    5443    5655
                        5779
C$OPEN= 000034          2209#
C$PNTB= 000014          2209#   3011    3020    3333    4043    4044    4045    4046    4047    4056    4057    4064    4066
                        4067    4073    4075    4080    4085    4088    4093    4097    4105    4112    4119    4126    4133
                        4140    4141    4142    4146    4147    4148    4153    4157    4163    4292    4313    4974    4980
                        5074    5086    5118    5184    5296    5300    5305    5309    5313    5421    5422    5425    5429
                        5433    5437    5441    5654    5778    6375    6526
C$PNTF= 000017          2209#   4856
C$PNTS= 000016          2209#
C$PNTX= 000015          2209#   4924
C$QIO = 000377          2209#
C$RDBU= 000007          2209#
C$REFG= 000047          2209#   4264    4266    4268    4270
C$RESE= 000033          2209#   4855
C$REVI= 000003          2209#   2251
C$RFLA= 000021          2209#
C$RPT = 000025          2209#
C$SEFG= 000046          2209#
C$SPRI= 000041          2209#   3752    3952    4020    4248    6322
C$SVEC= 000037          2209#   3742    4330    4331    4421    4887    6304    6347    6510
C$TPRI= 000013          2209#
DDMC  = 000010          2432#
DFPTBL  002174 G        2300#
DIAGMC= 000000          2209
DISCON= 000100          2408#
DMCMDE  002276          2533#   3673    4253*   4548    4624    4656    6595*   6680*   6731*   6784*   6839*
DMR   = 000522          2403#   4550    5231    5354    5368    5387    5485    5507    5526    5555    5599    5687    5735
                        5805    5814    5834    5867    5916    5969    6025    6030    6103    6133    6187    6381    6606
DMRFLG  002260          2520#   3253*   3256*   3325*   3328    3330*   6054*
DMRRUN= 000040          2410#   3341    4747
DMRVEC  002226          2492#   4315*   4330
DMTURN  002254          2512#   3679    4334*   4360    4365    4370    4375    4385    4387    4389    4391    4522    4565
                        5545
DMTVEC  002230          2493#   4316*   4325*   4331
DTR   = 000100          2409#
DXERR = 000007          2431#   5370
EF.CON= 000036 G        2343#   4270
EF.NEW= 000035 G        2343#   4268
EF.PWR= 000034 G        2343#
EF.RES= 000037 G        2343#   4266
EF.STA= 000040 G        2343#   4264
EMG1    020014          3003    3091    3183    4197#
EMG10   020165          4201#   6216    6423
EMG11   020214          4202#   4771    4802    4813    6222    6241    6429    6445
EMG12   020241          3995    4204#   4807    6227    6246    6434    6450
EMG13   020267          4205#   6235    6439
EMG14   020315          4206#   6261
EMG15   020341          4010    4207#   6264    6473
EMG16   020354          4208#   4762
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EMG17   020405          4209#   4505
EMG18   020457          4210#   4740
EMG2    020025          3973    4196#
EMG8    020072          3338    4199#   5715    5756    5819    5851    5885    5943    5986    6036    6064    6088    6118
                        6145
EMG9    020136          3014    3343    4200#   4751    5720    5761    5824    5856    5890    5948    5992    6041    6069
                        6093    6123    6150    6205    6416
EMS3    012532          3546    3556#
EMS4    012722          3592    3597    3604#
EMT0    024002          4921    4928#
EMT1    025362          5072    5084    5137#
EMT10   030524          5502    5569#
EMT11   030552          5516    5570#
EMT12   030606          5536    5571#
EMT13   031146          5620    5642    5658#
EMT2    025402          5116    5138#
EMT20   031746          5770    5781#
EMT22   036046          6374    6525    6536#
EMT3    025536          5198    5202#
EMT4    026264          5239    5317#
EMT5    026311          5254    5287    5318#
EMT6    026357          5272    5319#
EMT7    027514          5365    5378    5446#
EMT8    027545          5415    5447#
EMT9    030474          5495    5568#
END     021510          4272    4395    4398#
ERRFLG  002354          2586#   2976*   3004*   3015*   3028    3069*   3092*   3100
ERRG1   014562 G        3973    4042#
ERRG10  016160 G        3995    4152#
ERRG11  016212 G        4156#
ERRG12  016244 G        4010    4160#
ERRG2   015070 G        3003    3014    3091    3338    3343    3592    3597    4061#   4505    4740    4751    4771    5715
                        5720    5756    5761    5819    5824    5851    5856    5885    5890    5943    5948    5986    5992
                        6036    6041    6064    6069    6088    6093    6118    6123    6145    6150    6206    6216    6222
                        6227    6235    6241    6246    6261    6264    6416    6423    6429    6434    6439    6445    6450
                        6473
ERRG3   015204 G        3183    4070#   5198
ERRG4   015464 G        3546    4102#
ERRG7   015760 G        4139#   4813
ERRG8   016056 G        4145#   4802    4807
ERROR   002360          2592#   3009    3259    4251*   5810*   5827*   5840*   5860*   5876*   5893*   5977*   5995*   6027*
                        6044*   6051*   6072*   6079*   6096*   6109*   6126*   6136*   6153*
ERRT1   026044 G        5254    5287    5293#
ERRT2   031114 G        5620    5642    5653#
ERRT3   027206 G        5415    5420#
ERRT4   031710 G        5770    5777#
EVL     = 000004 G      2343#
EXERR   = 000006        2430#   5357
ESEND   = 002100        2209#
ESLOAD= 000035          2209#   2251
FINIT1  021512          4292    4400#
FINIT2  021605          4313    4401#
FLAG    002340          2574#   3741*   3744    3783    3792    3908*   4422*   4433    4437*   4837*   4888*   4905    4909*
                        4918    4922*   4994*   5068    5071*   5080    5083*   5097*   5112    5115*   6305*   6308    6312*
                        6346*   6355    6365    6372    6509*   6514    6521
FMDROP  023552          4856    4861#
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FMG1    016276          4044    4066    4075    4171#   5421
FMG10   016752          4133    4180#
FMG11   017010          4146    4181#
FMG12   017042          4140    4182#
FMG13   017073          4141    4147    4183#
FMG14   017147          4148    4184#
FMG15   017223          4142    4185#
FMG16   017252          4153    4186#
FMG17   017331          4157    4187#
FMG18   017404          4163    4188#
FMG19   017473          4093    4189#   5184
FMG2    016330          4045    4067    4172#
FMG20   017516          4097    4190#
FMG21   017545          4046    4191#
FMG22   017625          4047    4192#
FMG23   017652          4056    4193#
FMG24   017733          4057    4194#
FMG3    016362          4043    4064    4073    4105    4173#
FMG4    016434          4080    4174#
FMG5    016465          4085    4088    4175#
FMG6    016516          4176#
FMG7    016557          4112    4177#   5778
FMG8    016630          4119    4178#
FMG9    016701          4126    4179#
FMS1    010600          3011    3034#
FMS2    010641          3020    3035#
FMS3    011742          3333    3352#
FMT0    024040          4924    4929#
FMT1    025074          4974    5132#
FMT11   027602          5422    5449#
FMT12   027633          5425    5450#
FMT13   027670          5429    5451#
FMT14   027725          5433    5452#
FMT15   027762          5437    5453#
FMT16   030017          5441    5454#
FMT19   031172          5654    5661#
FMT2    025143          4980    5133#
FMT25   036104          6375    6526    6537#
FMT3    025220          5074    5086    5134#
FMT4    025304          5118    5135#
FMT5    026423          5296    5321#
FMT6    026454          5300    5322#
FMT7    026505          5305    5323#
FMT8    026536          5309    5324#
FMT9    026601          5313    5325#
FRSPAS  002266          2526#   4259*   4279*
FRSTIM  002264          2525#   4256    4258*
F$AU   = 000015         2209#
F$AUTO= 000020          2209#   4419    4439
F$BGN  = 000040         2209#   2212    4042    4061    4070    4102    4139    4145    4152    4156    4160    4223    4246
                        4419    4459    4477    4735    4835    4853    4885    4913    4916    4966    4967    4990    4993
                        5094    5096    5129    5131    5178    5181    5190    5200    5224    5225    5229    5233    5256
                        5258    5261    5266    5289    5291    5293    5348    5349    5352    5356    5359    5361    5372
                        5374    5380    5382    5385    5389    5392    5401    5403    5417    5418    5420    5480    5481
                        5484    5487    5490    5499    5504    5506    5511    5520    5522    5525    5528    5531    5533
                        5538    5540    5544    5556    5560    5562    5566    5593    5595    5598    5601    5611    5615
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                5623  5628  5630  5634  5637  5647  5649  5653  5682  5683  5686  5689  5692
                5701  5707  5725  5729  5731  5734  5737  5740  5749  5753  5773  5774  5777
                5800  5801  5804  5807  5809  5828  5830  5833  5836  5839  5861  5863  5866
                5869  5872  5875  5894  5896  5912  5915  5925  5928  5931  5938  5940  5952
                5965  5968  5971  5974  5983  6000  6020  6021  6033  6045  6047  6061  6073
                6075  6085  6097  6099  6102  6105  6108  6115  6127  6129  6132  6135  6142
                6154  6156  6172  6186  6189  6191  6195  6199  6283  6301  6380  6383  6385
                6403  6409  6412  6533  6588  6602  6608  6610  6625  6677  6687  6699  6727
                6738  6751  6779  6791  6808  6835  6846  6959  6878  6918  6935
F$CLEA= 000007   2209#  4459  4461
F$DU  = 000016   2209#  4853  4858
F$END = 000041   2209#  2212  4058  4068  4099  4135  4143  4149  4154  4158  4164  4399  4439
                4461  4730  4830  4839  4858  4885  4913  4926  4966  4967  4990  4993  5094
                5096  5129  5131  5178  5181  5190  5200  5224  5225  5229  5233  5256  5258
                5261  5266  5289  5291  5315  5348  5349  5352  5356  5359  5361  5372  5374
                5380  5382  5385  5389  5392  5401  5403  5417  5418  5443  5480  5481  5484
                5487  5490  5499  5504  5506  5511  5520  5522  5525  5528  5531  5533  5538
                5540  5544  5556  5560  5562  5566  5593  5595  5598  5601  5611  5615  5623
                5628  5630  5634  5637  5647  5649  5655  5682  5683  5686  5689  5692  5701
                5707  5725  5729  5731  5734  5737  5740  5749  5753  5773  5774  5779  5800
                5801  5804  5807  5809  5828  5830  5833  5836  5839  5861  5863  5866  5869
                5872  5875  5894  5896  5912  5915  5925  5928  5931  5938  5940  5952  5965
                5968  5971  5974  5983  6000  6020  6021  6033  6045  6047  6061  6073  6075
                6085  6097  6099  6102  6105  6108  6115  6127  6129  6132  6135  6142  6154
                6156  6172  6186  6189  6191  6195  6199  6283  6301  6380  6383  6385  6403
                6409  6412  6533  6588  6602  6608  6610  6625  6677  6687  6699  6727  6738
                6751  6779  6791  6808  6835  6846  6859  6884  6922  6935
F$HARD= 000004   2209#  6878  6884
F$HW  = 000013   2209#  2300  2314
F$INIT= 000006   2209#  4246  4399
F$JMP = 000050   2209#
F$MOD = 000000   2209#  2212  6935
F$MSG = 000011   2209#  4042  4058  4061  4068  4070  4099  4102  4135  4139  4143  4145  4149
                4152  4154  4156  4158  4160  4164  5293  5315  5420  5443  5653  5655  5777
                5779
F$PROT= 000021   2209#  4223  4229
F$PWR = 000017   2209#
F$RPT = 000012   2209#
F$SEG = 000003   2209#
F$SOFT= 000005   2209#  6918  6922
F$SRV = 000010   2209#  4477  4730  4735  4830  4835  4839  4916  4926
F$SUB = 000002   2209#  4967  4990  4993  5094  5096  5129  5225  5256  5258  5289  5349  5380
                5382  5417  5481  5504  5506  5520  5522  5538  5540  5562  5595  5628  5630
                5647  5683  5729  5731  5773  5801  5828  5830  5861  5863  5894  6021  6045
                6047  6073  6075  6097  6099  6127  6129  6154
F$SW  = 000014   2209#  2325  2329
F$TEST= 000001   2209#  4885  4913  4966  5131  5178  5200  5224  5291  5348  5418  5480  5566
                5593  5649  5682  5774  5800  5896  5912  5952  5965  6000  6020  6156  6172
                6283  6301  6533  6588  6625  6677  6699  6727  6751  6779  6808  6835  6859
GETPRM  020666   4271  4281#  4286
G$CNTO= 000200   2209#
G$DELM= 000372   2209#  2999  3088  3180  3968
G$DISP= 000003   2209#
G$EXCP= 000400   2209#
G$HILI= 000002   2209#
G$LOLI= 000001   2209#
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G$NO  = 000000          2209#
G$OFFS= 000400          2209#  6880   6881   6882   6920
G$OFSI= 000376          2209#  6880   6881   6882   6920
G$PRMA= 000001          2209#  6880   6881
G$PRMD= 000002          2209#  6882   6920
G$PRML= 000000          2209#
G$RADA= 000140          2209#
G$RADB= 000000          2209#
G$RADD= 000040          2209#
G$RADL= 000120          2209#
G$RADO= 000020          2209#  6880   6881   6882   6920
G$XFER= 000004          2209#
G$YES = 000010          2209#  6880   6881   6882   6920
HALTC = 001000          2401#  3595   4745   6039   6067   6091   6121   6148
HDX   = 002000          2399#  5509
HELP  = 000000          2197#  2230   2253   2279   2700
HICRC   002376          2604#  5004*  5045*  5051   5052*  5053*  5077*  5078   5086
HIWORD  002402          2606#  5017*  5021*  5046*  5078   5086
HLT   = 000002          2426#  3581   4503   4644   4696   4716
HOE   = 100000 G        2343#
IBE   = 010000 G        2343#
IDU   = 000040 G        2343#
IECLR = 000020          2382#  4016   4630   4636
IEO   = 000100          2389#  4017   4557   4825
IER   = 020000 G        2343#
IESET = 000100          2379#  3955   4016   4653   4670   4675   4681   4696   4701   4716   4721
INFACE  002262          2523#  3257   4379*  4382*  4665
INFLAG  002346          2579#  3944*  3963   4648   4724*  4754
INISR   021772 G        4330   4477#
INRCV   002324          2565#  3940*  4048*  4052*  4056   4578*  4684   4688
INTER = 000015          2441#  3265   4501   4661   4670
INXMIT  002326          2566#  3941*  4049*  4053*  4056   4586*  4704   4708
ISP1  = 000076          2465#  5362   5375   5422
ISP7  = 000072          2464#  5235   5268   5500   5534
ISR   = 000100 G        2343#
IXE   = 004000 G        2343#
I$AU  = 000041          2209#
I$AUTO= 000041          2209#  4419#  4439#
I$CLN = 000041          2209#  4459#  4461#
I$DU  = 000041          2209#  4853#  4858#
I$HRD = 000041          6878#  6884#
I$INIT= 000041          2209#  4246#  4399#
I$MOD = 000041          2209#  2212#  6935#
I$MSG = 000041          2209#  4042#  4058#  4061#  4068#  4070#  4099#  4102#  4135#  4139#  4143#  4145#  4149#
                        4152#  4154#  4156#  4158#  4160#  4164#  5293#  5315#  5420#  5443#  5653#  5655#  5777#
                        5779#
I$PROT= 000040          2209#  4223#
I$PTAB= 000041          2209#
I$PWR = 000041          2209#
I$RPT = 000041          2209#
I$SEG = 000041          2209#  4885   4966   4967   4993   5096   5178   5224   5225   5258   5348   5349   5382
                        5480   5481   5506   5522   5540   5593   5595   5630   5682   5683   5731   5800   5801
                        5830   5863   5912   5965   6020   6021   6047   6075   6099   6129   6172   6301   6588
                        6677   6727   6779   6835
I$SETU= 000041          2209#
I$SFT = 000041          6918#  6922#
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I$SRV = 000041          2209#  4477#  4730#  4735#  4830#  4835#  4839#  4916#  4926#
I$SUB = 000041          2209#  4885   4966   4967#  4990#  4993#  5094#  5096#  5129#  5178   5224   5225#  5256#
                        5258#  5289#  5348   5349#  5380#  5382#  5417#  5480   5481#  5504#  5506#  5520#  5522#
                        5538#  5540#  5562#  5593   5595#  5628#  5630#  5647#  5682   5683#  5729#  5731#  5773#
                        5800   5801#  5828#  5830#  5861#  5863#  5894#  5912   5965   6020   6021#  6045#  6047#
                        6073#  6075#  6097#  6099#  6127#  6129#  6154#  6172   6301   6588   6677   6727   6779
                        6835
I$TST = 000041          2209#  4885#  4913#  4966#  4967   4993   5096   5131#  5178#  5181   5190   5200#  5224#
                        5225   5229   5233   5258   5261   5266   5291#  5348#  5349   5352   5356   5359   5361
                        5372   5374   5382   5385   5389   5392   5401   5403   5418#  5480#  5481   5484   5487
                        5490   5499   5506   5511   5522   5525   5528   5531   5533   5540   5544   5556   5560
                        5566#  5593#  5595   5598   5601   5611   5615   5623   5630   5634   5637   5649#  5682#
                        5683   5686   5689   5692   5701   5707   5725   5731   5734   5737   5740   5749   5753
                        5774#  5800#  5801   5804   5807   5809   5830   5833   5836   5839   5863   5866   5869
                        5872   5875   5896#  5912#  5915   5925   5928   5931   5938   5940   5952#  5965#  5968
                        5971   5974   5983   6000#  6020#  6021   6033   6047   6061   6075   6085   6099   6102
                        6105   6108   6115   6129   6132   6135   6142   6156#  6172#  6186   6189   6191   6195
                        6199   6283#  6301#  6380   6383   6385   6403   6409   6412   6533#  6588#  6602   6608
                        6610   6625#  6677#  6687   6699#  6727#  6738   6751#  6779#  6791   6808#  6835#  6846
                        6859#
J$JMP = 000167          2209#
LAST    002356          2590#  4622*  4644   4659   4661
LF    = 000012          2476#  6888   6889   6890   6892   6894   6895   6897   6899   6900   6924
LOCATE  023724 G        4887   4916#
LOCRC   002374          2603#  5002*  5034*  5040   5041*  5042*  5064*  5065   5074
LOE   = 040000 G        2343#
LOGDEV  002362          2593#  4278*  4282*  4283   4285   4435   4856   4907   4974
LOT   = 000010 G        2343#
LOWORD  002400          2605#  5016*  5020*  5035*  5065   5074
LPLU  = 004000          2373#  4567   4570   5354   5368   5387   5485   5507   5526   5547   5550   5599   5687
                        5735   5805   5834   5867   5916   5969   6025   6030   6103   6133   6187   6381   6606
L$ACP   002110 G        2251#
L$APT   002036 G        2251#
L$AUT   002070 G        2251#
L$AUTO  021700 G        2251   4419#
L$CCP   002106 G        2251#
L$CLEA  021770 G        2251   4459#
L$CO    002032 G        2251#
L$DEPO  002011 G        2251#
L$DESC  010236 G        2251   2692#
L$DESP  002076 G        2251#
L$DEVP  002060 G        2251#
L$DISP  002124 G        2251   2277#
L$DLY   002116 G        2251#  2999   3088   3180   3968
L$DTP   002040 G        2251#
L$DTYP  002034 G        2251#
L$DU    023522 G        2251   4853#
L$DUT   002072 G        2251#
L$DVTY  010230 G        2251   2687#
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L$ENVI  002044 G        2251#
L$ETP   002102 G        2251#
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L$EXP4  002064 G        2251#
L$EXP5  002066 G        2251#
L$HARD  036534 G        2251   6878#
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L$HIME  002120 G        2251#   3748    6318    6490
L$HPCP  002016 G        2251#
L$HPTP  002022 G        2251#
L$HW    002174 G        2251    2300#
L$ICP   002104 G        2251#
L$INIT  020514 G        2251    4246#
L$LADP  002026 G        2251#
L$LAST  037744 G        2251    6937#
L$LOAD  002100 G        2251#
L$LUN   002074 G        2251#
L$MREV  002050 G        2251#
L$NAME  002000 G        2251#
L$PRIO  002042 G        2251#
L$PROT  020506 G        2251    4223#
L$PRT   002112 G        2251#
L$REPP  002062 G        2251#
L$REV   002010 G        2251#
L$SOFT  037470 G        2251    6918#
L$SPC   002056 G        2251#
L$SPCP  002020 G        2251#
L$SPTP  002024 G        2251#
L$STA   002030 G        2251#
L$SW    002224 G        2251    2325#
L$TEST  002114 G        2251#   3535
L$TIML  002014 G        2251#
L$UNIT  002012 G        2251#   4283
L10000  002222          2300    2314#
L10001  002226          2325    2329#
L10002  015066          4058#
L10003  015202          4068#
L10004  015462          4099#
L10005  015756          4135#
L10006  016054          4143#
L10007  016156          4149#
L10010  016210          4154#
L10011  016242          4158#
L10012  016274          4164#
L10014  021510          4399#
L10015  021766          4439#
L10016  021770          4461#
L10017  023052          4730#
L10020  023510          4830#
L10021  023520          4839#
L10022  023550          4858#
L10023  023722          4913#
L10024  024000          4926#
L10025  025072          5131#
L10026  024274          4990#
L10027  024716          5094#
L10030  025070          5129#
L10031  025534          5181    5190    5200#
L10032  026042          5229    5233    5261    5266    5291#
L10033  025712          5256#
L10034  026040          5289#
L10035  026262          5315#
L10036  027204          5352    5356    5359    5361    5372    5374    5385    5389    5392    5401    5403    5418#
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L10040  027202          5417#
L10041  027512          5443#
L10042  030472          5484    5487    5490    5499    5511    5525    5528    5531    5533    5544    5556    5560    5566#
L10043  030210          5504#
L10044  030300          5520#
L10045  030374          5538#
L10046  030470          5562#
L10047  031100          5598    5601    5611    5615    5623    5634    5637    5649#
L10050  031000          5628#
L10051  031076          5647#
L10052  031144          5655#
L10053  031706          5686    5689    5692    5701    5707    5725    5734    5737    5740    5749    5753    5774#
L10054  031500          5729#
L10055  031704          5773#
L10056  031744          5779#
L10057  032472          5804    5807    5809    5833    5836    5839    5866    5869    5872    5875    5896#
L10060  032124          5828#
L10061  032304          5861#
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L10063  032674          5915    5925    5928    5931    5938    5940    5952#
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L10065  033760          6033    6061    6085    6102    6105    6108    6115    6132    6135    6142    6156#
L10066  033204          6045#
L10067  033322          6073#
L10070  033440          6097#
L10071  033616          6127#
L10072  033756          6154#
L10073  034454          6186    6189    6191    6195    6199    6283#
L10074  036044          6380    6383    6385    6403    6409    6412    6533#
L10075  036270          6602    6608    6610    6625#
L10076  036336          6687    6699#
L10077  036406          6738    6751#
L10100  036456          6791    6808#
L10101  036530          6846    6859#
L10102  036566          6878    6884#
L10103  037502          6918    6922#
MAINT =  000400         2402#   3323    4537    5529    5690
MAINT1=  000010         2412#   3682    3687    4525    4528
MAINT2=  000004         2415#   3681    3688    4524    4529
MCLR  =  040000         2370#   3158    3161
MDIAG =  020000         2371#   3161
MICRO    002256         2513#
MMANAG   002302         2535#   3751*   3816*   3982    3991    4006    4012    4590    4765
MNTMDE   002300         2534#   4535    6596*   6681*   6732*   6785*   6840*
MNTREC=  000010         2413#
MODEM    031102         5604    5651#
N     =  000043         2455#   5245    5278    5298
NAKS  =  000001         2417#
NESTPC   002370         2596#   2977    3022    3071    3094    3233*   3272*   3315*   3348*   3395    3404    3405*   3408*
                        3430    3473*   3486*   3518    3548    3583*   3600*   3690*   3697*   3939*   4021*
NEWST    020650         4269    4277#   4284
NEXT     022526         4484    4643#
NOBFR =  000004         2414#   5718    5759
NOXMEM   023512 G       3742    4421    4835#   6304    6347    6510
NXM   =  000400         2406#   5822    5854    5888
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OUTFLG  002350          2582#  3945*  3965   4650   4756   4826*
OUTISR  023054 G        4331   4735#
OUTRCV  002330          2567#  3942*  4050*  4054*  4057   4810*  4822
OUTXMT  002332          2568#  3943*  4051*  4055*  4057   4798*  4820
O$APTS= 000000          2209#  2251
O$AU  = 000000          2209#  2251
O$BGNR= 000000          2209#  2251
O$BGNS= 000001          2209#  2228#  2251
O$DU  = 000001          2209#  2228#  2251
O$ERRT= 000000          2209#  2251
O$GNSW= 000001          2209#  2228#  2251
O$POIN= 000001          2209#  2228#  2251
O$SETU= 000000          2209#  2251   6937
PATCH   037632          6929#
PNT   = 001000 G        2343#
PRETIM= 000055          2459#  5404   5423   5425
PRI   = 002000 G        2343#
PRI00 = 000000 G        2343#
PRI01 = 000040 G        2343#
PRI02 = 000100 G        2343#
PRI03 = 000140 G        2343#
PRI04 = 000200 G        2343#  3952
PRI05 = 000240 G        2343#  4330   4331
PRI06 = 000300 G        2343#
PRI07 = 000340 G        2343#  3742   3752   4020   4248   4421   4887   6304   6322   6347   6510
PSTACK  002364          2594#  4249*
P1      036566          6880   6886#
P2      036604          6881   6887#
P3      036625          6882   6888#
R     = 000042          2454#  5243   5276   5294   5296
RBUF    002562          2650#  5873   5975   6082   6106   6139   6176   6193   6239   6252
RCOUNT= 000044          2649#  5844   5873   5975   6082   6106   6173   6193   6244   6250
RCV   = 000004          2385#  4796   6209   6270   6419   6477
RCVBUF  003630          2664#  3799*  3832*  3833*  3868   3876   3877   3948   3950   3979
RDI   = 000200          2378#  2994   3083   4482
RDO   = 000200          2388#  2992   3262   3346   3599   4737   4828   5710   5723   5726   5826   5859   5892
                        6043   6071   6095   6125   6152   6270   6477
RES   = 010000          2394#  3250   4560   5368   5507   5814
RESFLG  002352          2584#  4561*  4690   4699*  4710   4719*
RESUME  002274          2532#  4252*  4646   4686   4706   4759   6594*  6679*  6730*  6783*  6838*
RETURN= 000207          2470#
REV1    025430          4977*  4980   5142#
REV2    025432          4978*  4980   5143#
RFLAG   002560          2648#  6183*  6233   6238*  6271   6388*  6437   6442*  6478   6493*
RMODEM= 000017          2442#  5491   5512   5613   5635
ROMADR  002404          2607#  3627   3636   4973*  4986*  4999*  5018*  5024*  5099*  5126*
ROMI  = 001000          2375#  3628   3634   3637   3643
ROMLOC  025421          5118   5140#
ROMO  = 002000          2374#  3644
RQI   = 000040          2381#  3070   3232   3265   3314   3403   3581   3955   4631   4653   4670   4675   4681
                        4696   4701   4716   4721   5491   5512   5613   5635   5704   5750   5844   5846   5873
                        5880   5936   5975   5980   6082   6106   6112   6139   6193   6197   6400   6406
RRAM  = 000014          2440#
RSEL4   035170          6392*  6401#  6443   6500*
RSEL6   035172          6393*  6402#  6448   6501*
RUN   = 100000          2369#  3175   4076
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SECN  = 004000          2397#
SEL0  = 002232          2498# 2994  3070* 3083  3158* 3161* 3175  3239* 3262  3403* 3581* 3626* 3628*
                        3633* 3634* 3637* 3641* 3643* 3644* 4016* 4044  4066  4075  4076  4480  4482
                        4567* 4570* 4630* 4631* 4636* 4653* 4898  5421  5491* 5512* 5613* 5635*
SEL2    002234          2495# 2501  2992  3012  3336  3346* 3582* 3590  3599* 3627* 4017* 4044  4066
                        4075  4297* 4298* 4557* 4737  4743  4796  4825* 4828* 4900  5421  5710* 5713
                        5723* 5726* 5754  5817  5826* 5849  5859* 5883  5892* 5941  5984  6034  6043*
                        6062  6071* 6086  6095* 6116  6125* 6143  6152* 6204  6209  6270* 6414  6419
                        6477*
SEL4    002236          2496# 2503  3241* 3415* 3479* 4045  4067  4141  4147  4301* 4302* 4546* 4579*
                        4587* 4596  4597* 4604* 4610* 4614* 4775  4777* 4781* 4786* 4791* 4794* 4799
                        4811  4902  5493  5514  6220  6239  6427  6443
SEL6    002240          2497# 2505  3243* 3250  3321* 3323  3341  3418* 3423* 3425* 3481* 3595  3629*
                        3638* 4045  4067  4141  4147  4305* 4306* 4524* 4525* 4528* 4529* 4537* 4540*
                        4550* 4553* 4560* 4580* 4588* 4593* 4745  4747  4767  4774* 4805  4817  4904
                        5718  5759  5822  5854  5888  5946  5989  6039  6067  6091  6121  6148  6225
                        6244  6432  6448
SFLAG   002342          2575# 6389* 6452  6486  6489*
SFPTBL  002224  G       2325#
SKIP    002344          2576#
SPEED   002224          2327# 4337
STARES  002270          2527# 4275* 4280* 4968
STARST  020644          4265  4267  4274#
START   002272          2531# 3946* 4555  4667  4678  4680*
STLU  = 010000          2372#
STREC = 000200          2407#
STUP  = 000400          2376# 3633  3634  3641  3643
SUBRPC  002366          2595# 2979* 2980* 3024* 3073* 3074* 3096* 3144* 3145* 3187* 3229* 3230* 3273*
                        3312* 3313* 3349* 3397* 3398* 3432* 3469* 3470* 3487* 3520* 3521* 3550* 3579*
                        3580* 3601* 3677* 3678* 3698* 3739* 3740* 3909* 3937* 3938* 4022* 4043  4062
                        4064  4071  4073  4103  4105  4250*
SVCGBL= 000000          2209# 2220# 2251  2277  2300  2325  2687  2692  4042  4061  4070  4102  4139
                        4145  4152  4156  4160  4223  4246  4419  4459  4477  4735  4835  4853  4916
                        5293  5420  5653  5777  6878  6918  6937#
SVCINS= 000001          2209# 2217# 2251  2277  2300  2325  2687  2692  2996  2999  3003  3011  3014
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                        3338  3343  3409  3475  3546  3585  3587  3589  3592  3597  3742  3752  3817
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                        4056  4057  4058  4064  4066  4067  4068  4073  4075  4080  4085  4088  4093
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                        4147  4148  4149  4153  4154  4157  4158  4163  4164  4248  4262  4264  4265
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                        5116  5118  5129  5131  5181  5184  5190  5198  5200  5225  5229  5233  5239
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                        5385  5389  5392  5401  5403  5415  5417  5418  5421  5422  5425  5429  5433
                        5437  5441  5443  5481  5484  5487  5490  5495  5499  5502  5504  5506  5511
                        5516  5520  5522  5525  5528  5531  5533  5536  5538  5540  5544  5556  5560
                        5562  5566  5595  5598  5601  5611  5615  5620  5623  5628  5630  5634  5637
                        5642  5647  5649  5654  5655  5683  5686  5689  5692  5701  5707  5715  5720
                        5725  5729  5731  5734  5737  5740  5749  5753  5756  5761  5770  5773  5774
                        5778  5779  5801  5804  5807  5809  5819  5824  5828  5830  5833  5836  5839
```

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                    5851  5856  5861  5863  5866  5869  5872  5875  5885  5890  5894  5896  5915
                    5925  5928  5931  5938  5940  5943  5948  5952  5968  5971  5974  5983  5986
                    5992  6000  6021  6033  6036  6041  6045  6047  6061  6064  6069  6073  6075
                    6085  6088  6093  6097  6099  6102  6105  6108  6115  6118  6123  6127  6129
                    6132  6135  6142  6145  6150  6154  6156  6186  6189  6191  6195  6199  6203
                    6206  6216  6222  6227  6235  6241  6246  6261  6264  6283  6304  6307  6322
                    6347  6371  6374  6375  6380  6383  6385  6403  6409  6412  6416  6423  6429
                    6434  6439  6445  6450  6473  6510  6520  6525  6526  6533  6602  6608  6610
                    6625  6687  6699  6738  6751  6791  6808  6846  6859  6878  6880  6881  6882
                    6884  6918  6920  6922  6937
SVCSUB= 000001       2209#  2219#  4967  4993  5096  5225  5258  5349  5382  5481  5506  5522  5540
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SVCTAG= 000001       2209#  2221#  2314  2329  4058  4068  4099  4135  4143  4149  4154  4158  4164
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                    5200  5256  5289  5291  5315  5380  5417  5418  5443  5504  5520  5538  5562
                    5566  5628  5647  5649  5655  5729  5773  5774  5779  5828  5861  5894  5896
                    5952  6000  6045  6073  6097  6127  6154  6156  6283  6533  6625  6699  6751
                    6808  6859  6884  6922
SVCTST= 000001       2209#  2218#  4885  4966  5178  5224  5348  5480  5593  5682  5800  5912  5965
                    6020  6172  6301  6588  6677  6727  6779  6835
SW00  = 000001       2364#
SW01  = 000002       2363#
SW02  = 000004       2362#
SW03  = 000010       2361#
SW04  = 000020       2360#
SW05  = 000040       2359#
SW06  = 000100       2358#
SW07  = 000200       2357#
SW08  = 000400       2356#
SW09  = 001000       2355#
SW10  = 002000       2354#
SW11  = 004000       2353#
SW12  = 010000       2352#
SW13  = 020000       2351#
SW14  = 040000       2350#
SW15  = 100000       2349#
S$LSYM= 010000       2209#  2314#  2329#  4058#  4068#  4099#  4135#  4143#  4149#  4154#  4158#  4164#  4399#
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                    6859#  6884#  6922#
S1          037502   6920  6924#
T           000045   2457#  5249  5282  5307  5309
TBUF        002512   2641#  5704  5750  5846  5936  5980  6112  6197  6220  6251
TCOUNT= 000044       2640#  5704  5750  5846  5936  5980  6197  6225
TEMP        002334   2572#  2982* 3007  3018
TFLAG       002510   2639#  6182* 6214  6219* 6275  6387* 6421  6426* 6482  6492*
THRESH= 000013       2435#  5399  5699  5747  5923
TH1L  = 000060       2460#  5408  5427  5429
TH2L  = 000062       2461#  5410  5431  5433
TH3L  = 000064       2462#  5406  5435  5437
TH4L  = 000066       2463#  5412  5439  5441
TIMER = 000012       2434#  5390  5926
TOLONG= 000020       2411#  5989
TOUT  = 000002       2416#  5946
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TSEL4   035206          6395* 6407# 6427  6503*
TSEL6   035210          6396* 6408# 6432  6504*
T$ARGC= 000002          2251# 3011# 3020# 3333# 4043# 4044# 4045# 4046# 4047# 4056# 4057# 4064# 4066#
                        4067# 4073# 4075# 4080# 4085# 4088# 4093# 4097# 4105# 4112# 4119# 4126# 4133#
                        4140# 4141# 4142# 4146# 4147# 4148# 4153# 4157# 4163# 4292# 4313# 4856# 4924#
                        4974# 4980# 5074# 5086# 5118# 5184# 5296# 5300# 5305# 5309# 5313# 5421# 5422#
                        5425# 5429# 5433# 5437# 5441# 5654# 5778# 6375# 6526#
T$CODE= 000032          6880# 6881# 6882# 6920#
T$ERRN= 000023          2209# 3003# 3014# 3091# 3183# 3338# 3343# 3546# 3592# 3597# 3973# 3995# 4010#
                        4505# 4740# 4751# 4762# 4771# 4802# 4807# 4813# 4921# 5072# 5084# 5116# 5198#
                        5239# 5254# 5272# 5287# 5365# 5378# 5415# 5495# 5502# 5516# 5536# 5620# 5642#
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                        5986# 5992# 6036# 6041# 6064# 6069# 6088# 6093# 6118# 6123# 6145# 6150# 6206#
                        6216# 6222# 6227# 6235# 6241# 6246# 6261# 6264# 6374# 6416# 6423# 6429# 6434#
                        6439# 6445# 6450# 6473# 6525#
T$EXCP= 000000          6880# 6881# 6882# 6920#
T$FLAG- 000040          5181# 5190# 5229# 5233# 5261# 5266# 5352# 5356# 5359# 5361# 5372# 5374# 5385#
                        5389# 5392# 5401# 5403# 5484# 5487# 5490# 5499# 5511# 5525# 5528# 5531# 5533#
                        5544# 5556# 5560# 5598# 5601# 5611# 5615# 5623# 5634# 5637# 5686# 5689# 5692#
                        5701# 5707# 5725# 5734# 5737# 5740# 5749# 5753# 5804# 5807# 5809# 5833# 5836#
                        5839# 5866# 5869# 5872# 5875# 5915# 5925# 5928# 5931# 5938# 5940# 5968# 5971#
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                        6189# 6191# 6195# 6199# 6380# 6383# 6385# 6403# 6409# 6412# 6602# 6608# 6610#
                        6687# 6738# 6791# 6846#
T$GMAN= 000000          2209#
T$HILI= 000005          6880# 6881# 6882# 6920#
T$LAST= 000001          2209# 6937#
T$LOLI= 000001          6880# 6881# 6882# 6920#
T$LSYM= 010000          2209# 2314  2329  4058  4068  4099  4135  4143  4149  4154  4158  4164  4399
                        4439  4461  4730  4830  4839  4858  4913  4926  4990  5094  5129  5131  5200
                        5256  5289  5291  5315  5380  5417  5418  5443  5504  5520  5538  5562  5566
                        5628  5647  5649  5655  5729  5773  5774  5779  5828  5861  5894  5896  5952
                        6000  6045  6073  6097  6127  6154  6156  6283  6533  6625  6699  6751  6808
                        6859  6884  6922
T$LTNO= 000023          6937#
T$NEST= 177777          2209# 2212# 2300# 2314# 2325# 2329# 4042# 4058# 4061# 4068# 4070# 4099# 4102#
                        4135# 4139# 4143# 4145# 4149# 4152# 4154# 4156# 4158# 4160# 4164# 4223# 4229#
                        4246# 4399# 4419# 4439# 4459# 4461# 4477# 4730# 4735# 4830# 4835# 4839# 4853#
                        4858# 4885# 4913# 4916# 4926# 4966# 4967# 4990# 4993# 5094# 5096# 5129# 5131#
                        5178# 5200# 5224# 5225# 5256# 5258# 5289# 5291# 5293# 5315# 5348# 5349# 5380#
                        5382# 5417# 5418# 5420# 5443# 5480# 5481# 5504# 5506# 5520# 5522# 5538# 5540#
                        5562# 5566# 5593# 5595# 5628# 5630# 5647# 5649# 5653# 5655# 5682# 5683# 5729#
                        5731# 5773# 5774# 5777# 5779# 5800# 5801# 5828# 5830# 5861# 5863# 5894# 5896#
                        5912# 5952# 5965# 6000# 6020# 6021# 6045# 6047# 6073# 6075# 6097# 6099# 6127#
                        6129# 6154# 6156# 6172# 6283# 6301# 6533# 6588# 6625# 6677# 6699# 6727# 6751#
                        6779# 6808# 6835# 6859# 6878# 6884# 6918# 6922# 6935#
T$NS0 = 000000          2212# 6935
T$NS1 = 000005          2300# 2314  2325# 2329  4042# 4058  4061# 4068  4070# 4099  4102# 4135  4139#
                        4143  4145# 4149  4152# 4154  4156# 4158  4160# 4164  4223# 4229  4246# 4399
                        4419# 4439  4459# 4461  4477# 4730  4735# 4830  4835# 4839  4853# 4858  4885#
                        4913  4916# 4926  4966# 5131  5178# 5200  5224# 5291  5293# 5315  5348# 5418
                        5420# 5443  5480# 5566  5593# 5649  5653# 5655  5682# 5774  5777# 5779  5800#
                        5896  5912# 5952  5965# 6000  6020# 6156  6172# 6283  6301# 6533  6588# 6625
                        6677# 6699  6727# 6751  6779# 6808  6835# 6859  6878# 6884  6918# 6922
T$NS2 = 000002          4967# 4990  4993# 5094  5096# 5129  5225# 5256  5258# 5289  5349# 5380  5382#
                        5417  5481# 5504  5506# 5520  5522# 5538  5540# 5562  5595# 5628  5630# 5647
```

```
                    5683#   5729    5731#   5773    5801#   5828    5830#   5861    5863#   5894    6021#   6045    6047#
                    6073    6075#   6097    6099#   6127    6129#   6154
T$PTNU= 000000      2209#
T$SAVL= 177777      2209#
T$SEGL= 177777      2209#
T$SUBN= 000000      2209#   4885#   4966#   4967#   4993#   5096#   5178#   5224#   5225#   5258#   5348#   5349#   5382#
                    5480#   5481#   5506#   5522#   5540#   5593#   5595#   5630#   5682#   5683#   5731#   5800#   5801#
                    5830#   5863#   5912#   5965#   6020#   6021#   6047#   6075#   6099#   6129#   6172#   6301#   6588#
                    6677#   6727#   6779#   6835#
T$TAGL= 177777      2209#
T$TAGN= 010104      2209#   2300#   2325#   4042#   4061#   4070#   4102#   4139#   4145#   4152#   4156#   4160#   4223#
                    4246#   4419#   4459#   4477#   4735#   4835#   4853#   4885#   4916#   4966#   4967#   4993#   5096#
                    5178#   5224#   5225#   5258#   5293#   5348#   5349#   5382#   5420#   5480#   5481#   5506#   5522#
                    5540#   5593#   5595#   5630#   5653#   5682#   5683#   5731#   5777#   5800#   5801#   5830#   5863#
                    5912#   5965#   6020#   6021#   6047#   6075#   6099#   6129#   6172#   6301#   6588#   6677#   6727#
                    6779#   6835#   6878#   6918#
T$TEMP= 000000      2277#   2314#   2329#   4058#   4068#   4099#   4135#   4143#   4149#   4154#   4158#   4164#   4229#
                    4399#   4439#   4461#   4730#   4830#   4839#   4858#   4913#   4926#   4990#   5094#   5129#   5131#
                    5181#   5190#   5200#   5229#   5233#   5256#   5261#   5266#   5289#   5291#   5315#   5352#   5356#
                    5359#   5361#   5372#   5374#   5380#   5385#   5389#   5392#   5401#   5403#   5417#   5418#   5443#
                    5484#   5487#   5490#   5499#   5504#   5511#   5520#   5525#   5528#   5531#   5533#   5538#   5544#
                    5556#   5560#   5562#   5566#   5598#   5601#   5611#   5615#   5623#   5628#   5634#   5637#   5647#
                    5649#   5655#   5686#   5689#   5692#   5701#   5707#   5725#   5729#   5734#   5737#   5740#   5749#
                    5753#   5773#   5774#   5779#   5804#   5807#   5809#   5828#   5833#   5836#   5839#   5861#   5866#
                    5869#   5872#   5875#   5894#   5896#   5915#   5925#   5928#   5931#   5938#   5940#   5952#   5968#
                    5971#   5974#   5983#   6000#   6033#   6045#   6061#   6073#   6085#   6097#   6102#   6105#   6108#
                    6115#   6127#   6132#   6135#   6142#   6154#   6156#   6186#   6189#   6191#   6195#   6199#   6283#
                    6380#   6383#   6385#   6403#   6409#   6412#   6533#   6602#   6608#   6610#   6625#   6687#   6699#
                    6738#   6751#   6791#   6808#   6846#   6859#   6880#   6881#   6882#   6884#   6920#   6922#   6935#
T$TEST= 000023       2209#   4885#   4966#   4967    4993    5096    5178#   5224#   5225    5258    5348#   5349    5382
                    5480#   5481    5506    5522    5540    5593#   5595    5630    5682#   5683    5731    5800#   5801
                    5830    5863    5912#   5965#   6020#   6021    6047    6075    6099    6129    6172#   6301#   6588#
                    6677#   6727#   6779#   6835#   6937
T$TSTM= 177777      2209#   2996    3003    3011    3014    3020    3085    3091    3177    3183    3333    3338    3343
T$TSTM= 177777      2209#   2996    3003    3011    3014    3020    3085    3091    3177    3183    3333    3338    3343
                    3546    3592    3597    3742    3752    3817    3818    3952    3959    3973    3995    4010    4020
                    4043    4044    4045    4046    4047    4056    4057    4058    4064    4066    4067    4068    4073
                    4075    4080    4085    4088    4093    4097    4099    4105    4112    4119    4126    4133    4135
                    4140    4141    4142    4143    4146    4147    4148    4149    4153    4154    4157    4158    4163
                    4164    4248    4262    4264    4266    4268    4270    4285    4292    4313    4330    4331    4399
                    4421    4432    4435    4436    4439    4461    4505    4740    4751    4762    4771    4802    4807
                    4813    4855    4856    4858    4887    4907    4908    4911    4913    4921    4924    4967    4974
                    4980    4990    4993    5072    5074    5084    5086    5094    5096    5116    5118    5129    5131
                    5181    5184    5190    5198    5200    5225    5229    5233    5239    5254    5256    5258    5261
                    5266    5272    5287    5289    5291    5296    5300    5305    5309    5313    5315    5349    5352
                    5356    5359    5361    5365    5372    5374    5378    5380    5382    5385    5389    5392    5401
                    5403    5415    5417    5418    5421    5422    5425    5429    5433    5437    5441    5443    5481
                    5484    5487    5490    5495    5499    5502    5504    5506    5511    5516    5520    5522    5525
                    5528    5531    5533    5536    5538    5540    5544    5556    5560    5562    5566    5595    5598
                    5601    5611    5615    5620    5623    5628    5630    5634    5637    5642    5647    5649    5654
                    5655    5683    5686    5689    5692    5701    5707    5715    5720    5725    5729    5731    5734
                    5737    5740    5749    5753    5756    5761    5770    5773    5774    5778    5779    5801    5804
                    5807    5809    5819    5824    5828    5830    5833    5836    5839    5851    5856    5861    5863
                    5866    5869    5872    5875    5885    5890    5894    5896    5915    5925    5928    5931    5938
                    5940    5943    5948    5952    5968    5971    5974    5983    5986    5992    6000    6021    6033
                    6036    6041    6045    6047    6061    6064    6069    6073    6075    6085    6088    6093    6097
                    6099    6102    6105    6108    6115    6118    6123    6127    6129    6132    6135    6142    6145
```

```
                    6150  6154  6156  6186  6189  6191  6195  6199  6206  6216  6222  6227  6235
                    6241  6246  6261  6264  6283  6304  6307  6322  6347  6371  6374  6375  6380
                    6383  6385  6403  6409  6412  6416  6423  6429  6434  6439  6445  6450  6473
                    6510  6520  6525  6526  6533  6602  6608  6610  6625  6687  6699  6738  6751
                    6791  6808  6846  6859
T$TSTS= 000001       2209#  4885#  4966#  5178#  5224#  5348#  5480#  5593#  5682#  5800#  5912#  5965#  6020#
                    6172#  6301#  6588#  6677#  6727#  6779#  6835#
T$$AUT= 010015       4419#  4439
T$$CLE= 010016       4459#  4461
T$$DU = 010022       4853#  4858
T$$HAR= 010102       6878#  6884
T$$HW = 010000       2300#  2314
T$$INI= 010014       4246#  4399
T$$MSG= 010056       4042#  4058  4061#  4068  4070#  4099  4102#  4135  4139#  4143  4145#  4149  4152#
                    4154  4156#  4158  4160#  4164  5293#  5315  5420#  5443  5653#  5655  5777#  5779
T$$PRO= 010013       4223#
T$$SOF= 010103       6918#  6922
T$$SRV= 010024       4477#  4730  4735#  4830  4835#  4839  4916#  4926
T$$SUB= 010072       4967#  4990  4993#  5094  5096#  5129  5225#  5256  5258#  5289  5349#  5380  5382#
                    5417  5481#  5504  5506#  5520  5522#  5538  5540#  5562  5595#  5628  5630#  5647
                    5683#  5729  5731#  5773  5801#  5828  5830#  5861  5863#  5894  6021#  6045  6047#
                    6073  6075#  6097  6099#  6127  6129#  6154
T$$SW = 010001       2325#  2329
T$$TES= 010101       4885#  4913  4966#  5131  5178#  5181  5190  5200  5224#  5229  5233  5261  5266
                    5291  5348#  5352  5356  5359  5361  5372  5374  5385  5389  5392  5401  5403
                    5418  5480#  5484  5487  5490  5499  5511  5525  5528  5531  5533  5544  5556
                    5560  5566  5593#  5598  5601  5611  5615  5623  5634  5637  5649  5682#  5686
                    5689  5692  5701  5707  5725  5734  5737  5740  5749  5753  5774  5800#  5804
                    5807  5809  5833  5836  5839  5866  5869  5872  5875  5896  5912#  5915  5925
                    5928  5931  5938  5940  5952  5965#  5968  5971  5974  5983  6000  6020#  6033
                    6061  6085  6102  6105  6108  6115  6132  6135  6142  6156  6172#  6186  6189
                    6191  6195  6199  6283  6301#  6380  6383  6385  6403  6409  6412  6533  6588#
                    6602  6608  6610  6625  6677#  6687  6699  6727#  6738  6751  6779#  6791  6808
                    6835#  6846  6859
T1          023602 G  2277  4885#
T10         032474 G  2277  5912#
T11         032676 G  2277  5965#
T12         033056 G  2277  6020#
T12.1       033056    6021#
T12.2       033206    6047#
T12.3       033324    6075#
T12.4       033442    6099#
T12.5       033620    6129#
T13         033762 G  2277  6172#
T14         034456 G  2277  6301#
T15         036166 G  2277  6588#
T16         036272 G  2277  6677#
T17         036340 G  2277  6727#
T18         036410 G  2277  6779#
T19         036460 G  2277  6835#
T2          024120 G  2277  4966#
T2.1        024120    4967#
T2.2        024276    4993#
T2.3        024720    5096#
T3          025434 G  2277  5178#
T4          025566 G  2277  5224#
```

```
T4.1    025566          5225#
T4.2    025714          5258#
T5      026644 G        2277    5348#
T5.1    026644          5349#
T5.2    027026          5382#
T6      030056 G        2277    5480#
T6.1    030056          5481#
T6.2    030212          5506#
T6.3    030302          5522#
T6.4    030376          5540#
T7      030636 G        2277    5593#
T7.1    030636          5595#
T7.2    031002          5630#
T8      031260 G        2277    5682#
T8.1    031260          5683#
T8.2    031502          5731#
T9      031762 G        2277    5800#
T9.1    031762          5801#
T9.2    032126          5830#
T9.3    032306          5863#
UAM   = 000200 G        2343#
UPDATE= 000011          2433#
WAIT1   002310          2555#   2987    4350*
WAIT2   002312          2557#   3078    3170    4353*
WAIT3   002314          2559#   3954    4355*
WAIT4   002316          2560#   3954*   3971*
WMAINT  002306          2546#   3675    4394*   4397*   4673    6589
WMODEM= 000005          2429#   3413    3692    4499    4675    5608    5632    5934
WTYPE   002252          2511#   4287*
X     = 000046          2458#   5251    5284    5311    5313
XMTBUF  003230          2662#   3798*   3824*   3829*   3832    3856    3887    3888    3949    3951    3980
X$ALWA= 000000          2209#
X$FALS= 000040          2209#
X$OFFS= 000400          2209#
X$TRUE= 000020          2209#
$BACC   012274          3468#   5704    5750    5844    5846    5873    5880    5936    5975    5980    6082    6106    6112
                        6139    6193    6197    6399    6405
$BASEI  011262          3228#   5231    5264    5354    5368    5387    5485    5507    5526    5552    5599    5687    5735
                        5805    5814    5834    5867    5916    5969    6025    6030    6103    6133    6187    6381    6606
$BUFFS  013204          3738#   6598    6683    6734    6787    6842
$CCITT  002410          2623#   3779    3858    6351
$CLRQI  010702          3068#   3246    3270    3327    3428    3484    3586    4637    5497    5622    5644
$CNTIN  011516          3311#   5488    5509    5529    5561    5690    5738    5837    5870    5929    5972    6058    6190
                        6384
$DMRIN  012064          3394#   3691    5357    5370    5390    5399    5607    5632    5699    5747    5923    5926    5934
$ERROR  012406          3517#   6281    6529    6748    6801    6856
$HALT   012560          3578#   4019    5234    5267    5360    5373    5402    5498    5518    5532    5645    5727    5764
                        5808    5950    5996    6279    6528    6609
$INOUT  014136          3936#   6616    6689    6740    6793    6848
$LOOP   013062          3672#   5557
$LSTIN= 000001          2215#
$LSTTA= 000001          2216#
$MSCLR  011064          3143#   5179    5188    5226    5259    5350    5383    5482    5523    5542    5596    5684    5732
                        5802    5831    5864    5913    5966    6023    6049    6077    6100    6130    6184    6378    6600
                        6685    6736    6789    6844
$ROMO   012742          3625#   4976    5015    5019    5101
```

```
$WAIT   01C246          2975#   3234    3266    3316    3331    3407    3474    3584    3588    5492    5513    5614    5636
                        5706    5724    5752    5816    5848    5882    5939    5982    6032    6060    6084    6114    6141
                        6202    6411
.       = 037744        2203#   2642#   2650#   2657#   2662#   2664#   2669#   2999    3088    3180    3557#   3605#   3968
                        4862#   5141#   5181    5190    5229    5233    5261    5266    5352    5356    5359    5361    5372
                        5374    5385    5389    5392    5401    5403    5455#   5484    5487    5490    5499    5511    5525
                        5528    5531    5533    5544    5556    5560    5598    5601    5611    5615    5623    5634    5637
                        5659#   5686    5689    5692    5701    5707    5725    5734    5737    5740    5749    5753    5782#
                        5804    5807    5809    5833    5836    5839    5866    5869    5872    5875    5915    5925    5928
                        5931    5938    5940    5968    5971    5974    5983    6033    6061    6085    6102    6105    6108
                        6115    6132    6135    6142    6186    6189    6191    6195    6199    6380    6383    6385    6403
                        6409    6412    6602    6608    6610    6687    6738    6791    6846    6926#   6930#
```

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BACCIR  2892#  5844  5873  5975  6082  6106  6139  6193
BACCIT  2918#  5704  5750  5846  5880  5936  5980  6112  6197
BASEIN  2795#  5231  5264  5354  5368  5387  5485  5507  5526  5599  5687  5735  5805  5814  5834
        5867   5916  5969  6025  6030  6103  6133  6187  6381  6606
BCOMPL    15#  2209#  4265  4267  4269
BERROR    19#  2209#  3247  3267  3585  3587  3589  6203
BGNAU     23#  2209#
BGNAUT    31#  2209#  4419
BGNCLN    39#  2209#  4459
BGNDU     47#  2209#  4853
BGNHRD    55#  2209#  6878
BGNHW     66#  2209#  2300
BGNINI    77#  2209#  4246
BGNMOD    85#  2209#  2212
BGNMSG    98#  2209#  4042  4061  4070  4102  4139  4145  4152  4156  4160  5293  5420  5653  5777
BGNPRO   106#  2209#  4223
BGNPTA   114#  2209#
BGNRPT   144#  2209#
BGNSEG   152#  2209#
BGNSET   161#  2209#
BGNSFT   182#  2209#  6918
BGNSRV   193#  2209#  4477  4735  4835  4916
BGNSUB   201#  2209#  4967  4993  5096  5225  5258  5349  5382  5481  5506  5522  5540  5595  5630
        5683   5731  5801  5830  5863  6021  6047  6075  6099  6129
BGNSW    225#  2209#  2325
BGNTST   236#  2209#  4885  4966  5178  5224  5348  5480  5593  5682  5800  5912  5965  6020  6172
        6301   6588  6677  6727  6779  6835
BNCOMP   266#  2209#  4271  4286
BNERRO   270#  2209#  3235  3317  3332  3409  3475
BREAK    274#  2209#  2996  3085  3177  3959
BRESET   278#  2209#  4855
CALL    2735#  3691  4637  4976  5015  5019  5101  5552  5557  6281  6399  6405  6529  6598  6616
        6683   6689  6734  6740  6748  6787  6793  6801  6842  6848  6856
CKLOOP   282#  2209#
CLEAR   2779#  5179  5188  5226  5259  5350  5383  5482  5523  5542  5596  5684  5732  5802  5831
        5864   5913  5966  6023  6049  6077  6100  6130  6184  6378  6600  6685  6736  6789  6844
CLOCK    286#  2209#
CLOSE    292#  2209#
CLRVEC   296#  2209#  3817  4262  4432  4911  6307  6371  6520
CNTRIN  2823#  5488  5509  5529  5561  5690  5738  5837  5870  5929  5972  6058  6190  6384
COMMEN   301#  2209#
DELAY    322#  2209#  2999  3088  3180  3968
DESCRI   317#  2209#  2692
DEVTYP   341#  2209#  2687
DISPAT   346#  2209#  2277
DISPLA   360#  2209#
DMRIN   2844#  5357  5370  5390  5399  5632  5699  5747  5923  5926  5934
DOCLN    376#  2209#  4436  4908
DODU     380#  2209#  4435  4907
DORPT    385#  2209#
ENDAU    389#  2209#
ENDAUT   401#  2209#  4439
ENDCLN   413#  2209#  4461
ENDCOM   425#  2209#
ENDDU    441#  2209#  4858
ENDHRD   453#  2209#  6884
```

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ENDHW    465#  2209#  2314
ENDINI   475#  2209#  4399
ENDMOD   487#  2209#  6935
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ENDRPT   529#  2209#
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ENDSRV   580#  2209#  4730  4830  4839  4926
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ERRHRD   718#  2209#
ERROR    722#  2209#
ERRSF    726#  2209#
ERRSOF   730#  2209#  3546
ERRTBL   734#  2209#
ESCAPE   744#  2209#  5181  5190  5229  5233  5261  5266  5352  5356  5359  5361  5372  5374  5385
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FEQUAL   810#  2209#
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GETWOR   829#  2209#
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GMANIL   859#  2209#
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GPRML    934#  2209#
HEADER   954#  2209#  2251
INLOOP   962#  2209#
IOSETU   966#  2209#
IOSTAR   974#  2209#
KT11     982#  2209#
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MANUAL  1162#  2209#
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MSMCHI             4#  2209#
MSMCLO          1624#  2209#
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         5433#  5437#  5441#  5443#  5481#  5484#  5487#  5490#  5495#  5499#  5502#  5504#  5506#  5511#  5516#
         5520#  5522#  5525#  5528#  5531#  5533#  5536#  5538#  5540#  5544#  5556#  5560#  5562#  5566#  5595#
         5598#  5601#  5611#  5615#  5620#  5623#  5628#  5630#  5634#  5637#  5642#  5647#  5649#  5654#  5655#
         5683#  5686#  5689#  5692#  5701#  5707#  5715#  5720#  5725#  5729#  5731#  5734#  5737#  5740#  5749#
         5753#  5756#  5761#  5770#  5773#  5774#  5778#  5779#  5801#  5804#  5807#  5809#  5819#  5824#  5828#
         5830#  5833#  5836#  5839#  5851#  5856#  5861#  5863#  5866#  5869#  5872#  5875#  5885#  5890#  5894#
         5896#  5915#  5925#  5928#  5931#  5938#  5940#  5943#  5948#  5952#  5968#  5971#  5974#  5983#  5986#
         5992#  6000#  6021#  6033#  6036#  6041#  6045#  6047#  6061#  6064#  6069#  6073#  6075#  6085#  6088#
         6093#  6097#  6099#  6102#  6105#  6108#  6115#  6118#  6123#  6127#  6129#  6132#  6135#  6142#  6145#
         6150#  6154#  6156#  6186#  6189#  6191#  6195#  6199#  6206#  6216#  6222#  6227#  6235#  6241#  6246#
         6261#  6264#  6283#  6304#  6307#  6322#  6347#  6371#  6374#  6375#  6380#  6383#  6385#  6403#  6409#
         6412#  6416#  6423#  6429#  6434#  6439#  6445#  6450#  6473#  6510#  6520#  6525#  6526#  6533#  6602#
         6608#  6610#  6625#  6687#  6699#  6738#  6751#  6791#  6808#  6846#  6859#
M$WORD   1994#  2209#  2251#  2277#  3003#  3014#  3091#  3183#  3338#  3343#  3546#  3592#  3597#  3973#  3995#
         4010#  4505#  4740#  4751#  4762#  4771#  4802#  4807#  4813#  4921#  5072#  5084#  5116#  5198#  5239#
         5254#  5272#  5287#  5365#  5378#  5415#  5495#  5502#  5516#  5536#  5620#  5642#  5715#  5720#  5756#
         5761#  5770#  5819#  5824#  5851#  5856#  5885#  5890#  5943#  5948#  5986#  5992#  6036#  6041#  6064#
         6069#  6088#  6093#  6118#  6123#  6145#  6150#  6206#  6216#  6222#  6227#  6235#  6241#  6246#  6261#
         6264#  6374#  6416#  6423#  6429#  6434#  6439#  6445#  6450#  6473#  6525#  6880#  6881#  6882#  6920#
         6937
M$XFER   1682#  2209#
OPEN     1171#  2209#
POINTE   1176#  2209#  2228
PRINTB   1239#  2209#  3011   3020   3333   4043   4044   4045   4046   4047   4056   4057   4064   4066   4067
         4073   4075   4080   4085   4088   4093   4097   4105   4112   4119   4126   4133   4140   4141   4142
         4146   4147   4148   4153   4157   4163   4292   4313   4974   4980   5074   5086   5118   5184   5296
         5300   5305   5309   5313   5421   5422   5425   5429   5433   5437   5441   5654   5778   6375   6526
PRINTF   1279#  2209#  4856
PRINTS   1319#  2209#
PRINTX   1359#  2209#  4924
READBU   1399#  2209#
READEF   1403#  2209#  4264   4266   4268   4270
RFLAGS   1408#  2209#
SETPRI   1413#  2209#  3752   3952   4020   4248   6322
SETVEC   1418#  2209#  3742   4330   4331   4421   4887   6304   6347   6510
SHUTDN   2876#  4019   5234   5267   5360   5373   5402   5498   5518   5532   5645   5727   5764   5808   5950
         5996   6279   6528   6609
SLASH    1424#  2209#
STARS    1438#  2209#
SVC      1452#  2208#  2209
WAIT     2750#  3234   3246   3266   3270   3316   3327   3331   3407   3428   3474   3484   3584   3586   3588
         5492   5497   5513   5614   5622   5636   5644   5706   5724   5752   5816   5848   5882   5939   5982
         6032   6060   6084   6114   6141   6202   6411
XFER     1612#  2209#
XFERF    1636#  2209#
```

```
XFERT    1620#   2209#


. ABS.  037744     000


 ERRORS DETECTED:  0

 CZDMIA.BIN,CZDMIA.SEQ/CRF/NL:TOC=SVC34R.MLB,CZDMIA.P11
 RUN-TIME: 118 144 13 SECONDS
 RUN-TIME RATIO: 507/277=1.8
 CORE USED:  17K  (33 PAGES)
```