DMR-11

DMR-11 FCTNL DIAG
CZDMIDO

AH-F832D-MC
FICHE 1 OF 2

DMR-11

DMR-11 FCTNL DIAG
CZDMIDO

AH-F832D-MC
FICHE 2 OF 2

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5                                   IDENTIFICATION
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7
8                                   PRODUCT CODE:   AC-F830D-MC
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10                                  PRODUCT NAME:   CZDMIDO  DMR-11 FCTNL DIAG
11
12                                  PRODUCT DATE:   OCTOBER 1981
13
14                                  MAINTAINER:     DIAGNOSTIC ENGINEERING
15
16                                  AUTHOR:         MIKE O'CONNOR
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36                          DEC              DECUS            DECTAPE
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REVISION HISTORY

REVISION	REASON	DATE
A	INITIAL RELEASE	5 FEB 80
B	1. SUPPORT REMOTE LOOPBACK IN TESTS 17-19 2. BUG FIX - CONTROL C EXIT OF PROGRAM WOULD CAUSE UNEXPECTED INTERRUPT ON RESTART - PUT MASTER CLEAR IN CLEAN UP CODE 3. BUG FIX - DTR WAS DROPPED WHEN WRITING MODEM MAINTENANCE BIT (AFFECTED MANUF. TURNAROUND.)	17 APR 80
C	ADDED CHECK OF M8207 PROGRAM TIMER IN TEST 10	20 AUG 80
D	1. AT ENGINEERING'S REQUEST, CHANGED TEST 15 SO THAT IT NO LONGER TESTS DMC MODE BASE IN RESUME. ALSO CHANGED TEST 16 SO THAT A MASTER CLEAR IS DONE BEFORE A BASE IN RESUME AND TEST 16 NOW ONLY RUNS IN INTERNAL LOOPBACK MAKING THESE CHANGES GETS AROUND A PROBLEM IN MANUFACTURING. THE DMR DOCUMENTATION WAS CHANGED TO SPECIFY THAT A MASTER CLEAR MUST BE DONE BEFORE A BASE IN RESUME. 2. BUG FIX - ALLOWED 1 REP TO BE SENT IN TEST 14. THIS IS NECESSARY TO MASK THE SOFT ERROR MESSAGE THAT CAN OCCUR WHEN LARGE MESSAGES ARE SENT AT LOW BAUD RATES.	26 OCT 81

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.

NOTE THAT A MANUFACTURING-ONLY PATCH IS REQUIRED TO RUN WHEN USING THE SPECIAL MANUFACTURING TEST CONNECTORS. THIS PATCH WILL CHANGE THE FLAG WORD 'MANUF' TO A NON-ZERO VALUE. WHEN THE FLAG IS NON-ZERO, THE MAINTENANCE BIT IS SET BY A MODEM WRITE COMMAND IF THE V.35 OR EIA ONBOARD CONNECTORS ARE USED.

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:

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

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

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

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

6.3.1.5 EFFECT OF START COMMAND

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

THE HARDWARE PARAMETER DIALOGUE COMMENCES WITH THE QUESTION ''# UNITS?'' TO WHICH THE OPERATOR REPLIES WITH A DECIMAL NUMBER N FROM 1 TO 16. THE TERM ''UNIT'' REFERS TO THE DEVICE TO WHICH THIS SERIES OF DIAGNOSTICS IS DEDICATED. FOLLOWING THIS ARE THE QUESTIONS WHEREBY THE P-TABLES THEMSELVES WILL BE BUILT. EACH P-TABLE IS A CORE-RESIDENT TABLE CONTAINING ALL THE HARDWARE INFORMATION FOR ONE UNIT. THE OPERATOR MUST SUPPLY N (NUMBER OF UNITS) VALUES FOR EACH QUESTION. HE MAY DO THIS BY GIVING ONE ANSWER TO EACH QUESTION (IN WHICH CASE THE SERIES OF QUESTIONS WILL BE POSED N TIMES) OR BY GIVING N VALUES, SEPARATED BY COMMAS, TO EACH QUESTION (SERIES WILL BE POSED ONCE). EACH QUESTION IS FOLLOWED BY THE RESPONSE RADIX (D FOR DECIMAL, B FOR BINARY, O FOR

OCTAL, L FOR YES/NO) IN PARENTHESES AND THE DEFAULT VALUE AFTER THE PARENTHESES.

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

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

EXAMPLE:

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

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

6.3.2 RESTART COMMAND

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

6.3.2.1 TESTS, PASS, AND FLAGS SWITCHES

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

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

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

6.3.2.3 EFFECT OF RESTART COMMAND

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

6.3.3 CONTINUE COMMAND

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

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

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

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

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

6.3.3.3 EFFECT OF CONTINUE COMMAND

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

6.3.4 PROCEED COMMAND

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

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

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

6.3.4.2 EFFECT OF PROCEED COMMAND

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

6.3.5 ADD COMMAND

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

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

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

6.3.5.2 EFFECT OF ADD COMMAND

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

6.3.6 DROP COMMAND

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

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

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

6.3.6.2 EFFECT OF DROP COMMAND

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

6.3.7 PRINT COMMAND

****
PRI(NT)

```
597                                 **************************************************************
598
599
600                                 6.3.7.1 EFFECT OF PRINT COMMAND
601
602                                 THE TOTAL NUMBER OF ERRORS FOR EACH UNIT SINCE THE LAST
603                                 START OR RESTART COMMAND ARE PRINTED.  THE ISR (INHIBIT
604                                 STATISTICAL REPORTING) FLAG IS CLEARED.
605
606
607                                 6.3.8 DISPLAY COMMAND
608
609                                 **************************************************************
610                                 DIS(PLAY)/UNITS:<UNIT-LIST>
611                                 **************************************************************
612
613
614                                 6.3.8.1 UNITS SWITCH (/UNITS:<UNIT-LIST>)
615
616                                 <UNIT-LIST> IS AS IN THE RESTART COMMAND.
617
618
619                                 6.3.8.2 EFFECT OF DISPLAY COMMAND
620
621                                 THE HARDWARE P-TABLES FOR ALL UNITS UNDER TEST ARE PRINTED
622                                 OUT IN THE FORMAT IN WHICH THEY WERE ENTERED.  ANY UNITS
623                                 THAT WERE DROPPED BY THE OPERATOR 'DROP'' COMMAND ARE SO
624                                 DESIGNATED.
625
626
627                                 6.3.9 FLAGS COMMAND
628
629                                 **************************************************************
630                                 FLA(GS)
631                                 **************************************************************
632
633
634                                 6.3.9.1 EFFECT OF FLAGS COMMAND
635
636                                 THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.
637
638
639                                 6.3.10 ZFLAGS COMMAND
640
641                                 **************************************************************
642                                 ZFL(AGS)
643                                 **************************************************************
644
645
646                                 6.3.10.1 EFFECT OF ZFLAGS COMMAND
647
648                                 ALL FLAGS ARE CLEARED.
649
650
651                                 6.3.11  CONTROL  CHARACTERS
652
```

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 (SEL0) 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 000-776 (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
     (O)  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 WILL 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
```

```
793
794                          THE  FIRST  TIME THE SERIES IS ASKED, SLOT ONE RECEIVES A 75
795                          IN ALL 16 TABLES.  SLOT TWO RECEIVES THE VALUES 0,1,2,...,6
796                          IN  TABLES 0 THRU 6 AND A CONSTANT 6 IN TABLES 7 THRU 15.
797                          SLOT THREE RECEIVES A CONSTANT 76 IN ALL 16 TABLES.
798
799                          THE SECOND TIME THRU THE SERIES, TABLES 7 THRU THE END  ARE
800                          GOING TO BE AFFECTED (NOTE THAT THIS PIECE OF INFORMATION IS
801                          PRINTED OUT FOR THE THE OPERATOR IN THE FORM 'UNIT  XX'' AT
802                          THE  BEGINNING  OF EACH SERIES).  QUESTION 1 IS RESPONDED TO
803                          BY A <CR>, SO SLOT ONE STAYS AT CONSTANT  75  IN  TABLES  7
804                          THRU 15, SINCE NO NEW EXPLICIT VALUES ARE TYPED IN.  SLOT TWO
805                          GETS THE VALUES 7,8,9,10,11 IN TABLES 7  THRU  11,  AND
806                          GETS AN 11 IN SLOT 12, AND GETS THE VALUES 13,14,15 IN
807                          TABLES 13 THRU 15. SLOT THREE GETS THE VALUE 77 IN TABLES 7
808                          THRU 15.
809
810                          THE DIALOGUE IS TERMINATED WHEN THE SOFTWARE RECOGNIZES THAT
811                          16 EXPLICIT VALUES HAVE BEEN GIVEN FOR AT LEAST ONE QUESTION
812                          (NAMELY QUESTION 2).
813
```

```
                        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.
;* THIS TEST WILL ALSO USE AN APPROXIMATE TIMER TO DETERMINE IF THE
;* M8207 1 MSEC. PROGRAM TIMER IS OUT OF RANGE.
;*
;*****************************************************************************



;*****************************************************************************
;*                  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.
;*
;*************************************************************************

```

```
1053
1054                    ;*************************************************************************
1055                    ;*              TEST 15 - DMR-11
1056                    ;* DMC MODE
1057                    ;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS.
1058                    ;*
1059                    ;*      ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
1060                    ;*      THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
1061                    ;*      THE RECEIVE/TRANSMIT TABLE.
1062                    ;*
1063                    ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
1064                    ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
1065                    ;*      SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
1066                    ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
1067                    ;*      HIERARCHY:
1068                    ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
1069                    ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
1070                    ;*                 THAN 2K BYTES, USE THAT MEMORY
1071                    ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
1072                    ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
1073                    ;*
1074                    ;*************************************************************************
1075
```

```
;*************************************************************************
;*                 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    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN RECEIVE
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       1 BA/CC IN RECEIVE
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       2 BA/CC IN TRANSMIT
;*       HALT    MASTER CLEAR    BASE IN RESUME
;*       1 BA/CC IN TRANSMIT
;*       HALT    MASTER CLEAR    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.
;*
;*       THIS TEST RUNS IN INTERNAL TTL ONLY
;*
;*************************************************************************
```

```

;*******************************************************************************
;*                      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
;* 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 :

  CZDMI DVC FTL ERR 00002 ON UNIT 00 TST 006 SUB 000 PC:  016210
  TIME OUT
  ERROR IN SUBROUTINE CALLED AT PC: 036174
  BUFFER STATUS
  # OF BUFFERS: 7
  BUFFER SIZE: 2048
  IN  - RCV ASSIGNED:  7      XMIT ASSIGNED:  7
  OUT - RCV RETURNED:  0      XMIT RETURNED:  0
  DMR RUN ACKNOWLEDGE NOT RCVD
  (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.
@
```

```
1224          002000                          .=2000
1225
1226
1227
1228
1229                                          .MCALL  SVC
1230  002000                                  SVC                                     ; INITIALIZE SUPERVISOR MACROS
1231
1232
1233  002000                          BGNMOD
1234
1235
1236          000001                  $LSTIN=   1     ;   LIST INSTRUCTIONS
1237          000001                  $LSTTAG=  1
1238          000001                  SVCINS=   1     ;   LIST INSTRUCTIONS, SHIFTED RIGHT
1239          000001                  SVCTST=   1     ;   LIST TEST TAGS, SHIFTED RIGHT
1240          000001                  SVCSUB=   1     ;   LIST SUBTEST TAGS, SHIFTED RIGHT
1241          000001                  SVCGBL=   1     ;   LIST GLOBAL TAGS, SHIFTED RIGHT
1242          000001                  SVCTAG=   1     ;   LIST OTHER TAGS, SHIFTED RIGHT
1243
1244                                  ;       CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
1245                                  ;       TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
1246                                  ;       SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
1247                                  ;       CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
1248
1249  002000                            POINTER BGNSW,BGNDU,BGNSFT
1250
1251
1252
1253
```

```
1254                                    .SBTTL  PROGRAM HEADER
1255                                    ;++
1256                                    ;       THE PROGRAM HEADER MACRO CHARACTERIZES THIS DIAGNOSTIC. THE
1257                                    ;       HEADER MACRO'S ARGUMENTS ARE FILE NAME, RELEASE LEVEL, PATCH
1258                                    ;       DISPOSITION OF THE MOST RECENT PATCH, MAXIMUM TEST TIME IN SEC.,
1259                                    ;       AND THE TYPE OF DIAGNOSTIC (0-SEQUENTIAL, 1-EXERCISER).  THESE
1260                                    ;       ARGUMENTS ARE IN RESPECTIVE ORDER.
1261                                    ;--
1262
1263
1264  002000                                    HEADER CZDMI,D,0,600.,0
1265  002000                                                                  L$NAME::
1266  002000      103                                                                 .ASCII /C/
1267  002001      132                                                                 .ASCII /Z/
1268  002002      104                                                                 .ASCII /D/
1269  002003      115                                                                 .ASCII /M/
1270  002004      111                                                                 .ASCII /I/
1271  002005      000                                                                 .BYTE   0
1272  002006      000                                                                 .BYTE   0
1273  002007      000                                                                 .BYTE   0
1274  002010                                                                  L$REV::
1275  002010      104                                                                 .ASCII  /D/
1276  002011                                                                  L$DEPO::
1277  002011      060                                                                 .ASCII  /0/
1278  002012                                                                  L$UNIT::
1279  002012  000000                                                                  .WORD   0
1280  002014                                                                  L$TIML::
1281  002014  001130                                                                  .WORD   600.
1282  002016                                                                  L$HPCP::
1283  002016  036744                                                                  .WORD   L$HARD
1284  002020                                                                  L$SPCP::
1285  002020  037700                                                                  .WORD   L$SOFT
1286  002022                                                                  L$HPTP::
1287  002022  002174                                                                  .WORD   L$HW
1288  002024                                                                  L$SPTP::
1289  002024  002224                                                                  .WORD   L$SW
1290  002026                                                                  L$LADP::
1291  002026  040100                                                                  .WORD   L$LAST
1292  002030                                                                  L$STA::
1293  002030  000000                                                                  .WORD   0
1294  002032                                                                  L$CO::
1295  002032  000000                                                                  .WORD   0
1296  002034                                                                  L$DTYP::
1297  002034  000000                                                                  .WORD   0
1298  002036                                                                  L$APT::
1299  002036  000000                                                                  .WORD   0
1300  002040                                                                  L$DTP::
1301  002040  002124                                                                  .WORD   L$DISPATCH
1302  002042                                                                  L$PRIO::
1303  002042  000000                                                                  .WORD   0
1304  002044                                                                  L$ENVI::
1305  002044  000000                                                                  .WORD   0
1306  002046                                                                  L$EXP1::
1307  002046  000000                                                                  .WORD   0
1308  002050                                                                  L$MREV::
1309  002050      003                                                                 .BYTE   C$REVISION
```

```
002051      003                                   .BYTE   C$EDIT
002052                                   L$EF::
002052   000000                                   .WORD   0
002054   000000                                   .WORD   0
002056                                   L$SPC::
002056   000000                                   .WORD   0
002060                                   L$DEVP::
002060   010240                                   .WORD   L$DVTYP
002062                                   L$REPP::
002062   000000                                   .WORD   0
002064                                   L$EXP4::
002064   000000                                   .WORD   0
002066                                   L$EXP5::
002066   000000                                   .WORD   0
002070                                   L$AUT::
002070   000000                                   .WORD   0
002072                                   L$DUT::
002072   023640                                   .WORD   L$DU
002074                                   L$LUN::
002074   000000                                   .WORD   0
002076                                   L$DESP::
002076   010246                                   .WORD   L$DESC
002100                                   L$LOAD::
002100   104035                                   EMT     E$LOAD
002102                                   L$ETP::
002102   000000                                   .WORD   0
002104                                   L$ICP::
002104   020452                                   .WORD   L$INIT
002106                                   L$CCP::
002106   022046                                   .WORD   L$CLEAN
002110                                   L$ACP::
002110   021756                                   .WORD   L$AUTO
002112                                   L$PRT::
002112   020444                                   .WORD   L$PROT
002114                                   L$TEST::
002114   000000                                   .WORD   0
002116                                   L$DLY::
002116   000000                                   .WORD   0
002120                                   L$HIME::
002120   000000                                   .WORD   0

                        .EVEN
```

```
                                .SBTTL  DISPATCH TABLE

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

                                        DISPATCH 19
002122                                                                  .WORD   19
002122  000023                                                 L$DISPATCH::
002124                                                                  .WORD   T1
002124  023720                                                          .WORD   T2
002126  024230                                                          .WORD   T3
002130  025544                                                          .WORD   T4
002132  025676                                                          .WORD   T5
002134  026724                                                          .WORD   T6
002136  030136                                                          .WORD   T7
002140  030716                                                          .WORD   T8
002142  031340                                                          .WORD   T9
002144  032042                                                          .WORD   T10
002146  032554                                                          .WORD   T11
002150  033000                                                          .WORD   T12
002152  033160                                                          .WORD   T13
002154  034064                                                          .WORD   T14
002156  034614                                                          .WORD   T15
002160  036360                                                          .WORD   T16
002162  036462                                                          .WORD   T17
002164  036550                                                          .WORD   T18
002166  036620                                                          .WORD   T19
002170  036670
```

```
1397                                    .SBTTL  DEFAULT HARDWARE P-TABLE
1398
1399                                    ;////////////////////////////////////////////////////////////////////////////
1400                                    ;/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
1401                                    ;/ THE TEST-DEVICE PARAMETERS.  **NOTE - MANY OF THE P-TABLE VALUES LISTED
1402                                    ;/ BELOW ARE NOT USED IN THIS DIAGNOSTIC BUT ARE INCLUDED TO AGREE WITH
1403                                    ;/ M8207 & M8203 DIAGNOSTIC P-TABLES.
1404                                    ;////////////////////////////////////////////////////////////////////////////
1405
1406  002172                                    BGNHW   DFPTBL
1407  002172  000013                                                                   .WORD   L10000-L$HW/2
1408  002174                                                                          L$HW::
1409  002174                                                                          DFPTBL::
1410
1411  002174  000000                            .WORD       0        ;**NOT USED - MICROPROCESSOR TYPE
1412  002176  160170                            .WORD    160170      ;DMR11 CSR UNIBUS ADDRESS DEFAULT
1413  002200  000300                            .WORD     300        ;DMR11 INTERRUPT VECTOR DEFAULT
1414  002202  000000                            .WORD       0        ;**NOT USED - PRIORITY LEVEL
1415  002204  000000                            .WORD       0        ;**NOT USED - LINE UNIT
1416  002206  000000                            .WORD      000       ;**NOT USED - SWITCH PACK #1 (REG 11)
1417  002210  000000                            .WORD      000       ;**NOT USED - SWITCH PACK #2 (REG 15)
1418  002212  000000                            .WORD      000       ;**NOT USED - SWITCH PACK #3 (REG 16)
1419  002214  000005                            .WORD       5        ;CABLE TURNAROUND (DEFAULT = CABLE(5))
1420  002216  000000                            .WORD       0        ;**NOT USED - BAUD RATE
1421  002220  000000                            .WORD       0        ;**NOT USED - RUN SWITCH
1422
1423  002222                                    ENDHW
1424  002222                                                                          L10000:
1425
1426
1427
1428
1429
1430
```

```
                                .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
002222  000001                                                                    .WORD   L10001-L$SW/2
002224                                                                      L$SW::
002224                                                                      SFPTBL::

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

```
                                .SBTTL  GLOBAL EQUATES SECTION

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

002226                                  EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
100000                          BIT15== 100000
040000                          BIT14== 40000
020000                          BIT13== 20000
010000                          BIT12== 10000
004000                          BIT11== 4000
002000                          BIT10== 2000
001000                          BIT09== 1000
000400                          BIT08== 400
000200                          BIT07== 200
000100                          BIT06== 100
000040                          BIT05== 40
000020                          BIT04== 20
000010                          BIT03== 10
000004                          BIT02== 4
000002                          BIT01== 2
000001                          BIT00== 1
                                ;
001000                          BIT9==  BIT09
000400                          BIT8==  BIT08
000200                          BIT7==  BIT07
000100                          BIT6==  BIT06
000040                          BIT5==  BIT05
000020                          BIT4==  BIT04
000010                          BIT3==  BIT03
000004                          BIT2==  BIT02
000002                          BIT1==  BIT01
000001                          BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
000040                          EF.START==      32.                     ; START COMMAND WAS ISSUED
000037                          EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
000036                          EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
000035                          EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
000034                          EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
000340                          PRI07== 340
000300                          PRI06== 300
000240                          PRI05== 240
000200                          PRI04== 200
000140                          PRI03== 140
```

```
1508    000100          PRI02== 100
1509    000040          PRI01== 40
1510    000000          PRI00== 0
1511                    ;
1512                    ;OPERATOR FLAG BITS
1513                    ;
1514    000004          EVL==     4
1515    000010          LOT==    10
1516    000020          ADR==    20
1517    000040          IDU==    40
1518    000100          ISR==   100
1519    000200          UAM==   200
1520    000400          BOE==   400
1521    001000          PNT==  1000
1522    002000          PRI==  2000
1523    004000          IXE==  4000
1524    010000          IBE== 10000
1525    020000          IER== 20000
1526    040000          LOE== 40000
1527    100000          HOE== 100000
1528                    ;;*****************************************************************************
1529
1530                    ;;*****************************************************************************
1531                    ;SWITCH REGISTER OPTIONS
1532
1533    100000          SW15=   100000
1534    040000          SW14=   40000
1535    020000          SW13=   20000
1536    010000          SW12=   10000
1537    004000          SW11=   4000
1538    002000          SW10=   2000
1539    001000          SW09=   1000
1540    000400          SW08=   400
1541    000200          SW07=   200
1542    000100          SW06=   100
1543    000040          SW05=   40
1544    000020          SW04=   20
1545    000010          SW03=   10
1546    000004          SW02=   4
1547    000002          SW01=   2
1548    000001          SW00=   1
1549
1550                    ;;*****************************************************************************
1551                    ;;CSR AND STAUS WORD DEFINITIONS
1552                    ;;SEL0 (CSR) - BSEL0/BSEL1
1553    100000          RUN=    BIT15           ;SET IF RUNNING
1554    040000          MCLR=   BIT14           ;MASTER CLEAR OF PROCESSOR AND LINE UNIT
1555    020000          MDIAG=  BIT13           ;CSR MAINTENANCE - ENABLE MICRODIAGNOSTICS
1556    010000          STLU=   BIT12           ;CSR MAINTENANCE - STEP LINE UNIT
1557    004000          LPLU=   BIT11           ;CSR MAINTENANCE - LINE UNIT LOOP
1558    002000          ROMO=   BIT10           ;CSR MAINTENANCE
1559    001000          ROMI=   BIT9            ;CSR MAINTENANCE
1560    000400          STUP=   BIT8            ;CSR MAINTENANCE - USED WITH LOOP LU
1561                                            ;WHEN ASSERTED, XMITTER SHIFTS; CLEAR, REC. SHIFTS
1562    000200          RDI=    BIT7            ;CSR - DMR11 READY RESPONSE
1563    000100          IESET=  BIT6            ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS
```

```
1564
1565            000040          RQI=    BIT5            ;CPU WHEN RDI SET IN RESPONSE TO RQI BEING SET.
1566            000020          IECLR=  BIT4            ;CSR - REQUEST IN
1567                                                    ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS
1568                                                    ;CPU WHEN RDI CLEARS IN RESPONSE TO RQI BEING CLEAR.
1569            000004          RCV=    BIT2            ;(DMR RUN MODE ONLY)
1570                                                    ;CSR -  IF 0, TRANSMIT   &   IF 1, RECEIVE
1571                            ;;SEL2 - BSEL2/BSEL3
1572            000200          RDO=    BIT7            ;SEL2 - DMR11 SETS TO INDICATE DATA READY FOR OUTPUT
1573            000100          IEO=    BIT6            ;SEL2 - SET TO ENABLE DMR11 TO INTERRUPT WHEN RDO
1574
1575                            ;;SEL6 - BSEL6/BSEL7
1576            020000          BASEUP= BIT13           ;SEL6 - CONTROL OUT - RESPONSE TO DMR MODE BASE
1577                                                    ;       TABLE UPDATE COMMAND.
1578            010000          RES=    BIT12           ;SEL6 - BASE IN -- WHEN SET CAUSES
1579                                                    ;       RESUMPTION OF OPERATION
1580            010000          CTS=    BIT12           ;SEL6 - CONTROL OUT - CTS FAILED
1581            004000          SECN=   BIT11           ;SEL6 - CONTROL IN -- START TIME (3 SEC IF SET
1582                                                    ;       1 SEC IF CLEAR)
1583            002000          HDX=    BIT10           ;SEL6 - HALF-DUPLEX  &  CLEAR FOR FULL-DUPLEX
1584            002000          CD=     BIT10           ;SEL6 - CONTROL OUT - CD GLITCHED
1585            001000          HALTC=  BIT9            ;SEL6 - EXTENDED CONTROL OUT - HALT COMPLETED
1586            000400          MAINT=  BIT8            ;SEL6 - DDCMP MAINTENANCE DURING CONTROL IN
1587            000522          DMR=    BIT8!122        ;SEL6 - BASE IN -- SET FOR DMR11 MODE
1588                                                    ;       122 IS THE DMR PASSWORD FOR BSEL6 AND
1589                                                    ;       BIT8 SETS THE DMR MODE BIT IN BSEL7
1590            000400          NXM=    BIT8            ;SEL6 - CONTROL OUT - NON EXISTENT MEMORY
1591            000200          STREC=  BIT7            ;SEL6 - CONTROL OUT - START RECEIVED
1592            000100          DISCON= BIT6            ;SEL6 - CONTROL OUT - DISCONNECT
1593            000100          DTR=    BIT6            ;SEL6 - MODEM WRITE - DATA TERMINAL READY
1594            000040          DMRRUN= BIT5            ;SEL6 - CONTROL OUT - DMR RUN MODE
1595            000020          TOLONG= BIT4            ;SEL6 - CONTROL OUT - MESSAGE TOO LONG
1596            000010          MAINT1= BIT3            ;SEL6 - MODEM WRITE - LOCAL MODEM LOOPBACK
1597            000010          MNTREC= BIT3            ;SEL6 - CONTROL OUT - MAINTENANCE MSG. RECEIVED
1598            000004          NOBFR=  BIT2            ;SEL6 - CONTROL OUT - NO BUFFER
1599            000004          MAINT2= BIT2            ;SEL6 - MODEM WRITE - REMOTE MODEM LOOPBACK
1600            000002          TOUT=   BIT1            ;SEL6 - CONTROL OUT - TIME OUT
1601            000001          NAKS=   BIT0            ;SEL6 - CONTROL OUT - NAKS THRESHOLD EXCEEDED
1602
1603
1604                            ;;**************************************************************************
1605                            ;;DDCMP COMMANDS - BITS 0 & 1 IN SEL0 AND SEL2
1606
1607                            ;INPUT (SEL0)
1608            000000          BACCT=  0               ;BUF ADDRESS AND CHARACTER COUNT TRANSMIT
1609            000001          CNTRL=  1               ;CONTROL COMMAND (IN OR OUT)
1610            000002          HLT=    2               ;HALT COMMAND
1611            000003          BASEI=  3               ;BASE IN COMMAND
1612            000004          BACCR=  4               ;BUF ADDRESS AND CHARACTER COUNT RECEIVE
1613            000005          WMODEM= 5               ;WRITE MODEM STATUS REGISTER
1614            000006          EXERR=  6               ;ENABLE EXTENDED ERROR NOTIFICATION
1615            000007          DXERR=  7               ;DISABLE EXTENDED ERROR NOTIFICATION
1616            000010          DDMC=   10              ;DESELECT DMC LINE MODE
1617            000011          UPDATE= 11              ;REQUEST BASE TABLE UPDATE
1618            000012          TIMER=  12              ;SET REP/SELECT TIMER VALUE
1619            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

000006                  LLOOP=  6                       ;LOCAL MODEM LOOPBACK
000007                  RLOOP=  7                       ;REMOTE MODEM LOOPBACK.
000015                  CR=     15                      ;ASCII CARRIAGE RETURN
000012                  LF=     12                      ;ASCII LINE FEED
```

```
1666                                    .SBTTL  GLOBAL DATA SECTION
1667
1668                                    ;////////////////////////////////////////////////////////////////////////////////
1669                                    ;/      THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
1670                                    ;/      IN MORE THAN ONE TEST.
1671                                    ;////////////////////////////////////////////////////////////////////////////////
1672
1673
1674
1675                                    ;;**************************************************************************
1676                                    ;DMR11 VECTOR AND REGISTER INDIRECT POINTERS
1677
1678  002226  000000                    DMRVEC: .WORD   0               ;DMR11 RECEIVER INTERRUPT VECTOR
1679  002230  000000                    DMTVEC: .WORD   0               ;DMR11 TRANSMITTER INT. VECTOR
1680  002232  000000                    CSR:    .WORD   0               ;POINTER TO DMR11 CONTROL STATUS REGISTER
1681  002234  000000                    SEL2:   .WORD   0               ;POINTER TO DMR11 CONTROL OUT REGISTER (SEL 2)
1682  002236  000000                    SEL4:   .WORD   0               ;POINTER TO DMR11 PORT REGISTER (SEL 4)
1683  002240  000000                    SEL6:   .WORD   0               ;POINTER TO DMR11 PORT REGISTER (SEL 6)
1684           002232                   SEL0=   CSR                     ;CSR IS SEL0
1685           002232                   BSEL0=  CSR                     ;LOW BYTE OF CSR
1686  002242  000000                    BSEL1:  .WORD   0               ;POINTER TO DMR11 CSR HIGH BYTE
1687           002234                   BSEL2=  SEL2                    ;LOW BYTE OF SEL2
1688  002244  000000                    BSEL3:  .WORD   0               ;POINTER TO SEL2 HIGH BYTE
1689           002236                   BSEL4=  SEL4                    ;LOW BYTE OF SEL4
1690  002246  000000                    BSEL5:  .WORD   0               ;POINTER TO SEL4 HIGH BYTE
1691           002240                   BSEL6=  SEL6                    ;LOW BYTE OF SEL6
1692  002250  000000                    BSEL7:  .WORD   0               ;POINTER TO SEL6 HIGH BYTE
1693
1694                                    ;;**************************************************************************
1695                                    ;;OTHER HARDWARE PARAMETERS
1696
1697  002252  000000                    WTYPE:  .WORD   0               ;MICROPROCESSOR TYPE
1698  002254  000000                    DMTURN: .WORD   0               ;TURN AROUND TYPE (0-7)
1699  002256  000000                    MICRO:  .WORD   0               ;MICRODIAGNOSTICS (IF 1(YES) - ENABLED)
1700
1701                                    ;;**************************************************************************
1702                                    ;PROGRAM CONTROL PARAMETERS
1703
1704
1705
1706  002260  000000                    DMRFLG: .WORD   0               ;FLAG SET WHEN DMR MODE IS REQUESTED IN
1707                                                                    ;THE BASE IN COMMAND.  USED TO FLAG THAT
1708                                                                    ;A DMR MODE ACKNOWLEDGE IS EXPECTED.
1709  002262  000000                    INFACE: .WORD   0               ;FLAG TO ALLOW CHANGE OF INTERFACE TYPE
1710                                                                    ;BY WRITING AX3-15.  FLAG SET/CLEARED IN INIT.
1711  002264  000000                    FRSTIM: .WORD   0               ;FLAG=0 IF PROGRAM JUST LOADED
1712  002266  000000                    FRSPAS: .WORD   0               ;FLAG=0 IF FIRST PASS AFTER LOAD
1713  002270  000000                    STARES: .WORD   0               ;FLAG=0 IF 1ST TIME THRU AFTER STA OR RES
1714
1715                                                                    ;FOLLOWING PARAMETERS ARE USED IN THE
1716                                                                    ;INTERRUPT TESTS (TESTS 15-19):
1717  002272  000000                    START:  .WORD   0               ;FLAG SET WHEN A CONTROL IN HAS BEEN ISSUED.
1718  002274  000000                    RESUME: .WORD   0               ;FLAG SET WHEN A BASE IN WITH RESUME DESIRED.
1719  002276  000000                    DMCMDE: .WORD   0               ;FLAG SET WHEN A BASE IN WITH DMC MODE DESIRED
1720  002300  000000                    MNTMDE: .WORD   0               ;FLAG SET WHEN MAINTENANCE MODE IS DESIRED.
1721  002302  000000                    MMANAG: .WORD   0               ;FLAG RETURNED IN THE SUBROUTINE $BUFFS
```

```
1722                                                    ;MMANAG=1, MEMORY MANAGED BUFFERS USED
1723
1724  002304  000000          AX3:     .WORD   0        ;BIT PATTERN TO WRITE INTO AX3-15, WHEN
1725                                                    ;IT IS REQUESTED TO ALLOW INTERFACE
1726                                                    ;SELECTION. (TEST CONFIGURATION 1-4)
1727                                                    ;BIT0 = TEST BIT (MUST BE SET TO ALLOW SELECT)
1728                                                    ;BIT3 - INTEGRAL MODEM
1729                                                    ;BIT4 = V.35
1730                                                    ;BIT6 = EIA
1731                                                    ;BIT7 = RS422
1732  002306  000000          WMAINT: .WORD   0        ;FLAG SET WHEN IT IS NECESSARY TO WRITE
1733                                                    ;MODEM MAINTENANCE BITS (MAINTENANCE 1 & 2)
1734                                                    ;THIS FLAG IS SET OR CLEARED IN THE INIT CODE.
1735  002310  000000          MANUF:   .WORD   0        ;******* MANUFACTURING USE ONLY *******
1736                                                    ;THIS WORD MAY BE PATCHED TO A NON ZERO WHEN
1737                                                    ;MANUFACTURING SPECIAL TEST CONNECTORS ARE
1738                                                    ;USED.  THIS WILL ALLOW MAINTENANCE BITS
1739                                                    ;TO BE SET.
1740
1741
1742                          ;;*************************************************************************
1743                          ;PROGRAM VARIABLES
1744                                                    ;WORD1-WORD3 VALUES DETERMINED IN INIT
1745                                                    ;CODE DEPENDING ON THE BAUD RATE.
1746  002312  000000          WAIT1:   .WORD   0        ;VALUE FOR TIMEOUT COUNTER
1747                                                    ;USED IN $WAIT SUBROUTINE
1748  002314  000000          WAIT2:   .WORD   0        ;VALUE FOR TIMEOUT COUNTER USED IN $MSCLR
1749                                                    ;AND $CLRQI SUBROUTINES.
1750  002316  000000          WAIT3:   .WORD   0        ;VALUE FOR TIMEOUT COUNTER USED IN $INOUT.
1751  002320  000000          WAIT4:   .WORD   0        ;WORD USED AS OUTER LOOP COUNTER IN $INOUT.
1752  002322  000000          BUFSIZ:  .WORD   0        ;CALCULATED BUFFER SIZE IN BYTES.
1753  002324  000000          BUFNUM:  .WORD   0        ;# OF RECEIVE & TRANSMIT BUFFERS.  THIS
1754                                                    ;VARIABLE IS USED IN THE SUBROUTINE $BUFFS
1755
1756  002326  000000          INRCV:   .WORD   0        ;COUNTER FOR # OF BA/CC IN RECEIVES.
1757  002330  000000          INXMIT:  .WORD   0        ;COUNTER FOR # OF BA/CC IN TRANSMITS.
1758  002332  000000          OUTRCV:  .WORD   0        ;COUNTER FOR # OF BA/CC OUT RECEIVES.
1759  002334  000000          OUTXMT:  .WORD   0        ;COUNTER FOR # OF BA/CC OUT TRANSMITS.
1760
1761                          ;;*************************************************************************
1762                          ;* MISCELLANEOUS STORAGE
1763  002336  000000          TEMP1:   .WORD   0        ;STORAGE FOR TURNAROUND TYPE
1764  002340  000000          TEMP:    .WORD   0        ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
1765  002342  000000          SAVE:    .WORD   0        ;SCRATCH WORD USED FOR MISC. STORAGE IN SUB.
1766  002344  000000          FLAG:    .WORD   0        ;SCRATCH WORD USED FOR MISC. FLAG IN SUB.
1767  002346  000000          SFLAG:   .WORD   0        ;FLAG USED IN TEST 15 FOR LOOP CONTROL.
1768  002350  000000          SKIP:    .WORD   0        ;FLAG USED IN TEST 7 TO MARK WHETHER TO SKIP
1769                                                    ;A PORTION OF THE TEST.
1770  002352  000000          NXMFLG:  .WORD   0        ;FLAG USED TO MARK THAT THE DMR ADDRESS IS NXM
1771
1772  002354  000000          INFLAG:  .WORD   0        ;FLAG USED IN INISR TO FLAG WHEN ALL THE
1773                                                    ;BA/CC INS HAVE BEEN DONE.
1774
1775  002356  000000          OUTFLG:  .WORD   0        ;FLAG USED IN OUTISR TO FLAG WHEN ALL THE
1776                                                    ;BA/CC OUTS HAVE BEEN DONE.
1777  002360  000000          RESFLG:  .WORD   0        ;FLAG USED IN IN ISR TO FLAG THAT THE RESUME
```

```
1778
1779  002362  000000                    ERRFLG: .WORD   0               ;COMMAND HAS JUST BEEN ISSUED.
1780                                                                    ;FLAG USED IN THE WAIT SUBROUTINES ($WAIT
1781                                                                    ; & $CLRQI) TO RETURN ERROR CONDITON (SEC)
1782
1783  002364  000000                    LAST:   .WORD   0               ;WORD USED TO STORE LAST COMMAND PROCESSED IN
1784                                                                    ;THE INPUT INTERRUPT ROUTINE.
1785  002366  000000                    ERROR:  .WORD   0               ;ERROR STORAGE
1786  002370  000000                    LOGDEV: .WORD   0               ;LOGICAL DEVICE NUMBER
1787  002372  000000                    PSTACK: .WORD   0               ;CONTAINS BASE LEVEL PROGRAM SP
1788  002374  000000                    SUBRPC: .WORD   0               ;PC OF SUBR CALL FOR ERROR REPORTS
1789  002376  000000                    NESTPC: .WORD   0               ;FLAG TO NOTIFY WHEN A SUBR IS NESTED
1790                                                                    ;IN ANOTHER SUBROUTINE (WHEN SET)
1791  002400  000000                    CLRNO:  .WORD   0               ;THIS WORD IS INCREMENTED DURING EACH MASTER
1792                                                                    ;CLEAR.  THIS WILL ALLOW EVERY OTHER MASTER
1793                                                                    ;CLEAR TO RUN THE MICRO TESTS.
1794
1795                                                                    ;ROM CHECK VARAIBLES
1796  002402  000000                    LOCRC:  .WORD   0               ;CRC STORAGE FOR LOW BYTE CHIP
1797  002404  000000                    HICRC:  .WORD   0               ;CRC STORAGE FOR HIGH BYTE CHIP
1798  002406  000000                    LOWORD: .WORD   0               ;TEMP. WORD CONTAINING 2 CONSECUTIVE LOW BYTES
1799  002410  000000                    HIWORD: .WORD   0               ;TEMP. WORD CONTAINING 2 CONSECUTIVE HI BYTES
1800  002412  000000                    ROMADR: .WORD   0               ;POINTER TO ROM ADDRESS.
1801  002414  000000                    CHIPNO: .WORD   0               ;CHIP NUMBER BEING CHECKED.
1802  002416  000000                    COUNT:  .WORD   0               ;COUNTER USED IN THE $WAIT SUBROUTINE.
1803                                            .EVEN
1804
1805                                    ;;**************************************************************************
1806                                    ;;**************************************************************************
1807                                    ;;BUFFER AREA
1808                                            ;       ** CCITT PSUEDO-RANDOM TEST PATTERN **
1809                                            ; THE FOLLOWING 32 WORDS TRANSLATE INTO A 512 BIT PATTERN
1810                                            ; THAT WAS GENERATED ACCORDING TO CCITT RECOMMENDATION V.52.  THIS
1811                                            ; PATTERN WAS GENERATED BY A 9 BIT SHIFT REGISTER (INITIALIZED
1812                                            ; AS 1S) WHOSE 5TH AND 9TH BITS ARE XORED.  THIS XOR RESULT IS SHIFTED
1813                                            ; INTO THE 1ST BIT OF THE REGISTER AS THE REGISTER IS SHIFTED RIGHT.
1814                                            ; THE 9TH BIT (OR BIT SHIFTED OUT) IS SHIFTED INTO THE BIT PATTERN.
1815                                            ; NOTE: CCITT RECOMMENDED 511 BITS, I'VE EXTENDED THIS BY 1 BIT TO END
1816                                            ; ON A WORD BOUNDARY.
1817  002420                            $CCITT:
1818  002420  177603  157427  031011            .WORD   177603,157427,031011
1819  002426  047321  163715  105221            .WORD   047321,163715,105221
1820  002434  143325  142304  040041            .WORD   143325,142304,040041
1821  002442  014116  052606  172334            .WORD   014116,052606,172334
1822  002450  105025  123754  111337            .WORD   105025,123754,111337
1823  002456  111523  030030  145064            .WORD   111523,030030,145064
1824  002464  137642  143531  063617            .WORD   137642,143531,063617
1825  002472  135015  066730  026575            .WORD   135015,066730,026575
1826  002500  052012  053627  070071            .WORD   052012,053627,070071
1827  002506  151172  165044  031605            .WORD   151172,165044,031605
1828  002514  166632  016741                    .WORD   166632,016741
1829
1830                                    ;;**************************************************************************
1831                                    ;; TRANSMIT BUFFER (SMALL)
1832
1833  002520  000000                    TFLAG:  .WORD   0               ;FLAG FOR STATUS OF TRANSMIT BUFFER
```

```
1834            000044                          TCOUNT= 36.                     ;CHARACTER COUNT OF TBUF
1835  002522    041101  042103  043105          TBUF:   .ASCIZ  /ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789/
1836  002530    044107  045111  046113
1837  002536    047115  050117  051121
1838  002544    052123  053125  054127
1839  002552    055131  030460  031462
1840  002560    032464  033466  034470
1841  002566      000
1842            002570                                  .EVEN
1843
1844
1845                                            ;;**********************************************************************
1846                                            ;; RECEIVE BUFFER (SMALL)
1847
1848  002570    000000                          RFLAG:  .WORD   0               ;FLAG FOR STATUS OF RECEIVE BUFFER
1849            000044                          RCOUNT= 36.                     ;CHARACTER COUNT OF RBUF
1850  002572    000046                          RBUF:   .BLKB   38.             ;36. BYTE BUFFER + 2 BYTES USED
1851                                                                            ;TO MARK THE END OF THE RECEIVE BUFFER
1852                                                    .EVEN
1853
1854                                            ;;**********************************************************************
1855                                            ;; BASE TABLE
1856
1857  002640    000400                          BASE:   .BLKB   256.            ;MICROPROCESSOR MEMORY ALLOCATION
1858
1859                                            ;;**********************************************************************
1860                                            ;; TRANSMIT AND RECEIVE BUFFER POINTERS
1861
1862  003240    000200                          XMTBUF: .BLKW   128.            ;POINTERS TO TRANSMIT BUFFERS (UP TO 64)
1863                                                                            ;1 WORD FOR ADDRESS AND 1 WORD FOR CHAR. COUNT
1864  003640    000200                          RCVBUF: .BLKW   128.            ;POINTERS TO RECEIVE BUFFERS (UP TO 64).
1865
1866                                            ;;**********************************************************************
1867                                            ;; BUFFER AREA (LARGE)
1868
1869  004240    004000                          BIGBUF: .BLKB   4000            ;MAX BUFFER (2K BYTES)
```

```
                                        .SBTTL  GLOBAL TEXT SECTION

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


                                        ;;*********************************************************************
                                        ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
                                        ;;*********************************************************************
010240                                          DEVTYP  <DMR11>
010240                                                                              L$DVTYP::
010240  046504  030522  000061                                                               .ASCIZ  /DMR11/
                                                                                             .EVEN

                                        ;;***********************************************************************
                                        ;* TITLE OF PROGRAM
                                        ;;***********************************************************************
010246                                          DESCRIPT   <DMR-11 FUNCTIONAL TESTS>
010246                                                                              L$DESC::
010246  046504  026522  030461                                                               .ASCIZ  /DMR-11 FUNCTION
010254  043040  047125  052103
010262  047511  040516  020114
010270  042524  052123  000123
                                                                                             .EVEN




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

```
                        .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
```

```
1965                                            .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
1966                                    .ENDC
1967                                                            ;****                   ****
1968                                    .NLIST ME
1969                                    .ENDM
1970
1971
1972                                ;;**************************************************************************
1973                                ; CLEAR MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
1974                                ;               $MSCLR SUBROUTINE
1975                                ;;**************************************************************************
1976                                    .MACRO  CLEAR
1977                                    .NLIST
1978                                    .LIST ME
1979                                    .LIST
1980                                                            ;**** MACRO EXPANSION ****
1981                                    JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
1982                                                            ;****                   ****
1983                                    .NLIST ME
1984                                    .ENDM
1985
```

```
1986                            ;;*****************************************************************************
1987                            ; BASEIN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
1988                            ;                $BASEIN SUBROUTINE (WITH DEFAULT ARGUMENTS
1989                            ;                IF ARGUMENTS NOT GIVEN)
1990                            ;;*****************************************************************************
1991                                    .MACRO  BASEIN  $A,$B,$C
1992                                    .NLIST
1993                                    .LIST ME
1994                                    .LIST
1995                                                            ;**** MACRO EXPANSION ****
1996                                    .IF     B       $A
1997                                    JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
1998                                            .WORD   LPLU    ;SET LINE UNIT LOOP
1999                                            .WORD   BASE    ;BASE TABLE ADDRESS
2000                                            .WORD   DMR     ;DMR-11 MODE
2001                                    .IFF
2002                                    JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
2003                                            .WORD   $A      ;MAINTENANCE MODE BITS TO SET IN BSEL1
2004                                            .WORD   $B      ;BASE TABLE ADDRESS
2005                                            .WORD   $C      ;MODE
2006                                    .ENDC
2007                                                            ;****                   ****
2008                                    .NLIST ME
2009                                    .ENDM
2010
2011
2012
2013
2014                            ;;*****************************************************************************
2015                            ; CNTRIN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2016                            ;                $CNTIN SUBROUTINE (WITH DEFAULT ARGUMENTS
2017                            ;                IF ARGUMENTS NOT GIVEN)
2018                            ;;*****************************************************************************
2019                                    .MACRO  CNTRIN  $A
2020                                    .NLIST
2021                                    .LIST ME
2022                                    .LIST
2023                                                            ;**** MACRO EXPANSION ****
2024                                    .IF     B       $A
2025                                    JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
2026                                            .WORD   0       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
2027                                    .IFF
2028                                    JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE
2029                                            .WORD   $A      ;SEL6 - (DUPLEX, MODE)
2030                                    .ENDC
2031                                                            ;****                   ****
2032                                    .NLIST ME
2033                                    .ENDM
2034
```

```
2035                    ;;*****************************************************************************
2036                    ; DMRIN MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2037                    ;                $DMRIN SUBROUTINE
2038                    ;;*****************************************************************************
2039                            .MACRO  DMRIN   $A,$B,$C
2040                            .NLIST
2041                            .LIST ME
2042                            .LIST
2043                                                    ;**** MACRO EXPANSION ****
2044                            .IF     B       $A
2045                            .ERROR  DMRIN; ## MISSING ARGUMENTS-EXPANSION ABORT ##
2046                            .MEXIT
2047                            .ENDC
2048                            JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
2049                                    .WORD   $A      ;INPUT COMMAND
2050                            .IF     B       $B
2051                                    .WORD   0       ;NO SEL4
2052                            .IFF
2053                                    .WORD   $B      ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
2054                            .ENDC
2055                            .IF     B       $C
2056                                    .WORD   0       ;NO SEL6
2057                            .IFF
2058                                    .WORD   $C      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
2059                            .ENDC
2060                                                    ;****                   ****
2061                            .NLIST ME
2062                            .ENDM
2063
2064
2065
2066
2067                    ;;*****************************************************************************
2068                    ; SHUTDN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2069                    ;                $HALT SUBROUTINE
2070                    ;;*****************************************************************************
2071                            .MACRO  SHUTDN
2072                            .NLIST
2073                            .LIST ME
2074                            .LIST
2075                                                    ;**** MACRO EXPANSION ****
2076                            JSR     PC, $HALT       ;DMR HALT ROUTINE.
2077                                                    ;****                   ****
2078                            .NLIST ME
2079                            .ENDM
2080
```

```
2081                            ;;*****************************************************************************
2082                            ; BACCIR MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2083                            ;                 $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
2084                            ;                 IF ARGUMENTS NOT GIVEN)
2085                            ;;*****************************************************************************
2086                                    .MACRO  BACCIR  $A,$B
2087                                    .NLIST
2088                                    .LIST ME
2089                                    .LIST
2090                                                    ;**** MACRO EXPANSION ****
2091                                    .IF     B       $A
2092                                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
2093                                            .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
2094                                            .WORD   RBUF    ;RECEIVE BUFFER
2095                                            .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
2096                                    .IFF
2097                                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
2098                                            .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
2099                                            .WORD   $A      ;BUFFER ADDRESS BITS 0-15
2100                                            .WORD   $B      ;BA BITS 16/17 AND CHAR. COUNT
2101                                    .ENDC
2102                                                    ;****                   ****
2103                                    .NLIST ME
2104                                    .ENDM
2105
2106
2107                            ;;*****************************************************************************
2108                            ; BACCIT MACRO -  THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2109                            ;                 $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
2110                            ;                 IF ARGUMENTS NOT GIVEN)
2111                            ;;*****************************************************************************
2112                                    .MACRO  BACCIT  $A,$B
2113                                    .NLIST
2114                                    .LIST ME
2115                                    .LIST
2116                                                    ;**** MACRO EXPANSION ****
2117                                    .IF     B       $A
2118                                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
2119                                            .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
2120                                            .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
2121                                            .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
2122                                    .IFF
2123                                    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
2124                                            .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
2125                                            .WORD   $A      ;BUFFER ADDRESS BITS 0-15
2126                                            .WORD   $B      ;BA BITS 16 & 17 AND CHAR. COUNT
2127                                    .ENDC
2128                                                    ;****                   ****
2129                                    .NLIST ME
2130                                    .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
                                   ;
                                   ;;*******************************************************************
                                   ;;*******************************************************************
010276                             $WAIT:
010276  005037  002362                     CLR     ERRFLG          ;CLEAR ERROR FLAG
010302  005037  002416                     CLR     COUNT           ;CLEAR DELAY COUNTER
010306  005737  002376                     TST     NESTPC          ;IS THIS NESTED IN ANOTHER SUBROUTINE?
010312  001005                             BNE     10$             ;YES - USE THE SUBRPC ALREADY CALCULATED.
010314  011637  002374                     MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
010320  162737  000004  002374             SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
010326                             10$:
010326  017637  000000  002340             MOV     @(SP),TEMP      ;GET THE FLAG FOR RDI OR RDO
010334  062716  000002                     ADD     #2,(SP)         ;INC THE PC LEFT ON THE STACK TO POINT
                                                                   ;PAST THE FLAG ARGUMENT
010340  010046                             MOV     R0,-(SP)        ;SAVE R0
010342  010146                             MOV     R1,-(SP)        ;SAVE R1
010344  013701  002312                     MOV     WAIT1,R1        ;DELAY COUNTER DETERMINED BY BAUD RATE
                                                                   ;(DETERMINED IN INIT ROUTINE).
010350                             30$:
010350  005000                             CLR     R0              ;INNER LOOP COUNT OF DELAY COUNTER
010352                             40$:
010352  032777  000200  171654             BIT     #RDO,@SEL2      ;IS THE RDO BIT SET IN SEL2?
010360  001036                             BNE     60$             ;YES - EXIT BIT CHECK LOOP.
```

```
2187  010362  032777  000200  171642          BIT     #RDI,@SEL0      ;IS THE RDI BIT SET IN SEL0?
2188  010370  001064                          BNE     70$             ;YES - EXIT
2189  010372                                  BREAK                   ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
2190  010372  104422                                                          TRAP    C$BRK
2191  010374  005237  002416                  INC     COUNT           ;INCREMENT DELAY COUNTER.
2192  010400  005300                          DEC     R0              ;LOOP UNTIL R0 RETURNS TO 0
2193  010402  001363                          BNE     40$
2194  010404                                  DELAY   1               ;DELAY 100 MICROSECONDS
2195  010404  012727  000001                                                  MOV     #1,(PC)+
2196  010410  000000                                                          .WORD   0
2197  010412  013727  002116                                                  MOV     L$DLY,(PC)+
2198  010416  000000                                                          .WORD   0
2199  010420  005367  177772                                                  DEC     -6(PC)
2200  010424  001375                                                          BNE     .-4
2201  010426  005367  177756                                                  DEC     -22(PC)
2202  010432  001367                                                          BNE     .-20
2203                                                  ;BETWEEN LOOPS.
2204  010434  005301                          DEC     R1              ;REPEAT UNTIL MAXIMUM LOOP SATISFIED.
2205  010436  001344                          BNE     30$
2206  010440                                  ERRDF   1,EMG1,ERRG2    ;TIME OUT ERROR
2207  010440  104455                                                          TRAP    C$ERDF
2208  010442  000001                                                          .WORD   1
2209  010444  017716                                                          .WORD   EMG1
2210  010446  015124                                                          .WORD   ERRG2
2211  010450  005237  002362                  INC     ERRFLG          ;SET ERROR FLAG
2212  010454  000445                          BR      100$            ;BRANCH TO COMMON EXIT.
2213  010456                          60$:
2214  010456  005737  002340                  TST     TEMP            ;WERE WE WAITING FOR THE RDO FLAG?
2215  010462  001042                          BNE     100$            ;YES - OK, EXIT.
2216  010464  022737  000001  002366          CMP     #CNTRL,ERROR    ;IS THIS CONTROL OUT ERROR EXPECTED?
2217  010472  001436                          BEQ     100$            ;IF YES, DON'T REPORT THE FOLLOWING ERRORS.
2218  010474                                  PRINTB  #FMS1           ;RECEIVED AN RDO, WHEN WAITING FOR RDI
2219  010474  012746  010620                                                  MOV     #FMS1,-(SP)
2220  010500  012746  000001                                                  MOV     #1,-(SP)
2221  010504  010600                                                          MOV     SP,R0
2222  010506  104414                                                          TRAP    C$PNTB
2223  010510  062706  000004                                                  ADD     #4,SP
2224  010514  032777  000001  171512          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
2225  010522  001422                          BEQ     100$            ;NO NEED TO CHECK ERROR CODES.
2226  010524                                  ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT.
2227  010524  104455                                                          TRAP    C$ERDF
2228  010526  000011                                                          .WORD   9
2229  010530  020040                                                          .WORD   EMG9
2230  010532  015124                                                          .WORD   ERRG2
2231  010534  005237  002362                  INC     ERRFLG          ;SET ERROR FLAG.
2232  010540  000413                          BR      100$
2233  010542                          70$:
2234  010542  005737  002340                  TST     TEMP            ;WERE WE WAITING FOR THE RDI FLAG?
2235  010546  001410                          BEQ     100$            ;YES - OK, EXIT
2236  010550                                  PRINTB  #FMS2           ;RECEIVED AN RDI, WHEN WAITING FOR RDO
2237  010550  012746  010653                                                  MOV     #FMS2,-(SP)
2238  010554  012746  000001                                                  MOV     #1,-(SP)
2239  010560  010600                                                          MOV     SP,R0
2240  010562  104414                                                          TRAP    C$PNTB
2241  010564  062706  000004                                                  ADD     #4,SP
2242  010570                          100$:
```

```
2243  010570  005737  002376          TST     NESTPC          ;WAS THIS NESTED IN ANOTHER SUBROUTINE?
2244  010574  001002                  BNE     105$            ;IF YES - LEAVE THE SUBROUTINE PC ALONE
2245  010576  005037  002374          CLR     SUBRPC          ;CLEAR THE PC
2246  010602                        105$:
2247  010602  012601                  MOV     (SP)+,R1        ;RESTORE R1
2248  010604  012600                  MOV     (SP)+,R0        ;RESTORE R0
2249  010606  005737  002362          TST     ERRFLG          ;WAS THERE AN ERROR (CARRY CLEARED ON TST)
2250  010612  001401                  BEQ     110$            ;IF NOT, RETURN WITH CARRY CLEAR
2251  010614  000261                  SEC                     ;SET CARRY.
2252  010616                        110$:
2253  010616  000207                  RETURN
2254
2255  010620  047045  040445  042122 FMS1:   .ASCIZ  /%N%ARDO SET EXPECTED RDI%N/
2256  010626  020117  042523  020124
2257  010634  054105  042520  052103
2258  010642  042105  051040  044504
2259  010650  047045     000
2260  010653     045  022516  051101 FMS2:   .ASCIZ  /%N%ARDI SET EXPECTED RDO%N/
2261  010660  044504  051440  052105
2262  010666  042440  050130  041505
2263  010674  042524  020104  042122
2264  010702  022517  000116
2265                                  .EVEN
2266
2267
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $CLRQI
                        ;
                        ;               FUNCTION -  TO CLEAR RQI AND WAIT FOR RDI TO BE CLEARED
                        ;
                        ;       CALLING FORMAT:         JSR     PC,     $CLRQI
                        ;                               (MACRO CALL -- WAIT RQI)
                        ;
                        ;       NESTING LEVEL    - MAY BE NESTED WITHIN ANOTHER SUBROUTINE
                        ;
                        ;       ENTRY CONDITIONS - WAIT2 = DELAY COUNTER (DETERMINED IN INIT. ROUTINE)
                        ;                          NESTPC= 1   -   ROUTINE NESTED WITHIN ANOTHER
                        ;                                          SUBROUTINE.
                        ;                                = 0   -   ROUTINE NOT NESTED.
                        ;
                        ;        EXIT CONDITIONS - 1. NON ERROR, DMR READY TO RECEIVE THE NEXT COMMAND
                        ;                          2. ERROR IF RDI DOES NOT CLEAR BEFORE THE
                        ;                             DELAY ROUTINE EXPIRES. AN ERROR MESSAGE WILL
                        ;                             OCCUR.  ALSO A CARRY BIT WILL BE SET TO FLAG
                        ;                             THE ERROR FOR THE USER.
                        ;
                        ;
                        ;    REGISTERS DESTROYED - RESTORED
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
010706                  $CLRQI:
010706  005037  002362          CLR     ERRFLG          ;CLEAR ERROR FLAG
010712  042777  000040  171312  BIC     #RQI,@SEL0      ;REQUEST INPUT CLEAR
010720  005737  002376          TST     NESTPC          ;IS THIS NESTED IN ANOTHER SUBROUTINE?
010724  001005                  BNE     10$             ;YES - USE SUBRPC CALCULATED
010726  011637  002374          MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $WAIT.
010732  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
010740                  10$:
010740  010046                  MOV     R0,-(SP)        ;SAVE R0
010742  010146                  MOV     R1,-(SP)        ;SAVE R1
010744  013701  002314          MOV     WAIT2,R1        ;GET THE DELAY COUNTER (DETERMINED BY
                                                        ;BAUD RATE IN INIT ROUTINE)
010750                  12$:
010750  005000                  CLR     R0              ;INNER LOOP COUNT
010752                  20$:
010752  032777  000200  171252  BIT     #RDI,@SEL0      ;IS THE RDI BIT CLEAR IN SEL0?
010760  001427                  BEQ     30$             ;YES - EXIT
010762                          BREAK                   ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
010762  104422                                                  TRAP    C$BRK
010764  005300                  DEC     R0              ;LOOP UNTIL R0 RETURNS TO 0
010766  001371                  BNE     20$
010770                          DELAY   1               ;DELAY 100 MICROSECONDS
010770  012727  000001                                          MOV     #1,(PC)+
010774  000000                                                  .WORD   0
010776  013727  002116                                          MOV     L$DLY,(PC)+
011002  000000                                                  .WORD   0
011004  005367  177772                                          DEC     -6(PC)
011010  001375                                                  BNE     .-4
```

```
2324  011012  005367  177756                                                  DEC     -22(PC)
2325  011016  001367                                                          BNE     .-20
2326  011020  005301                  DEC     R1              ;REPEAT UNTIL MAXIMUM LOOP SATISFIED.
2327  011022  001352                  BNE     12$
2328  011024                          ERRDF   1,EMG1,ERRG2    ;TIME OUT ERROR
2329  011024  104455                                                          TRAP    C$ERDF
2330  011026  000001                                                          .WORD   1
2331  011030  017716                                                          .WORD   EMG1
2332  011032  015124                                                          .WORD   ERRG2
2333  011034  005237  002362          INC     ERRFLG          ;SET ERROR FLAG
2334  011040                  30$:
2335  011040  005737  002376          TST     NESTPC          ;WAS THIS A NESTED ROUTINE?
2336  011044  001002                  BNE     40$             ;IF YES - LEAVE THE SUBRPC ALONE
2337  011046  005037  002374          CLR     SUBRPC          ;CLEAR THE PC
2338  011052                  40$:
2339  011052  012601                  MOV     (SP)+,R1        ;RESTORE R1
2340  011054  012600                  MOV     (SP)+,R0        ;RESTORE R0
2341  011056  005737  002362          TST     ERRFLG          ;WAS THERE AN ERROR? (CARRY CLEARED ON TST)
2342  011062  001401                  BEQ     50$             ;IF NOT - RETURN WITH CARRY CLEAR
2343  011064  000261                  SEC                     ;SET CARRY.
2344  011066                  50$:
2345  011066  000207                  RETURN
2346
2347
```

```
                        ;*****************************************************************************
                        ;*****************************************************************************
                        ;
                        ;                       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
                        ;
                        ;*****************************************************************************
                        ;*****************************************************************************
011070                  $MSCLR:
011070  011637  002374          MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
011074  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
011102  010046                  MOV     R0,-(SP)        ;SAVE R0
011104  010146                  MOV     R1,-(SP)        ;SAVE R1
                        ;
011106  105077  171132          CLRB    @BSEL3          ;CLEAR BSEL3
                        ;
011112  000240                  NOP                     ;***************************************
011114  000240                  NOP                     ;** PATCH AREA FOR 8206 IF NEEDED **
011116  000240                  NOP                     ;CLR @#SEL6  -
011120  000240                  NOP                     ;***************************************
                        ;
011122  032737  000001  002400  BIT     #BIT0,CLRNO     ;IS THIS AN ODD MASTER CLEAR.
011130  001004                  BNE     7$              ;IF YES - BR
011132  012777  040000  171072  MOV     #MCLR,@SEL0     ;ISSUE A MASTER CLEAR.
011140  000403                  BR      8$
011142                  7$:
011142  012777  060000  171062  MOV     #MCLR!MDIAG,@SEL0 ;ISSUE THE MASTER CLEAR AND TOGGLE
                                                        ;MICRO TEST SWITCH.
                        ;
011150                  8$:
```

```
2404  011150  000240                        NOP                     ;*************************************
2405  011152  000240                        NOP                     ;** PATCH AREA FOR 8206 IF NEEDED **
2406  011154  000240                        NOP                     ;MOV #RUN,@#SEL0  -
2407  011156  000240                        NOP                     ;*************************************
2408
2409  011160  005237  002400                INC     CLRNO           ;INCR WORD (CHANGE ODD TO EVEN ETC.)
2410  011164  013701  002314                MOV     WAIT2,R1        ;GET THE # OF 100 MICRO SECOND DELAYS
2411                                                                 ;TO WAIT BEFORE EXITING THE ROUTINE.
2412  011170                        10$:
2413  011170  005000                        CLR     R0              ;INNER LOOP COUNT
2414  011172                        20$:
2415  011172  032777  100000  171032        BIT     #RUN,@SEL0      ;IS THE RUN BIT SET IN SEL0?
2416  011200  001025                        BNE     40$             ;YES - EXIT
2417  011202                                BREAK                   ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
                                                                                TRAP    C$BRK
2418  011202  104422
2419  011204  005300                        DEC     R0              ;LOOP UNTIL R0 RETURNS TO 0
2420  011206  001371                        BNE     20$
2421  011210                                DELAY   1               ;DELAY 100 MICROSECONDS
                                                                                MOV     #1,(PC)+
2422  011210  012727  000001                                                   .WORD   0
2423  011214  000000                                                           MOV     L$DLY,(PC)+
2424  011216  013727  002116                                                   .WORD   0
2425  011222  000000                                                           DEC     -6(PC)
2426  011224  005367  177772                                                   BNE     .-4
2427  011230  001375                                                           DEC     -22(PC)
2428  011232  005367  177756                                                   BNE     .-20
2429  011236  001367
2430  011240  005301                        DEC     R1              ;REPEAT UNTIL MAX LOOP SATISFIED.
2431  011242  001352                        BNE     10$
2432  011244                                ERRDF   1,EMG1,ERRG3    ;REPORT RUN NOT SET
                                                                                TRAP    C$ERDF
2433  011244  104455                                                           .WORD   1
2434  011246  000001                                                           .WORD   EMG1
2435  011250  017716                                                           .WORD   ERRG3
2436  011252  015240
2437  011254                        40$:
2438  011254  012601                        MOV     (SP)+,R1        ;RESTORE R1
2439  011256  012600                        MOV     (SP)+,R0        ;RESTORE R0
2440  011260  005037  002374                CLR     SUBRPC          ;TIDY UP SUBRPC
2441  011264  000207                        RETURN
2442
2443
```

```
2444                    ;;*****************************************************************************
2445                    ;;*****************************************************************************
2446                    ;
2447                    ;                       SUBROUTINE $BASEI
2448                    ;
2449                    ;               FUNCTION -  TO PERFORM A BASE IN COMMAND
2450                    ;
2451                    ;       CALLING FORMAT:         JSR     PC,     $BASEI
2452                    ;                               .WORD A (SEL0 MAINTENANCE BITS)
2453                    ;                               .WORD B (SEL4 - ADDRESS)
2454                    ;                               .WORD C (SEL6 - MODE AND/OR RESUME)
2455                    ;                               (MACRO CALL -- BASEIN  OR  BASEIN A,B,C)
2456                    ;
2457                    ;       NESTING LEVEL    - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
2458                    ;                          SUBTEST OR TEST SEGMENT)
2459                    ;
2460                    ;       ENTRY CONDITIONS - A = MAINTENANCE BITS (I.E. LINE UNIT LOOP BACK)
2461                    ;                          B = BASE TABLE ADDRESS (SEL4)
2462                    ;                          C = MODE + RESUME (SEL6)
2463                    ;                          INFACE = 0  - NO INTERFACE WRITE REQUIRED
2464                    ;                                   1  - WRITE INTERFACE (AX3-15)
2465                    ;
2466                    ;        EXIT CONDITIONS - 1. IF NO ERROR - DMR11 BASE TABLE ASSIGNED
2467                    ;                          2. IF IN DMR MODE, AND INTERFACE WRITE REQUESTED
2468                    ;                             WRITE REQUESTED AX3-15.
2469                    ;                          3. TIMEOUT ERRORS ARE DETECTED IN WAIT SUBROUTINES.
2470                    ;                          DMRFLG = -1  DMR MODE REQUESTED (USED IN CONTROL IN
2471                    ;                                       ROUTINE)
2472                    ;                                 0  DMC MODE OR RESUME REQUESTED.
2473                    ;
2474                    ;
2475                    ;     REGISTERS DESTROYED - RESTORED
2476                    ;
2477                    ;;*****************************************************************************
2478                    ;;*****************************************************************************
2479  011266            $BASEI:
2480  011266  011637  002374           MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
2481  011272  162737  000004  002374   SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
2482
2483  011300  112777  000043  170724   MOVB    #RQI!BASEI,@BSEL0 ;ISSUE THE BASE IN COMMAND.
2484  011306  012737  000001  002376   MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
2485  011314                           WAIT    RDI             ;WAIT FOR RDI
2486                                                           ;**** MACRO EXPANSION ****
2487  011314  004737  010276           JSR     PC, $WAIT       ;CALL WAIT ROUTINE
2488  011320  000000                   .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
2489                                                           ;****                    ****
2490  011322                           BNERROR 10$             ;IF NO ERROR, RDI SET - PROCEED
2491  011322  103003                                                                   BCC     10$
2492  011324  062716  000006           ADD     #6,(SP)         ;CORRECT STACK FOR ERROR EXIT
2493  011330  000467                   BR      30$             ;EXIT
2494  011332                   10$:
2495  011332  057677  000000  170672   BIS     @(SP),@SEL0     ;SET ANY MAINTENANCE BITS
2496  011340  062716  000002           ADD     #2,(SP)         ;INC. POINTER.
2497  011344  017677  000000  170664   MOV     @(SP),@SEL4     ;SET UP BASE ADDRESS
2498  011352  062716  000002           ADD     #2,(SP)         ;INC. POINTER AGAIN
2499  011356  017677  000000  170654   MOV     @(SP),@SEL6     ;SET UP RESUME BIT AND THE HIGH 2 BITS
```

```
2500
2501  011364  062716  000002                ADD     #2,(SP)          ;OF THE BASE TABLE ADDRESS
2502  011370                                WAIT    RQI              ;INC. POINTER AGAIN (SHOULD BE AT RETURN PC)
2503                                                                   ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
2504  011370  004737  010706                JSR     PC, $CLRQI       ;**** MACRO EXPANSION ****
2505                                                                   ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
2506  011374                                BERROR  30$              ;****                    ****
2507  011374  103445                                                  ;IF ERROR, EXIT
2508  011376  122777  000122  170634        CMPB    #122,@BSEL6      ;                                BCS     30$
2509  011404  001004                        BNE     15$              ;WAS THIS A DMR BASE IN?
2510  011406  032777  010000  170624        BIT     #RES,@SEL6       ;IF NOT, CLEAR DMR FLAG (DMC MODE)
2511  011414  001403                        BEQ     16$              ;IS THIS A RESUME?
2512  011416                          15$:                           ;IF NOT, PROCEED
2513  011416  005037  002260                CLR     DMRFLG           ;CLEAR DMR FLAG (NO DMR RUN ACKNOWLEDGE).
2514  011422  000432                        BR      30$              ;SKIP - TO END
2515  011424                          16$:
2516  011424  012737  177777  002260        MOV     #-1,DMRFLG       ;FLAG THAT DMR MODE WAS REQUESTED.
2517  011432  005737  002262                TST     INFACE           ;IS AN INTERFACE WRITE REQUIRED?
2518  011436  001424                        BEQ     30$              ;IF NOT - SKIP TO END
2519  011440  022737  000001  002366        CMP     #CNTRL,ERROR     ;ARE WE EXPECTING AN ERROR (IN TEST THAT
2520                                                                   ;FORCES AN ERROR)
2521  011446  001004                        BNE     17$              ;IF NOT PROCEED
2522  011450  032777  000200  170554        BIT     #RDO,@SEL0       ;IF EXPECTING AN ERROR - IS RDO SET
2523  011456  001014                        BNE     30$              ;IF YES - DON'T BOTHER CHANGING THE INTERFACE.
2524  011460                          17$:
2525  011460  112777  000055  170544        MOVB    #RQI!INTER,@BSEL0 ;ISSUE WRITE INTERFACE COMMAND.
2526  011466                                WAIT    RDI              ;WAIT FOR RDI
2527                                                                   ;**** MACRO EXPANSION ****
2528  011466  004737  010276                JSR     PC, $WAIT        ;CALL WAIT ROUTINE
2529  011472  000000                                .WORD   0        ;FLAG THAT WE'RE WAITING FOR RDI
2530                                                                   ;****                    ****
2531  011474                                BERROR  30$              ;IF ERROR, BR TO END.
2532  011474  103405                                                  ;                                BCS     30$
2533  011476  113777  002304  170544        MOVB    AX3,@BSEL7       ;WRITE AX3-15. INTERFACE SELECTED
2534                                                                   ;BY AX3 DETERMINED IN INIT. CODE.
2535  011504                                WAIT    RQI              ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
2536                                                                   ;**** MACRO EXPANSION ****
2537  011504  004737  010706                JSR     PC, $CLRQI       ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
2538                                                                   ;****                    ****
2539  011510                          30$:
2540  011510  005037  002376                CLR     NESTPC           ;CLEAR THE NEST FLAG
2541  011514  005037  002374                CLR     SUBRPC           ;TIDY UP SUBRPC
2542  011520  000207                        RETURN
2543
2544
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       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
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
011522                  $CNTIN:
011522  011637  002374          MOV     (SP),SUBRPC     ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
011526  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO PC OF ACTUAL CALL
011534  112777  000041  170470  MOVB    #RQI+CNTRL,@BSEL0 ;SET UP CONTROL IN COMMAND
011542  012737  000001  002376  MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
011550                          WAIT    RDI             ;WAIT FOR SETTING OF RDI
                                                        ;**** MACRO EXPANSION ****
011550  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
011554  000000                  .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
                                                        ;****                   ****
011556                          BNERROR 1$              ;IF NO ERROR - PROCEED
011556  103003                                                          BCC     1$
011560  062716  000002          ADD     #2,(SP)         ;CORRECT RETURN ADDRESS
011564  000463                  BR      20$             ;ERROR - EXIT
011566                  1$:
011566  017677  000000  170444  MOV     @(SP),@SEL6     ;SET MODE DESIRED
011574  062716  000002          ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
011600  032777  000400  170432  BIT     #MAINT,@SEL6    ;WAS MAINTENANCE MODE REQUESTED?
011606  001402                  BEQ     5$              ;IF NOT, LEAVE DMRFLG AS IS.
011610  005037  002260          CLR     DMRFLG          ;CLEAR FLAG - NO RUN MODE CONTROL OUT.
011614                  5$:
011614                          WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
                                                        ;**** MACRO EXPANSION ****
```

```
2601  011614  004737  010706                  JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
2602                                          ;****                   ****
2603  011620  005737  002260                  TST     DMRFLG          ;WAS DMR MODE REQUESTED ON BASE IN?
2604  011624  001443                          BEQ     20$             ;BR IF NOT (DMC MODE)
2605  011626  005037  002260                  CLR     DMRFLG          ;CLEAR DMR RUN MODE FLAG
2606  011632                                  WAIT    RDO             ;EXPECT RDO TO BE SET
2607                                          ;**** MACRO EXPANSION ****
2608  011632  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
2609  011636  000001                          .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
2610                                          ;****                   ****
2611  011640                                  BNERROR 7$              ;IF NO ERROR - PROCEED
2612  011640  103011                                                                  BCC     7$
2613  011642                                  PRINTB  #FMS3           ;PRINT RUN ACKNOWLEDGE NOT RECEIVED.
2614  011642  012746  011746                                                          MOV     #FMS3,-(SP)
2615  011646  012746  000001                                                          MOV     #1,-(SP)
2616  011652  010600                                                                  MOV     SP,R0
2617  011654  104414                                                                  TRAP    C$PNTB
2618  011656  062706  000004                                                          ADD     #4,SP
2619  011662  000421                          BR      15$
2620  011664                          7$:
2621  011664  032777  000001  170342          BIT     #CNTRL,@SEL2    ;DID WE RECEIVE A CONTROL OUT?
2622  011672  001005                          BNE     10$             ;IF YES - PROCEED.
2623  011674                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
2624  011674  104455                                                                  TRAP    C$ERDF
2625  011676  000010                                                                  .WORD   8
2626  011700  017774                                                                  .WORD   EMG8
2627  011702  015124                                                                  .WORD   ERRG2
2628  011704  000410                          BR      15$
2629  011706                          10$:
2630  011706  032777  000040  170324          BIT     #DMRRUN,@SEL6   ;WAS THE DMR RUN MODE BIT SET?
2631  011714  001004                          BNE     15$             ;BR IF OK.
2632  011716                                  ERRDF   9,EMG9,ERRG2    ;WRONG CONTROL OUT RECEIVED.
2633  011716  104455                                                                  TRAP    C$ERDF
2634  011720  000011                                                                  .WORD   9
2635  011722  020040                                                                  .WORD   EMG9
2636  011724  015124                                                                  .WORD   ERRG2
2637
2638  011726                          15$:
2639  011726  042777  000207  170300          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
2640  011734                          20$:
2641  011734  005037  002376                  CLR     NESTPC          ;CLEAR THE NEST FLAG
2642  011740  005037  002374                  CLR     SUBRPC          ;CLEAR PC
2643  011744  000207                          RETURN
2644
2645  011746  040445  046504  020122  FMS3:   .ASCII  /%ADMR RUN ACKNOWLEDGE NOT RCVD.%N/
2646  011754  052522  020116  041501
2647  011762  047113  053517  042514
2648  011770  043504  020105  047516
2649  011776  020124  041522  042126
2650  012004  022456     116
2651  012007     045  024101  044103          .ASCIZ  /%A(CHECK INTERFACE, BAUD AND TURNAROUND)%N/
2652  012014  041505  020113  047111
2653  012022  042524  043122  041501
2654  012030  026105  041040  052501
2655  012036  020104  047101  020104
2656  012044  052524  047122  051101
```

```
2657  012052  052517  042116  022451
2658  012060  000116
2659                                  .EVEN
2660
2661
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $DMRIN
                        ;
                        ;               FUNCTION -  TO PERFORM A DMR MODE INPUT COMMAND
                        ;
                        ;       CALLING FORMAT:         JSR     PC,     $DMRIN
                        ;                               .WORD   COMMAND
                        ;                               .WORD   B
                        ;                               .WORD   C
                        ;                               (MACRO CALL -- DMRIN A,B,C)
                        ;
                        ;       NESTING LEVEL    - MAY BE CALLED FROM IN-LINE CODE (TEST,
                        ;                          SUBTEST OR TEST SEGMENT) OR FROM THE $LOOP
                        ;                          SUBROUTINE
                        ;
                        ;       ENTRY CONDITIONS - MUST BE IN DMR MODE
                        ;                          FOR ALL COMMANDS EXCEPT WRITE MODEM
                        ;                               B = SEL4
                        ;                               C = SEL6
                        ;                          FOR MODEM WRITE
                        ;                               B = BITS TO CLEAR IN SEL6
                        ;                               C = BITS TO SET IN SEL6
                        ;                          NESTPC = 1 - SUBROUTINE NESTED WITHIN ANOTHER SUB.
                        ;                                 = 0 - SUBROUTINE NOT NESTED.
                        ;
                        ;        EXIT CONDITIONS - IF NO ERROR - DMR11 MODE INPUT COMMAND PERFORMED.
                        ;
                        ;    REGISTERS DESTROYED
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
012062                  $DMRIN:
012062  005737  002376          TST     NESTPC          ;IS THIS SUBROUTINE NESTED?
012066  001005                  BNE     1$              ;IF YES - DON'T CHANGE  SUBRPC.
012070  011637  002374          MOV     (SP),SUBRPC     ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
012074  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO PC OF ACTUAL CALL
012102                  1$:
012102  117637  000000  002342  MOVB    @(SP),SAVE      ;SAVE DMR INPUT COMMAND
012110  117677  000000  170114  MOVB    @(SP),@BSEL0    ;SET UP DMR INPUT COMMAND.
012116  062716  000002          ADD     #2,(SP)         ;INC RETURN PC LEFT ON STACK.
012122  052777  000040  170102  BIS     #RQI,@SEL0      ;REQUEST INPUT.
012130  013746  002376          MOV     NESTPC,-(SP)    ;SAVE THE CURRENT NEST FLAG.
012134  012737  000001  002376  MOV     #1,NESTPC       ;USE THE FLAG TO SHOW THE WAIT
                                                        ;ROUTINE IS NESTED.
012142                          WAIT    RDI             ;WAIT FOR SETTING OF RDI
                                                        ;**** MACRO EXPANSION ****
012142  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
012146  000000                  .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
                                                        ;****                    ****
012150  012637  002376          MOV     (SP)+,NESTPC    ;RESTORE THE ORIGINAL NEST FLAG.
012154                          BNERROR 5$              ;IF NO ERROR, OK - PROCEED.
012154  103003                                                  BCC     5$
012156  062716  000004          ADD     #4,(SP)         ;UPDATE RETURN ADDRESS.
```

```
2718  012162  000433                          BR      10$             ;ERROR EXIT.
2719  012164                          5$:
2720  012164  122737  000005  002342          CMPB    #WMODEM,SAVE    ;IS THIS A MODEM WRITE?
2721  012172  001413                          BEQ     6$              ;IF YES - SET/CLEAR BITS.
2722  012174  017677  000000  170034          MOV     @(SP),@SEL4     ;PASS VALUE FOR SEL4 (VALUE, IF ANY,
2723                                                                  ;DEPENDS ON THE DMR COMMAND)
2724  012202  062716  000002                  ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
2725  012206  017677  000000  170024          MOV     @(SP),@SEL6     ;PASS VALUE FOR SEL6 (VALUE, IF ANY,
2726                                                                  ;DEPENDS ON THE DMR COMMAND)
2727  012214  062716  000002                  ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
2728  012220  000412                          BR      7$
2729  012222                          6$:
2730  012222  047677  000000  170010          BIC     @(SP),@SEL6     ;CLEAR MODEM BITS
2731  012230  062716  000002                  ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK
2732  012234  057677  000000  167776          BIS     @(SP),@SEL6     ;SET MODEM BITS
2733  012242  062716  000002                  ADD     #2,(SP)         ;INC. RETURN PC LEFT ON STACK.
2734  012246                          7$:
2735  012246                          WAIT    RQI                     ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
2736                                                                  ;**** MACRO EXPANSION ****
2737  012246  004737  010706                  JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
2738                                                                  ;****                   ****
2739  012252                          10$:
2740  012252  005737  002376                  TST     NESTPC          ;WAS THIS ROUTINE NESTED?
2741  012256  001002                          BNE     15$             ;BR IF YES
2742  012260  005037  002374                  CLR     SUBRPC          ;CLEAR PC
2743  012264                          15$:
2744  012264  005037  002342                  CLR     SAVE            ;RESTORE TEMP VALUE
2745  012270  000207                          RETURN
2746
2747
2748
2749
```

```
;*****************************************************************************
;*****************************************************************************
;
;                          SUBROUTINE $BACC
;
;                FUNCTION -  TO PERFORM A BUFFER ADDRESS/CHARACTER
;                            COUNT IN COMMAND
;
;          CALLING FORMAT:          JSR     PC,     $BACC
;                                   .WORD   SEL0    ;BA/CC IN COMMAND
;                                   .WORD   SEL4    ;BUFFER ADDRESS
;                                   .WORD   SEL6    ;BA BITS 16 & 17 AND
;                                                   ;CHARACTER COUNT
;                                  (MACRO CALL -- BACCIT  OR  BACCIT A,B)
;                                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
;
;*****************************************************************************
;*****************************************************************************
$BACC:
012272 011637 002374          MOV     (SP),SUBRPC     ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
012276 162737 000004 002374   SUB     #4,SUBRPC       ;BACKUP TO PC OF ACTUAL CALL
012304 117677 000000 167720   MOVB    @(SP),@BSEL0    ;SET UP BA/CC COMMAND IN (TRANSMIT OR RECEIVE)
012312 062716 000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012316 012737 000001 002376   MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
012324                        WAIT    RDI             ;WAIT FOR SETTING OF RDI
                                                      ;**** MACRO EXPANSION ****
012324 004737 010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
012330 000000                 .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
                                                      ;****                  ****
012332                        BNERROR 10$             ;IF NO ERROR - PROCEED
012332 103003                                                         BCC     10$
012334 062716 000004          ADD     #4,(SP)         ;CORRECT STACK FOR ERROR EXIT.
012340 000414                 BR      20$             ;EXIT
012342                  10$:
012342 017677 000000 167666   MOV     @(SP),@SEL4     ;SET BUFFER ADDRESS
012350 062716 000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012354 017677 000000 167656   MOV     @(SP),@SEL6     ;SET UP BUFFER COUNT AND BUFFER ADDRESS
                                                      ;BITS 16 & 17
012362 062716 000002          ADD     #2,(SP)         ;INC POINTER ON STACK
012366                        WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
                                                      ;**** MACRO EXPANSION ****
012366 004737 010706          JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
                                                      ;****                  ****
012372                  20$:
012372 005037 002376          CLR     NESTPC          ;CLEAR THE NEST FLAG
012376 005037 002374          CLR     SUBRPC          ;CLEAR PC
```

```
2806  012402  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
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
012404                  $ERROR:
012404  005737  002376          TST     NESTPC          ;IS THIS ROUTINE NESTED?
012410  001005                  BNE     10$             ;BR IF YES (PC ALREADY SAVED)
012412  011637  002374          MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $WAIT.
012416  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL
                                                        ;THE INSTRUCTION AFTER THE CALL.
012424                  10$:
012424  010046                  MOV     R0,-(SP)        ;SAVE R0
012426  010146                  MOV     R1,-(SP)        ;SAVE R1
012430  012700  002643          MOV     #BASE+3,R0      ;POINTER TO ACTUAL BASE TABLE COUNTS.
012434  012701  000006          MOV     #6.,R1          ;CHECK THE 6 NAK BYTES IN THE TABLE
012440                  20$:
012440  105720                  TSTB    (R0)+           ;IS THE NAK COUNT NON-ZERO?
012442  001022                  BNE     30$             ;IF YES - REPORT SOFT ERROR
012444  005301                  DEC     R1              ;LOOP UNTIL DONE.
012446  001374                  BNE     20$
012450  122010                  CMPB    (R0)+,(R0)      ;ARE THE REPS THE SAME?
012452  001016                  BNE     30$             ;IF NOT - REPORT ERROR.
012454  022737  000022  002114  CMP     #18.,L$TEST     ;IS THIS TEST 18 (LARGE BUFFER TEST)
012462  001407                  BEQ     25$             ;IF YES - ALLOW 1 REP
012464  022737  000016  002114  CMP     #14.,L$TEST     ;IS THIS TEST 14 ?
012472  001403                  BEQ     25$             ;IF YES - ALSO ALLOW 1 REP.
012474  105710                  TSTB    (R0)            ;IF NOT TEST 18 - REPORT IF NON ZERO.
012476  001004                  BNE     30$
012500  000407                  BR      40$             ;IF ZERO - OK.
012502                  25$:
012502  122710  000001          CMPB    #1,(R0)         ;IS THE REP 0 OR 1?
012506  002004                  BGE     40$             ;IF YES - OK (WE ALLOW 1 REP BECAUSE
                                                        ;IN TEST 18 AT LOW BAUD RATES 1 REP IS
                                                        ;EXPECTED.)
012510                  30$:
012510                  ERRSOFT 5,EMS3,ERRG4    ;REPORT SOFT ERROR
```

```
                                                                                    TRAP    C$ERSOFT
                                                                                    .WORD   5
                                                                                    .WORD   EMS3
                                                                                    .WORD   ERRG4
                                        40$:
                                                TST     NESTPC          ;IS THE ROUTINE NESTED?
                                                BNE     45$             ;BR IF YES
                                                CLR     SUBRPC          ;CLEAR SAVED PC
                                        45$:
                                                MOV     (SP)+,R1        ;RESTORE R1
                                                MOV     (SP)+,R0        ;RESTORE R0
                                                RETURN

012540  040502  042523  052040  EMS3:   .ASCIZ  /BASE TABLE ERRORS/
012546  041101  042514  042440
012554  051122  051117  000123
                                                .EVEN
```

```
                        ;;*******************************************************************************
                        ;;*******************************************************************************
                        ;
                        ;                       SUBROUTINE $HALT
                        ;
                        ;               FUNCTION - TO SHUTDOWN THE DMR11
                        ;
                        ;       ENTRY CONDITIONS - NONE
                        ;
                        ;       EXIT CONDITIONS  - DMR SHUTDOWN
                        ;
                        ;       REGISTERS        - NO EFFECT
                        ;
                        ;;*******************************************************************************
                        ;;*******************************************************************************
012562                  $HALT:
012562  011637  002374          MOV     (SP),SUBRPC     ;SAVE THE PC WHEN THE SUBROUTINE WAS CALLED.
012566  162737  000004  002374  SUB     #4,SUBRPC       ;BACK UP TO THE ADDRESS OF THE ACTUAL CALL.
012574  112777  000042  167430  MOVB    #RQI!HLT,@SEL0  ;ISSUE A HALT
012602  105077  167426          CLRB    @SEL2           ;CLEAR ANY OUTPUT PENDING
012606  012737  000001  002376  MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
012614                          WAIT    RDI             ;WAIT FOR RDI
                                                        ;**** MACRO EXPANSION ****
012614  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
012620  000000                  .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
                                                        ;****                   ****
012622                          BERROR  20$             ;IF ERROR, EXIT
012622  103430                                                          BCS     20$
012624                          WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
                                                        ;**** MACRO EXPANSION ****
012624  004737  010706          JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
                                                        ;****                   ****
012630                          BERROR  20$             ;IF ERROR, EXIT
012630  103425                                                          BCS     20$
012632                          WAIT    RDO             ;WAIT FOR RDO
                                                        ;**** MACRO EXPANSION ****
012632  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
012636  000001                  .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
                                                        ;****                   ****
012640                          BERROR  20$             ;IF ERROR, EXIT
012640  103421                                                          BCS     20$
012642  032777  000001  167364  BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
012650  001005                  BNE     10$             ;IF YES - PROCEED
012652                          ERRDF   4,EMS4,ERRG2    ;ERROR
012652  104455                                                          TRAP    C$ERDF
012654  000004                                                          .WORD   4
012656  012724                                                          .WORD   EMS4
012660  015124                                                          .WORD   ERRG2
012662  000410                  BR      20$
012664                  10$:
012664  032777  001000  167346  BIT     #HALTC,@SEL6    ;IS THE DMR HALTED?
012672  001004                  BNE     20$             ;IF YES - EXIT
012674                          ERRDF   4,EMS4,ERRG2    ;ERROR - NOT EXPECTED CONTROL OUT.
012674  104455                                                          TRAP    C$ERDF
012676  000004                                                          .WORD   4
```

```
2937  012700  012724                                                                  .WORD   EMS4
2938  012702  015124                                                                  .WORD   ERRG2
2939  012704                        20$:
2940  012704  042777  000207  167322          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND COMMAND BITS.
2941  012712  005037  002376                  CLR     NESTPC          ;CLEAR THE NEST FLAG
2942  012716  005037  002374                  CLR     SUBRPC          ;CLEAR THE PC.
2943  012722  000207                          RETURN
2944
2945  012724  044123  052125  047504  EMS4:   .ASCIZ  /SHUTDOWN ERROR/
2946  012732  047127  042440  051122
2947  012740  051117     000
2948          012744                          .EVEN
```

```
;*****************************************************************************
;*****************************************************************************
;
;                          SUBROUTINE $ROMO
;
;                 FUNCTION - TO READ THE CONTENTS OF THE ROM
;
;          ENTRY CONDITIONS - ROMADR =  ROM ADDRESS
;
;          EXIT CONDITIONS  - BSEL6  =  CONTENTS OF ROM ADDRESS
;
;          REGISTERS        - NO EFFECT
;
;*****************************************************************************
;*****************************************************************************
$ROMO:
012744
012744  005077  167262          CLR     @SEL0               ;INIT
012750  113777  002413  167256  MOVB    ROMADR+1,@SEL2      ;SET HIGH BYTE OF ROM ADDRESS
012756  052777  001000  167246  BIS     #ROMI,@SEL0         ;ENABLE SEL6 TO BE USED AS MAINTENANCE REG.
012764  012777  121053  167246  MOV     #121053,@SEL6       ;SET UP MICROINSTRUCTION TO
                                                            ;MOVE IBUS* 2 TO OBUS* 13
                                                            ;(OBUS* 13 IS A SHADOW REGISTER FOR
                                                            ;BITS 8-11 OF THE PC)
012772  052777  000400  167232  BIS     #STUP,@SEL0         ;CLOCK THE INSTRUCTION
013000  042777  001400  167224  BIC     #ROMI!STUP,@SEL0    ;CLEAR
013006  042737  000377  013062  BIC     #377,1$             ;CLEAR ADDRESS FIELD OF BRANCH INST.
013014  153737  002412  013062  BISB    ROMADR,1$           ;ADD ADDRESS OF BRANCH.
013022  052777  001000  167202  BIS     #ROMI,@SEL0         ;ENABLE SEL6
013030  013777  013062  167202  MOV     1$,@SEL6            ;SET UP MICROINSTRUCTION TO
                                                            ;BRANCH IMMEDIATELY TO PC.  BRANCH IS
                                                            ;NECESSARY TO TRANSFER PC SHADOW REG TO PC
013036  052777  000400  167166  BIS     #STUP,@SEL0         ;CLOCK THE INSTRUCTION
                                                            ;ROM PC = ROM ADDRESS
013044  042777  001400  167160  BIC     #ROMI!STUP,@SEL0    ;CLEAR
013052  052777  002000  167152  BIS     #ROMO,@SEL0         ;CLOCK IN A MAINTENANCE ROM OUT
                                                            ;ROM CONTENTS ARE NOW IN SEL6.
013060  000207          RETURN
                                                            ;MICRO INSTRUCTION OPCODE FOR IMMEDIATE
013062  100000  1$:     .WORD   100000                      ;BRANCH (ROM ADDRESS IS ADDED INTO BITS 0-7)
```

```
;;*****************************************************************************
;;*****************************************************************************
;
;                       SUBROUTINE $LOOP
;
;             FUNCTION - TO ISSUE AN EXTENDED CONTROL IN TO SET
;                        UP THE MODEM LOOPBACK DESIRED BY THE USER.
;
;       ENTRY CONDITIONS -  WMAINT = 0 - DON'T WRITE MAINT. BITS
;                           WMAINT = 1 - SET BITS
;                                (WMAINT SET IN INIT CODE)
;                           DMCMDE = 0 - DMR MODE
;                           DMTURN = TURN AROUND CONNECTOR
;
;       EXIT CONDITIONS  -
;
;       REGISTERS        -  NOT DESTROYED
;
;;*****************************************************************************
;;*****************************************************************************
$LOOP:
013064                          TST     DMCMDE          ;IS THE DMR IN DMC MODE?
013064  005737  002276          BNE     30$             ;IF SO, EXIT (CAN'T DO DMR MODE INPUT)
013070  001041                  TST     WMAINT          ;DO WE NEED TO WRITE THE MAINTENANCE BITS?
013072  005737  002306          BEQ     30$             ;IF NOT - EXIT.
013076  001436                  MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $LOOP
013100  011637  002374          SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
013104  162737  000004  002374  CMP     #LLOOP,DMTURN   ;IS LOCAL MODEM LOOPBACK DESIRED?
013112  022737  000006  002254  BNE     10$             ;IF NOT - PROCEED.
013120  001007                  MOV     #MAINT2,100$    ;ENSURE REMOTE LOOPBACK IS CLEAR.
013122  012737  000004  013170  MOV     #MAINT1,101$    ;SET MAINT BIT FOR LOCAL LOOPBACK
013130  012737  000010  013172  BR      20$
013136  000406                  10$:
013140                                                  ;IN ALL OTHER LOOPBACK CONFIGURATIONS
                                                        ;SET MAINTENANCE 2 (CONFIG. TYPE 1,3,7)
013140  012737  000010  013170  MOV     #MAINT1,100$    ;ENSURE REMOTE LOOPBACK IS CLEAR.
013146  012737  000004  013172  MOV     #MAINT2,101$    ;SET MAINT BIT FOR REMOTE LOOPBACK
013154                          20$:
013154  012737  000001  002376  MOV     #1,NESTPC       ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
013162                          CALL    $DMRIN          ;DMR MODE INPUT COMMAND
013166  000005                          .WORD   WMODEM  ;WRITE MODEM COMMAND
013170  000000          100$:           .WORD   0       ;BITS TO CLEAR IN MODEM REGISTER
013172  000000          101$:           .WORD   0       ;BITS TO SET IN MODEM REGISTER
013174                          30$:
013174  005037  002376          CLR     NESTPC          ;CLEAR THE NEST FLAG
013200  005037  002374          CLR     SUBRPC          ;CLEAR PC.
013204  000207                  RETURN
```

```
3040                    ;;*****************************************************************************
3041                    ;;*****************************************************************************
3042                    ;
3043                    ;                       SUBROUTINE $BUFFS
3044                    ;
3045                    ;               FUNCTION - TO DETERMINE BUFFERS FOR TEST 15 - 19.  THIS
3046                    ;                          SUBROUTINE WILL USE ONE OF THE FOLLOWING
3047                    ;                          THREE BUFFER AREAS:
3048                    ;                               1. IF MEMORY MANAGED, 32K - 48K
3049                    ;                               2. FREE MEMORY, IF MORE THAN 4K BYTES.
3050                    ;                               3. IF 2 OR 3 NOT POSSIBLE, DEFAULT 4K
3051                    ;                                  DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
3052                    ;
3053                    ;       CALL            - JSR  PC,$BUFFS
3054                    ;
3055                    ;       NESTING LEVEL   - CALLED ONLY BY TESTS  16-20
3056                    ;
3057                    ;       ENTRY CONDITIONS - BUFNUM = # OF RCV & XMIT BUFFERS
3058                    ;
3059                    ;       EXIT CONDITIONS - MMANAG = 1   MEMORY MANAGEMENT USED
3060                    ;                         MMANAG = 0   MEMORY MANAGEMENT NOT USED
3061                    ;                         RCVBUF     =  ADDRESS OF RECEIVE BUFFER (VIRTUAL)
3062                    ;                         RCVBUF+2   =  CHARACTER COUNT
3063                    ;                         RCVBUF+4   =  ADDRESS OF NEXT RECEIVE BUFFER
3064                    ;                              (UP TO 64 ADDRESSES AND COUNTS)
3065                    ;                         XMTBUF     =  ADDRESS OF TRANSMIT BUFFER (VIRTUAL)
3066                    ;                              (UP TO 64 ADDRESSES AND COUNTS)
3067                    ;
3068                    ;       REGISTERS       - NOT DESTROYED
3069                    ;
3070                    ;
3071                    ;;*****************************************************************************
3072                    ;;*****************************************************************************
3073  013206            $BUFFS:
3074  013206  011637  002374                   MOV     (SP),SUBRPC     ;SAVE PC AFTER THE CALL TO $BUFFS
3075  013212  162737  000004  002374           SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE CALL.
3076  013220  005037  002352                   CLR     NXMFLG
3077  013224                                   SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP 4 (WILL SET FLAG FOR NXM)
3078  013224  012746  000340                                                   MOV     #PRI07,-(SP)
3079  013230  012746  023630                                                   MOV     #NOXMEM,-(SP)
3080  013234  012746  000004                                                   MOV     #4,-(SP)
3081  013240  012746  000003                                                   MOV     #3,-(SP)
3082  013244  104437                                                           TRAP    C$SVEC
3083  013246  062706  000010                                                   ADD     #10,SP
3084  013252  005737  177572                   TST     @#177572        ;ADDRESS MEMORY MANAGEMENT REG
3085  013256  005737  002352                   TST     NXMFLG          ;IS THE FLAG STILL CLEARED?
3086                                                                    ;NOTE: THE FLAG WILL BE SET BY THE TRAP
3087                                                                    ;IF THERE IS NO MEMORY MANAGEMENT.
3088  013262  001143                           BNE     30$             ;BR TO USE NON-MEMORY MANAG. BUFFERS.
3089  013264  023727  002120  003000           CMP     L$HIMEM,#3000   ;IS THERE AT LEAST 48K WORDS? (16K WORDS
3090                                                                    ;FOR BUFFERS)
3091  013272  002537                           BLT     30$             ;IF NOT, USE NON-MEMORY MANAG. BUFFERS.
3092  013274  012737  000001  002302           MOV     #1,MMANAG       ;FLAG THAT MEMORY MANAGEMENT IS USED
3093  013302                                   SETPRI  #PRI07          ;MAKE SURE WE ARE IN KERNEL MODE.
3094  013302  012700  000340                                                   MOV     #PRI07,R0
3095  013306  104441                                                           TRAP    C$SPRI
```

```
3096                                                    ;SETTING PRI SHOULD SHOULD ALSO CLEAR
3097                                                    ;BITS 14 & 15
3098  013310  012701  172300              MOV     #172300,R1      ;GET ADDRESS OF KERNEL PDR REG 0.
3099  013314  012700  000010              MOV     #8.,R0          ;WRITE PDR REG 0-7.
3100  013320                        10$:
3101  013320  012721  077406              MOV     #77406,(R1)+    ;WRITE BITS FOR THE FOLLOWING PAGE DESCRIPTION
3102                                                    ;READ/WRITE ACCESS, 128. BLOCK PAGE LENGTH.
3103  013324  005300                      DEC     R0              ;WRITE ALL PDRS.
3104  013326  001374                      BNE     10$
3105  013330  012701  172340              MOV     #172340,R1      ;ADDRESS OF KERNEL PAR 0
3106  013334  005011                      CLR     (R1)            ;PAR 0, ADDRS      0 -  17776
3107  013336  012761  000200  000002      MOV     #200,2(R1)      ;PAR 1, ADDRS  20000 -  37776
3108  013344  012761  000400  000004      MOV     #400,4(R1)      ;PAR 2, ADDRS  40000 -  57776
3109  013352  012761  002000  000006      MOV     #2000,6(R1)     ;PAR 3, ADDRS 200000 - 217776 (BUFFER PAGE 1)
3110  013360  012761  002200  000010      MOV     #2200,10(R1)    ;PAR 4, ADDRS 220000 - 237776 (BUFFER PAGE 2)
3111  013366  012761  002400  000012      MOV     #2400,12(R1)    ;PAR 5, ADDRS 240000 - 257776 (BUFFER PAGE 3)
3112  013374  012761  002600  000014      MOV     #2600,14(R1)    ;PAR 6, ADDRS 260000 - 277776 (BUFFER PAGE 4)
3113  013402  012761  007600  000016      MOV     #7600,16(R1)    ;PAR 7, ADDRS 160000 - 677776 (I/O PAGE)
3114
3115  013410  012703  000400              MOV     #256.,R3        ;COUNTER FOR OUTER  LOOP OF TEST PATTERN
3116  013414  012704  060000              MOV     #60000,R4       ;USE VIRTUAL ADDRESS TO MAP TO PAR 5
3117                                                    ;GENERATE A TEST PATTERN IN THE 1ST 8K WORDS
3118                                                    ;VIRTUAL ADDRESS 60000 - 111776
3119  013420  012737  000001  177572      MOV     #1,@#177572     ;ENABLE MEMORY MANAGEMENT
3120  013426                        15$:
3121  013426  012701  000040              MOV     #32.,R1         ;COUNTER FOR INNER LOOP OF TEST PATTERN
3122  013432  012702  002420              MOV     #$CCITT,R2      ;ADDRESS FOR 32. WORD TEST PATTERN.
3123  013436                        16$:
3124  013436  012224                      MOV     (R2)+,(R4)+     ;WRITE TEST PATTERN
3125                                                    ;PHYSICAL ADDRESS 200000 - 237776
3126  013440  005737  002352              TST     NXMFLG          ;FLAG WILL BE SET IF WE ADDRESS NXM.
3127  013444  001050                      BNE     29$             ;IF NXM - DON'T USE MEMORY MANAGEMENT.
3128  013446  005301                      DEC     R1              ;DO TH INNER LOOP 32. TIMES
3129  013450  001372                      BNE     16$
3130  013452  005303                      DEC     R3              ;DO THE OUTER LOOP 256. TIMES
3131  013454  001364                      BNE     15$
3132  013456  012701  020000              MOV     #20000,R1       ;COUNTER TO CLEAR THE NEXT 8K WORDS
3133  013462                        17$:
3134  013462  005024                      CLR     (R4)+           ;CLEAR VIRTUAL ADDRESS 120000 - 157776
3135  013464  005737  002352              TST     NXMFLG          ;DOES AN NXM TRAP OCCUR?
3136  013470  001036                      BNE     29$             ;IF SO DON'T USE MEMORY MANAGEMENT.
3137  013472  005301                      DEC     R1
3138  013474  001372                      BNE     17$
3139  013476  005037  177572              CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
3140
3141  013502  012737  060000  003240      MOV     #60000,XMTBUF   ;VIRTUAL ADDRESS OF XMIT BUFFER
3142  013510  012737  120000  003640      MOV     #120000,RCVBUF  ;VIRTUAL ADDRESS OF RCV. BUFFER
3143  013516  022737  000001  002324      CMP     #1,BUFNUM       ;IS THERE ONLY 1 XMIT & RECEIVE BUFFER?
3144  013524  001004                      BNE     20$             ;IF NOT, BR
3145  013526  012737  037777  002322      MOV     #37777,BUFSIZ   ;EACH BUFFER IS 16K BYTES
3146  013534  000525                      BR      60$
3147  013536                        20$:
3148  013536  022737  000007  002324      CMP     #7,BUFNUM       ;ARE THERE 7 XMIT & RECEIVE (14 TOTAL BUFFER)?
3149  013544  001004                      BNE     21$             ;IF NOT - MUST BE 64 BUFFERS
3150  013546  012737  004000  002322      MOV     #4000,BUFSIZ    ;EACH BUFFER IS 2K BYTES
3151  013554  000515                      BR      60$
```

```
3152  013556                          21$:
3153  013556  012737  000376  002322          MOV     #376,BUFSIZ     ;EACH BUFFER IS 254. BYTES.
3154  013564  000511                          BR      60$
3155
3156  013566                          29$:
3157  013566  005037  177572                  CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
3158  013572                          30$:
3159  013572  005037  002302                  CLR     MMANAG          ;FLAG THAT MEMORY MANAGEMENT NOT USED.
3160  013576                          CLRVEC  #4                      ;RESTORE TRAP 4.
3161  013576  012700  000004                                                  MOV     #4,R0
3162  013602  104436                                                          TRAP    C$CVEC
3163  013604                          MEMORY  R2                      ;FIND THE FREE MEMORY AVAILABLE BETWEEN
3164  013604  104431                                                          TRAP    C$MEM
3165  013606  010002                                                          MOV     R0,R2
3166                                                                  ;THE DIAGNOSTIC AND THE DRS (SUPERVISOR).
3167  013610  021227  002000                  CMP     @R2,#2000       ;IS THERE AT LEAST 1K WORDS? (NOTE: CONTENTS
3168                                                                  ;OF THE RETURNED ADDRESS OF THE START OF FREE
3169                                                                  ;MEMORY CONTAIN THE AMOUNT OF AVAILABLE MEM.)
3170  013614  003406                          BLE     35$             ;IF NOT AT LEAST 1K, USE DEFAULT BUFFER.
3171  013616  010237  003240                  MOV     R2,XMTBUF       ;USE THE FREE MEMORY BUFFER.
3172  013622  011200                          MOV     @R2,R0          ;SAVE THE WORD SIZE OF THE BUFFER.
3173  013624  042700  000001                  BIC     #BIT0,R0        ;START WITH AN EVEN # OF WORDS.
3174  013630  000405                          BR      40$
3175  013632                          35$:
3176  013632  012737  004240  003240          MOV     #BIGBUF,XMTBUF  ;USE THE DEFAULT BUFFER (1ST HALF FOR XMIT).
3177  013640  012700  002000                  MOV     #2000,R0        ;1K WORD SIZE.
3178  013644                          40$:
3179  013644  013737  003240  003640          MOV     XMTBUF,RCVBUF   ;CALCULATE THE RECEIVE BUFFER ADDRESS
3180  013652  060037  003640                  ADD     R0,RCVBUF       ;AS STARTING IN THE 2ND HALF OF THE BUFFER.
3181  013656  010001                          MOV     R0,R1           ;BUFFER SIZE IN WORDS.
3182  013660  022737  000001  002324          CMP     #1,BUFNUM       ;ARE WE SETTING UP 1 RECEIVE AND XMIT BUFFER?
3183  013666  001415                          BEQ     47$             ;IF YES - R1 = BYTE SIZE FOR BOTH BUFFERS.
3184  013670  022737  000007  002324          CMP     #7,BUFNUM       ;ARE WE SETTING UP 7 RCV & 7 XMIT BUFFERS?
3185  013676  001004                          BNE     45$             ;IF NOT WE MUST NEED 64 RCV & 64 XMIT BUFFERS.
3186  013700  006201                          ASR     R1              ;R1 = # BYTES IN THE BUFFERS/8
3187  013702  006201                          ASR     R1
3188  013704  006201                          ASR     R1
3189  013706  000405                          BR      47$
3190  013710                          45$:
3191  013710  012704  000007                  MOV     #7,R4           ;DIVIDE BYTES BY 128.
3192  013714                          46$:
3193  013714  006201                          ASR     R1              ;SHIFT RIGHT 7 TIMES
3194  013716  005304                          DEC     R4
3195  013720  001375                          BNE     46$
3196  013722                          47$:
3197  013722  010137  002322                  MOV     R1,BUFSIZ       ;SAVE THE BUFFER SIZE IN BYTES.
3198  013726  162737  000002  002322          SUB     #2,BUFSIZ       ;ADJUST BUFFER SIZE BECAUSE WE
3199                                                                  ;WILL ADJUST BUFFER STARTING ADDRESS.
3200  013734  042737  000001  002322          BIC     #1,BUFSIZ       ;ENSURE WE START WITH AN EVEN # OF BYTES.
3201  013742  006200                          ASR     R0              ;# OF WORDS IN ALL XMIT BUFFERS.
3202  013744  010001                          MOV     R0,R1           ;SAVE # OF WORDS IN ALL RCV BUFFERS.
3203  013746  013702  003240                  MOV     XMTBUF,R2       ;ADDRESS OF START OF XMIT BUFFERS.
3204  013752                          50$:
3205  013752  012703  002420                  MOV     #$CCITT,R3      ;ADDRESS OF TEST PATTERN
3206  013756  012704  000040                  MOV     #32.,R4         ;# OF WORDS IN THE TEST PATTERN.
3207  013762                          51$:
```

```
3208  013762  012312                    MOV     (R3)+,(R2)      ;WRITE TEST PATTERN INTO ALL XMIT BUFFERS.
3209  013764  005300                    DEC     R0              ;ARE ALL THE XMIT BUFFERS WRITTEN?
3210  013766  001403                    BEQ     55$             ;IF YES PROCEED.
3211  013770  005304                    DEC     R4              ;CONTINUE WITH TEST PATTERN TILL DONE.
3212  013772  001373                    BNE     51$
3213  013774  000766                    BR      50$             ;START AT BEGINNING OF TEST PATTERN.
3214  013776                    55$:
3215  013776  013702  003640            MOV     RCVBUF,R2       ;ADDRESS OF RECEIVE BUFFERS
3216  014002                    56$:
3217  014002  005022                    CLR     (R2)+           ;CLEAR ALL RECEIVE BUFFERS.
3218  014004  005301                    DEC     R1
3219  014006  001375                    BNE     56$
3220
3221
3222  014010                    60$:
3223  014010  013700  003640            MOV     RCVBUF,R0       ;ADDRESS OF RECEIVE BUFFER
3224  014014  012701  003640            MOV     #RCVBUF,R1      ;TABLE ADDRESS OF RCV BUFFER POINTERS.
3225  014020  013702  002324            MOV     BUFNUM,R2       ;# OF RCV. BUFFERS.
3226  014024                    65$:
3227  014024  010021                    MOV     R0,(R1)+        ;SAVE THE RECEIVE BUFFER ADDRESS
3228  014026  013721  002322            MOV     BUFSIZ,(R1)+    ;SAVE THE BUFFER SIZE
3229  014032  063700  002322            ADD     BUFSIZ,R0       ;CALCULATE THE NEXT BUFFER ADDRESS.
3230  014036  005200                    INC     R0              ;CHANGE EVEN ADDRESS TO ODD & ODD TO EVEN.
3231  014040  005302                    DEC     R2              ;CALCULATE ALL THE BUFFER ADDRESSES.
3232  014042  001370                    BNE     65$
3233
3234  014044  013700  003240            MOV     XMTBUF,R0       ;ADDRESS OF TRANSMIT BUFFERS
3235  014050  012701  003240            MOV     #XMTBUF,R1      ;TABLE OF XMIT BUFFER POINTERS.
3236  014054  013702  002324            MOV     BUFNUM,R2       ;#OF XMIT BUFFERS.
3237  014060  012703  000004            MOV     #4,R3           ;R3 IS USED TO VARY THE CHARACTER COUNT.
3238  014064                    70$:
3239  014064  010021                    MOV     R0,(R1)+        ;SAVE THE XMIT BUFFER ADDRESS.
3240  014066  013711  002322            MOV     BUFSIZ,(R1)     ;SAVE THE BUFFER SIZE.
3241  014072  160321                    SUB     R3,(R1)+        ;VARY THE BUFFER SIZE
3242  014074  063700  002322            ADD     BUFSIZ,R0       ;CALCULATE THE NEXT BUFFER ADDRESS
3243  014100  005303                    DEC     R3              ;CHANGE THE CHARACTER COUNT VARIABLE.
3244  014102  032703  000001            BIT     #BIT0,R3        ;IS THE CONTENTS OF R3 ODD
3245  014106  001001                    BNE     72$             ;IF YES, DON'T ADJUST BUFFER ADDRESS.
3246  014110  005200                    INC     R0              ;CHANGE EVEN TO ODD ETC.
3247  014112                    72$:
3248  014112  005703                    TST     R3              ;WHAT IS R3.
3249  014114  002002                    BGE     75$             ;CONTINUE UNTIL R3 = -1
3250  014116  012703  000004            MOV     #4,R3           ;RE-INIT. THE R3 VARIABLE AGAIN.
3251  014122                    75$:
3252  014122  005302                    DEC     R2              ;CALCULATE ALL THE XMIT BUFFERS.
3253  014124  001357                    BNE     70$
3254
3255  014126  005037  002352            CLR     NXMFLG          ;RESTORE FLAG USED IN TRAP VECTOR.
3256  014132  005037  002374            CLR     SUBRPC          ;CLEAR PC.
3257  014136  000207                    RETURN
```

```
                        ;;*****************************************************************************
                        ;;*****************************************************************************
                        ;
                        ;                       SUBROUTINE $INOUT
                        ;
                        ;               FUNCTION - TO MANAGE THE INTERRUPT FROM BASE IN
                        ;                          TO BA/CC OUT IN THE INTERRUPT TESTS 15-19
                        ;
                        ;       ENTRY CONDITIONS - BUFNUM = # OF RCV AND XMIT BUFFERS
                        ;                          ALL BUFFERS SET UP IN  THE $BUFFS SUBROUTINE.
                        ;                          WAIT3  = # OF OUTER LOOP TIMEOUT COUNTERS.
                        ;                                   THIS VALUE IS DETERMINED BY THE BAUD
                        ;                                   RATE IN THE INIT. SECTION OF CODE.
                        ;
                        ;       EXIT CONDITIONS  -
                        ;
                        ;       REGISTERS        - R0 - R5 DESTROYED
                        ;
                        ;
                        ;;*****************************************************************************
                        ;;*****************************************************************************
014140                  $INOUT:
014140  011637  002374          MOV     (SP),SUBRPC     ;SAVE THE PC AFTER THE CALL TO $LOOP
014144  162737  000004  002374  SUB     #4,SUBRPC       ;BACKUP TO THE PC OF THE ACTUAL CALL.
014152  012737  000001  002376  MOV     #1,NESTPC       ;FLAG THAT ANY SUBROUTINE USED WILL BE NESTED.
014160  013737  002324  002326  MOV     BUFNUM,INRCV    ;# OF BA/CC IN RECEIVES
014166  013737  002324  002330  MOV     BUFNUM,INXMIT   ;# OF BA/CC IN TRANSMITS
014174  013737  002324  002332  MOV     BUFNUM,OUTRCV   ;# OF BA/CC OUT RECEIVES
014202  013737  002324  002334  MOV     BUFNUM,OUTXMT   ;# OF BA/CC OUT TRANSMITS
014210  005037  002354          CLR     INFLAG          ;CLEAR INPUT BA/CC FLAG
014214  005037  002356          CLR     OUTFLG          ;CLEAR OUTPUT BA/CC FLAG
014220  005037  002272          CLR     START           ;CLEAR FLAG TO SHOW START UP NOT DONE (SET
                                                        ;AFTER CONTROL IN)
014224  012702  003640          MOV     #RCVBUF,R2      ;ADDR OF RCV. BUFFER TABLE (FOR INPUT)
014230  012703  003240          MOV     #XMTBUF,R3      ;ADDR OF XMIT BUFFER TABLE (FOR INPUT)
014234  012704  003640          MOV     #RCVBUF,R4      ;ADDR OF RCV. BUFFER TABLE (OUTPUT CHECKING)
014240  012705  003240          MOV     #XMTBUF,R5      ;ADDR OF XMIT BUFFER TABLE (OUTPUT CHECKING)
014244                  SETPRI  #PRI04          ;SET THE PRIORITY TO LEVEL 4 TO ALLOW THE
014244  012700  000200                                                  MOV     #PRI04,R0
014250  104441                                                          TRAP    C$SPRI
                                                        ;DMR TO INTERRUPT AT LEVEL 5
014252  013737  002316  002320  MOV     WAIT3,WAIT4     ;TIMEOUT COUNTER DETERMINED BY BAUD RATE.
014260  112777  000143  165744  MOVB    #IESET!RQI!BASEI,@BSEL0 ;FIRST COMMAND - BASE IN.
014266                  8$:
014266  012701  001000          MOV     #1000,R1        ;INNER LOOP COUNTER
014272                  10$:
014272                  BREAK                   ;OPERATOR INTERRUPT ENABLE.  CALL TO
014272  104422                                                          TRAP    C$BRK
                                                        ;THE SUPERVISOR TO ALLOW CONSOLE INTERRUPT
                                                        ;(NOTE: INFLAG AND OUTFLG SET IN THE INTERRUPT
                                                        ;SERVICE ROUTINES)
014274  005737  002354          TST     INFLAG          ;ARE THE INPUTS DONE?   (INISR DONE?)
014300  001403          BEQ     12$             ;IF NOT KEEP CHECKING.
014302  005737  002356          TST     OUTFLG          ;ARE THE OUTPUTS DONE?  (OUTISR DONE?)
014306  001026          BNE     20$             ;IF YES EXIT WAIT LOOP.
014310                  12$:
```

```
3314  014310                                DELAY   1               ;WAIT 100 MICROSECONDS.
3315  014310  012727  000001                                                MOV     #1,(PC)+
3316  014314  000000                                                .WORD   0
3317  014316  013727  002116                                                MOV     L$DLY,(PC)+
3318  014322  000000                                                .WORD   0
3319  014324  005367  177772                                                DEC     -6(PC)
3320  014330  001375                                                BNE     .-4
3321  014332  005367  177756                                                DEC     -22(PC)
3322  014336  001367                                                BNE     .-20
3323  014340  005301                        DEC     R1              ;CONTINUE IN LOOP UNTIL R1 = 0.
3324  014342  001353                        BNE     10$
3325  014344  005337  002320                DEC     WAIT4           ;DECREMENT OUTER LOOP COUNTER
3326  014350  001346                        BNE     8$              ;IF NOT DONE - GO THROUGH INNER LOOP AGAIN.
3327  014352                                ERRDF   2,EMG2,ERRG1    ;TIMEOUT MESSAGE.
3328  014352  104455                                                TRAP    C$ERDF
3329  014354  000002                                                .WORD   2
3330  014356  017727                                                .WORD   EMG2
3331  014360  014616                                                .WORD   ERRG1
3332                                                                ;ALSO PRINT # OF BUFFERS NOT COMPLETE.
3333
3334  014362  000453                        BR      60$             ;EXIT
3335  014364                        20$:
3336
3337  014364  012700  003640                MOV     #RCVBUF,R0      ;RECEIVE BUFFER POINTER TABLE ADDRESS.
3338  014370  012701  003240                MOV     #XMTBUF,R1      ;TRANSMIT BUFFERS
3339  014374  013702  002324                MOV     BUFNUM,R2       ;# OF RCV. AND XMIT BUFFERS.
3340  014400  005737  002302                TST     MMANAG          ;ARE THE BUFFERS MEMORY MANAGED?
3341  014404  001403                        BEQ     40$             ;IF YES - PROCEED.
3342  014406  012737  000001  177572        MOV     #1,@#177572     ;TURN ON MEMORY MANAGEMENT
3343  014414                        40$:
3344  014414  012003                        MOV     (R0)+,R3        ;ADDRESS OF A RECEIVE BUFFER.
3345  014416  012104                        MOV     (R1)+,R4        ;ADDRESS OF A TRANSMIT BUFFER.
3346  014420  011005                        MOV     @R0,R5          ;CHARACTER COUNT.
3347  014422  022021                        CMP     (R0)+,(R1)+     ;ARE THE CHARACTER COUNTS THE SAME?
3348  014424  001412                        BEQ     45$             ;IF YES - PROCEED.
3349  014426  005737  002302                TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
3350  014432  001402                        BEQ     41$             ;IF NOT - SKIP TURN OFF.
3351  014434  005037  177572                CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
3352  014440                        41$:
3353  014440                                ERRDF   12,EMG12,ERRG10
3354  014440  104455                                                TRAP    C$ERDF
3355  014442  000014                                                .WORD   12
3356  014444  020141                                                .WORD   EMG12
3357  014446  016164                                                .WORD   ERRG10
3358  014450  000420                        BR      60$             ;EXIT
3359  014452                        45$:
3360  014452  122324                        CMPB    (R3)+,(R4)+     ;ARE THE CHARACTERS THE SAME?
3361  014454  001005                        BNE     50$             ;IF NOT - ERROR EXIT
3362  014456  005305                        DEC     R5              ;CHECK ALL THE CHARACTERS
3363  014460  001374                        BNE     45$
3364  014462  005302                        DEC     R2              ;CHECK ALL THE BUFFERS.
3365  014464  001353                        BNE     40$
3366  014466  000411                        BR      60$
3367  014470                        50$:
3368  014470  005737  002302                TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
3369  014474  001402                        BEQ     51$             ;IF NOT - SKIP TURN OFF.
```

```
3370  014476  005037  177572          CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
3371  014502                  51$:
3372  014502                          ERRDF   15,EMG15,ERRG12
3373  014502  104455                                                          TRAP    C$ERDF
3374  014504  000017                                                          .WORD   15
3375  014506  020235                                                          .WORD   EMG15
3376  014510  016250                                                          .WORD   ERRG12
3377  014512                  60$:
3378  014512  005737  002302          TST     MMANAG          ;IS MEMORY MANAGEMENT TURNED ON?
3379  014516  001402                  BEQ     61$             ;IF NOT - SKIP TURN OFF.
3380  014520  005037  177572          CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT.
3381  014524                  61$:
3382  014524  042777  000120  165500  BIC     #IESET!IECLR,@SEL0 ;DISABLE BOTH INPUT INTERRUPTS
3383  014532  042777  000100  165474  BIC     #IE0,@SEL2      ;DISABLE OUTPUT INTERRUPT
3384  014540  022737  000021  002114  CMP     #17.,L$TEST     ;IS THIS TEST 17, 18 OR 19 ?
3385  014546  003011                  BGT     62$             ;IF NOT - SHUTDOWN.
3386                                  ;NOTE:
3387                                  ;DOING AN UPDATE IN TESTS 17 - 19, ALLOWS
3388                                  ;THE USER TO CHECK OUT REMOTE LOOPBACK BETER.
3389                                  ;A SHUTDOWN WHEN TESTING THE REMOTE LOOPBACK,
3390                                  ;WOULD CAUSE THE CONNECTION TO BE DROPPED.
3391  014550                          DMRIN   UPDATE          ;DO A DMR UPDATE.
3392                                  ;**** MACRO EXPANSION ****
3393  014550  004737  012062          JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
3394  014554  000011                  .WORD   UPDATE          ;INPUT COMMAND
3395  014556  000000                  .WORD   0               ;NO SEL4
3396  014560  000000                  .WORD   0               ;NO SEL6
3397                                  ;****                   ****
3398  014562                          WAIT    RDO             ;WAIT FOR RDO
3399                                  ;**** MACRO EXPANSION ****
3400  014562  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
3401  014566  000001                  .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
3402                                  ;****                   ****
3403  014570  000402                  BR      63$
3404  014572                  62$:
3405  014572                          SHUTDN                  ;SHUT DOWN THE DMR
3406                                  ;**** MACRO EXPANSION ****
3407  014572  004737  012562          JSR     PC, $HALT       ;DMR HALT ROUTINE.
3408                                  ;****                   ****
3409  014576                  63$:
3410  014576                          SETPRI  #PRI07          ;RETURN PROCESSOR PRIORITY TO 7
3411  014576  012700  000340                                                  MOV     #PRI07,R0
3412  014602  104441                                                          TRAP    C$SPRI
3413  014604  005037  002376          CLR     NESTPC          ;CLEAR NESTED FLAG.
3414  014610  005037  002374          CLR     SUBRPC          ;CLEAR PC.
3415  014614  000207                  RETURN
3416
3417
3418
3419
3420
3421
3422
3423
```

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

014616                  BGNMSG  ERRG1
014616                                                                  ERRG1::
014616                          PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
014616  013746  002374                                                  MOV     SUBRPC,-(SP)
014622  012746  016366                                                  MOV     #FMG3,-(SP)
014626  012746  000002                                                  MOV     #2,-(SP)
014632  010600                                                          MOV     SP,R0
014634  104414                                                          TRAP    C$PNTB
014636  062706  000006                                                  ADD     #6,SP
014642                          PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
014642  017746  165366                                                  MOV     @SEL2,-(SP)
014646  017746  165360                                                  MOV     @SEL0,-(SP)
014652  012746  016302                                                  MOV     #FMG1,-(SP)
014656  012746  000003                                                  MOV     #3,-(SP)
014662  010600                                                          MOV     SP,R0
014664  104414                                                          TRAP    C$PNTB
014666  062706  000010                                                  ADD     #10,SP
014672                          PRINTB  #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS.
014672  017746  165342                                                  MOV     @SEL6,-(SP)
014676  017746  165334                                                  MOV     @SEL4,-(SP)
014702  012746  016334                                                  MOV     #FMG2,-(SP)
014706  012746  000003                                                  MOV     #3,-(SP)
014712  010600                                                          MOV     SP,R0
014714  104414                                                          TRAP    C$PNTB
014716  062706  000010                                                  ADD     #10,SP
014722                          PRINTB  #FMG21,BUFNUM   ;# OF BUFFERS
014722  013746  002324                                                  MOV     BUFNUM,-(SP)
014726  012746  017461                                                  MOV     #FMG21,-(SP)
014732  012746  000002                                                  MOV     #2,-(SP)
014736  010600                                                          MOV     SP,R0
014740  104414                                                          TRAP    C$PNTB
014742  062706  000006                                                  ADD     #6,SP
014746                          PRINTB  #FMG22,BUFSIZ   ;BUFFER SIZE
014746  013746  002322                                                  MOV     BUFSIZ,-(SP)
014752  012746  017527                                                  MOV     #FMG22,-(SP)
014756  012746  000002                                                  MOV     #2,-(SP)
014762  010600                                                          MOV     SP,R0
014764  104414                                                          TRAP    C$PNTB
014766  062706  000006                                                  ADD     #6,SP
014772  005437  002326          NEG     INRCV           ;NEGATE BUFFER VALUES
014776  005437  002330          NEG     INXMIT
015002  005437  002332          NEG     OUTRCV
015006  005437  002334          NEG     OUTXMT
015012  063737  002324  002326  ADD     BUFNUM,INRCV    ;CALCULATE BUFFERS ASSIGNED.
015020  063737  002324  002330  ADD     BUFNUM,INXMIT
015026  063737  002324  002332  ADD     BUFNUM,OUTRCV   ;CALCULATE BUFFERS RECEIVED.
015034  063737  002324  002334  ADD     BUFNUM,OUTXMT
015042                          PRINTB  #FMG23,INRCV,INXMIT
015042  013746  002330                                                  MOV     INXMIT,-(SP)
```

```
3480  015046  013746  002326                                                    MOV     INRCV,-(SP)
3481  015052  012746  017554                                                    MOV     #FMG23,-(SP)
3482  015056  012746  000003                                                    MOV     #3,-(SP)
3483  015062  010600                                                           MOV     SP,R0
3484  015064  104414                                                           TRAP    C$PNTB
3485  015066  062706  000010                                                    ADD     #10,SP
3486  015072                        PRINTB  #FMG24,OUTRCV,OUTXMT
3487  015072  013746  002334                                                    MOV     OUTXMT,-(SP)
3488  015076  013746  002332                                                    MOV     OUTRCV,-(SP)
3489  015102  012746  017635                                                    MOV     #FMG24,-(SP)
3490  015106  012746  000003                                                    MOV     #3,-(SP)
3491  015112  010600                                                           MOV     SP,R0
3492  015114  104414                                                           TRAP    C$PNTB
3493  015116  062706  000010                                                    ADD     #10,SP
3494  015122                  ENDMSG
3495  015122                                                          L10002:
3496  015122  104423                                                           TRAP    C$MSG
3497
3498
3499  015124                  BGNMSG  ERRG2
3500  015124                                                          ERRG2::
3501  015124  005737  002374          TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
3502  015130  001412                  BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
3503  015132                        PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
3504  015132  013746  002374                                                    MOV     SUBRPC,-(SP)
3505  015136  012746  016366                                                    MOV     #FMG3,-(SP)
3506  015142  012746  000002                                                    MOV     #2,-(SP)
3507  015146  010600                                                           MOV     SP,R0
3508  015150  104414                                                           TRAP    C$PNTB
3509  015152  062706  000006                                                    ADD     #6,SP
3510  015156                  10$:
3511  015156                        PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
3512  015156  017746  165052                                                    MOV     @SEL2,-(SP)
3513  015162  017746  165044                                                    MOV     @SEL0,-(SP)
3514  015166  012746  016302                                                    MOV     #FMG1,-(SP)
3515  015172  012746  000003                                                    MOV     #3,-(SP)
3516  015176  010600                                                           MOV     SP,R0
3517  015200  104414                                                           TRAP    C$PNTB
3518  015202  062706  000010                                                    ADD     #10,SP
3519  015206                        PRINTB  #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS.
3520  015206  017746  165026                                                    MOV     @SEL6,-(SP)
3521  015212  017746  165020                                                    MOV     @SEL4,-(SP)
3522  015216  012746  016334                                                    MOV     #FMG2,-(SP)
3523  015222  012746  000003                                                    MOV     #3,-(SP)
3524  015226  010600                                                           MOV     SP,R0
3525  015230  104414                                                           TRAP    C$PNTB
3526  015232  062706  000010                                                    ADD     #10,SP
3527  015236                  ENDMSG
3528  015236                                                          L10003:
3529  015236  104423                                                           TRAP    C$MSG
3530
3531  015240                  BGNMSG  ERRG3
3532  015240                                                          ERRG3::
3533  015240  005737  002374          TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
3534  015244  001412                  BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
3535  015246                        PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
```

```
3536  015246  013746  002374                                                    MOV     SUBRPC,-(SP)
3537  015252  012746  016366                                                    MOV     #FMG3,-(SP)
3538  015256  012746  000002                                                    MOV     #2,-(SP)
3539  015262  010600                                                            MOV     SP,R0
3540  015264  104414                                                            TRAP    C$PNTB
3541  015266  062706  000006                                                    ADD     #6,SP
3542  015272                        10$:
3543  015272                                PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
3544  015272  017746  164736                                                    MOV     @SEL2,-(SP)
3545  015276  017746  164730                                                    MOV     @SEL0,-(SP)
3546  015302  012746  016302                                                    MOV     #FMG1,-(SP)
3547  015306  012746  000003                                                    MOV     #3,-(SP)
3548  015312  010600                                                            MOV     SP,R0
3549  015314  104414                                                            TRAP    C$PNTB
3550  015316  062706  000010                                                    ADD     #10,SP
3551  015322  032777  100000  164702        BIT     #RUN,@SEL0      ;IS THE RUN BIT SET
3552  015330  001043                        BNE     20$             ;IF RUN SET, CHECK.
3553  015332  122777  000001  164704        CMPB    #1,@BSEL3       ;DID CPU MICRO. FAIL?
3554  015340  001011                        BNE     12$             ;IF NOT SEE IF LU FAILED.
3555  015342                                PRINTB  #FMG4           ;CPU MICRO. FAILED.
3556  015342  012746  016440                                                    MOV     #FMG4,-(SP)
3557  015346  012746  000001                                                    MOV     #1,-(SP)
3558  015352  010600                                                            MOV     SP,R0
3559  015354  104414                                                            TRAP    C$PNTB
3560  015356  062706  000004                                                    ADD     #4,SP
3561  015362  000441                        BR      25$
3562  015364                        12$:
3563  015364  122777  000002  164652        CMPB    #2,@BSEL3       ;DID LINE UNIT MICRO. FAIL?
3564  015372  001011                        BNE     15$
3565  015374                                PRINTB  #FMG5           ;LINE UNIT FAILED.
3566  015374  012746  016471                                                    MOV     #FMG5,-(SP)
3567  015400  012746  000001                                                    MOV     #1,-(SP)
3568  015404  010600                                                            MOV     SP,R0
3569  015406  104414                                                            TRAP    .C$PNTB
3570  015410  062706  000004                                                    ADD     #4,SP
3571  015414  000424                        BR      25$
3572  015416                        15$:
3573  015416                                PRINTB  #FMG5           ;NO RUN - MASTER CLEAR FAILED.
3574  015416  012746  016471                                                    MOV     #FMG5,-(SP)
3575  015422  012746  000001                                                    MOV     #1,-(SP)
3576  015426  010600                                                            MOV     SP,R0
3577  015430  104414                                                            TRAP    C$PNTB
3578  015432  062706  000004                                                    ADD     #4,SP
3579  015436  000413                        BR      25$
3580  015440                        20$:
3581  015440  105777  164600                TSTB    @BSEL3          ;IS BSEL3 STILL 0?
3582  015444  001010                        BNE     25$             ;IF NOT - SEE IF MICRODIAG. RUN.
3583  015446                                PRINTB  #FMG19          ;DEVICE IS NOT DMR (DMC?)
3584  015446  012746  017436                                                    MOV     #FMG19,-(SP)
3585  015452  012746  000001                                                    MOV     #1,-(SP)
3586  015456  010600                                                            MOV     SP,R0
3587  015460  104414                                                            TRAP    C$PNTB
3588  015462  062706  000004                                                    ADD     #4,SP
3589  015466                        25$:
3590  015466                        ENDMSG
3591  015466                                                        L10004:
```

```
3592  015466  104423                                                          TRAP    C$MSG
3593
3594
3595  015470                        BGNMSG  ERRG4
3596  015470                                                                ERRG4::
3597  015470  005737  002374                TST     SUBRPC          ;IS THE ERROR IN A SUBROUTINE?
3598  015474  001412                        BEQ     10$             ;IF NOT, DON'T PRINT SUBR. PC
3599  015476                                PRINTB  #FMG3,SUBRPC    ;PC THAT SUBROUTINE WAS CALLED.
3600  015476  013746  002374                                                  MOV     SUBRPC,-(SP)
3601  015502  012746  016366                                                  MOV     #FMG3,-(SP)
3602  015506  012746  000002                                                  MOV     #2,-(SP)
3603  015512  010600                                                          MOV     SP,R0
3604  015514  104414                                                          TRAP    C$PNTB
3605  015516  062706  000006                                                  ADD     #6,SP
3606  015522                        10$:
3607  015522  105737  002643                TSTB    BASE+3          ;ONLY PRINT NON-ZERO VALUES
3608  015526  001003                        BNE     11$
3609  015530  105737  002646                TSTB    BASE+6
3610  015534  001416                        BEQ     12$
3611  015536                        11$:
3612  015536                                PRINTB  #FMG7,<B,BASE+3>,<B,BASE+6>
3613  015536  005046                                                          CLR     -(SP)
3614  015540  153716  002646                                                  BISB    BASE+6,(SP)
3615  015544  005046                                                          CLR     -(SP)
3616  015546  153716  002643                                                  BISB    BASE+3,(SP)
3617  015552  012746  016522                                                  MOV     #FMG7,-(SP)
3618  015556  012746  000003                                                  MOV     #3,-(SP)
3619  015562  010600                                                          MOV     SP,R0
3620  015564  104414                                                          TRAP    C$PNTB
3621  015566  062706  000010                                                  ADD     #10,SP
3622  015572                        12$:
3623  015572  105737  002645                TSTB    BASE+5
3624  015576  001003                        BNE     13$
3625  015600  105737  002650                TSTB    BASE+8.
3626  015604  001416                        BEQ     14$
3627  015606                        13$:
3628  015606                                PRINTB  #FMG8,<B,BASE+5>,<B,BASE+8.>
3629  015606  005046                                                          CLR     -(SP)
3630  015610  153716  002650                                                  BISB    BASE+8.,(SP)
3631  015614  005046                                                          CLR     -(SP)
3632  015616  153716  002645                                                  BISB    BASE+5,(SP)
3633  015622  012746  016573                                                  MOV     #FMG8,-(SP)
3634  015626  012746  000003                                                  MOV     #3,-(SP)
3635  015632  010600                                                          MOV     SP,R0
3636  015634  104414                                                          TRAP    C$PNTB
3637  015636  062706  000010                                                  ADD     #10,SP
3638  015642                        14$:
3639  015642  105737  002644                TSTB    BASE+4
3640  015646  001003                        BNE     15$
3641  015650  105737  002647                TSTB    BASE+7
3642  015654  001416                        BEQ     16$
3643  015656                        15$:
3644  015656                                PRINTB  #FMG9,<B,BASE+4>,<B,BASE+7>
3645  015656  005046                                                          CLR     -(SP)
3646  015660  153716  002647                                                  BISB    BASE+7,(SP)
3647  015664  005046                                                          CLR     -(SP)
```

```
3648  015666  153716  002644                                                    BISB    BASE+4,(SP)
3649  015672  012746  016644                                                    MOV     #FMG9,-(SP)
3650  015676  012746  000003                                                    MOV     #3,-(SP)
3651  015702  010600                                                           MOV     SP,R0
3652  015704  104414                                                           TRAP    C$PNTB
3653  015706  062706  000010                                                   ADD     #10,SP
3654  015712                        16$:
3655  015712  105737  002652                TSTB    BASE+10.
3656  015716  001003                        BNE     17$
3657  015720  105737  002651                TSTB    BASE+9.
3658  015724  001416                        BEQ     20$
3659  015726                        17$:
3660  015726                        PRINTB  #FMG10,<B,BASE+10.>,<B,BASE+9.>
3661  015726  005046                                                           CLR     -(SP)
3662  015730  153716  002651                                                   BISB    BASE+9.,(SP)
3663  015734  005046                                                           CLR     -(SP)
3664  015736  153716  002652                                                   BISB    BASE+10.,(SP)
3665  015742  012746  016715                                                   MOV     #FMG10,-(SP)
3666  015746  012746  000003                                                   MOV     #3,-(SP)
3667  015752  010600                                                           MOV     SP,R0
3668  015754  104414                                                           TRAP    C$PNTB
3669  015756  062706  000010                                                   ADD     #10,SP
3670  015762                        20$:
3671  015762                        ENDMSG
3672  015762                                                          L10005:
3673  015762  104423                                                           TRAP    C$MSG
3674
3675
3676
3677  015764                        BGNMSG  ERRG7
3678  015764                                                          ERRG7::
3679  015764                        PRINTB  #FMG12          ;BA/CC OUT RECV
3680  015764  012746  017005                                                   MOV     #FMG12,-(SP)
3681  015770  012746  000001                                                   MOV     #1,-(SP)
3682  015774  010600                                                           MOV     SP,R0
3683  015776  104414                                                           TRAP    C$PNTB
3684  016000  062706  000004                                                   ADD     #4,SP
3685  016004                        PRINTB  #FMG13,@SEL4,@SEL6 ;ACTUAL BA/CC
3686  016004  017746  164230                                                   MOV     @SEL6,-(SP)
3687  016010  017746  164222                                                   MOV     @SEL4,-(SP)
3688  016014  012746  017036                                                   MOV     #FMG13,-(SP)
3689  016020  012746  000003                                                   MOV     #3,-(SP)
3690  016024  010600                                                           MOV     SP,R0
3691  016026  104414                                                           TRAP    C$PNTB
3692  016030  062706  000010                                                   ADD     #10,SP
3693  016034                        PRINTB  #FMG15,-2(R4)       ;EXPECTED BA/CC
3694  016034  016446  177776                                                   MOV     -2(R4),-(SP)
3695  016040  012746  017166                                                   MOV     #FMG15,-(SP)
3696  016044  012746  000002                                                   MOV     #2,-(SP)
3697  016050  010600                                                           MOV     SP,R0
3698  016052  104414                                                           TRAP    C$PNTB
3699  016054  062706  000006                                                   ADD     #6,SP
3700  016060                        ENDMSG
3701  016060                                                          L10006:
3702  016060  104423                                                           TRAP    C$MSG
3703
```

```
3704  016062                          BGNMSG  ERRG8
3705  016062                                                                  ERRG8::
3706  016062                                  PRINTB  #FMG11          ;BA/CC OUT XMIT
3707  016062  012746  016753                                                          MOV     #FMG11,-(SP)
3708  016066  012746  000001                                                          MOV     #1,-(SP)
3709  016072  010600                                                                  MOV     SP,R0
3710  016074  104414                                                                  TRAP    C$PNTB
3711  016076  062706  000004                                                          ADD     #4,SP
3712  016102                                  PRINTB  #FMG13,@SEL4,@SEL6   ;ACTUAL BA/CC
3713  016102  017746  164132                                                          MOV     @SEL6,-(SP)
3714  016106  017746  164124                                                          MOV     @SEL4,-(SP)
3715  016112  012746  017036                                                          MOV     #FMG13,-(SP)
3716  016116  012746  000003                                                          MOV     #3,-(SP)
3717  016122  010600                                                                  MOV     SP,R0
3718  016124  104414                                                                  TRAP    C$PNTB
3719  016126  062706  000010                                                          ADD     #10,SP
3720  016132                                  PRINTB  #FMG14,-4(R5),-2(R5) ;EXPECTED BA/CC
3721  016132  016546  177776                                                          MOV     -2(R5),-(SP)
3722  016136  016546  177774                                                          MOV     -4(R5),-(SP)
3723  016142  012746  017112                                                          MOV     #FMG14,-(SP)
3724  016146  012746  000003                                                          MOV     #3,-(SP)
3725  016152  010600                                                                  MOV     SP,R0
3726  016154  104414                                                                  TRAP    C$PNTB
3727  016156  062706  000010                                                          ADD     #10,SP
3728  016162                          ENDMSG
3729  016162                                                                  L10007:
3730  016162  104423                                                                  TRAP    C$MSG
3731
3732
3733  016164                          BGNMSG  ERRG10
3734  016164                                                                  ERRG10::
3735  016164                                  PRINTB  #FMG16,-2(R0),-2(R1) ;RCV CC & XMIT CC
3736  016164  016146  177776                                                          MOV     -2(R1),-(SP)
3737  016170  016046  177776                                                          MOV     -2(R0),-(SP)
3738  016174  012746  017215                                                          MOV     #FMG16,-(SP)
3739  016200  012746  000003                                                          MOV     #3,-(SP)
3740  016204  010600                                                                  MOV     SP,R0
3741  016206  104414                                                                  TRAP    C$PNTB
3742  016210  062706  000010                                                          ADD     #10,SP
3743  016214                          ENDMSG
3744  016214                                                                  L10010:
3745  016214  104423                                                                  TRAP    C$MSG
3746
3747  016216                          BGNMSG  ERRG11
3748  016216                                                                  ERRG11::
3749  016216                                  PRINTB  #FMG17,-4(R0),-4(R1) ;RCV BUFFER & XMIT BUFFER
3750  016216  016146  177774                                                          MOV     -4(R1),-(SP)
3751  016222  016046  177774                                                          MOV     -4(R0),-(SP)
3752  016226  012746  017274                                                          MOV     #FMG17,-(SP)
3753  016232  012746  000003                                                          MOV     #3,-(SP)
3754  016236  010600                                                                  MOV     SP,R0
3755  016240  104414                                                                  TRAP    C$PNTB
3756  016242  062706  000010                                                          ADD     #10,SP
3757  016246                          ENDMSG
3758  016246                                                                  L10011:
3759  016246  104423                                                                  TRAP    C$MSG
```

```
                                        BGNMSG  ERRG12
                                                                                ERRG12::
                                                DEC     R3              ;BACKUP TO RECEIVE ADDRESS
                                                DEC     R4              ;BACKUP TO TRANSMIT ADDRESS
                                                PRINTB  #FMG18,R3,R4    ;PRINT OUT ADDRESS
                                                                                MOV     R4,-(SP)
                                                                                MOV     R3,-(SP)
                                                                                MOV     #FMG18,-(SP)
                                                                                MOV     #3,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTB
                                                                                ADD     #10,SP
                                        ENDMSG
                                                                        L10012:
                                                                                TRAP    C$MSG

016302  040445  042523  030114  FMG1:   .ASCIZ  /%ASEL0: %06%A SEL2: %06%N/
016310  020072  047445  022466
016316  020101  042523  031114
016324  020072  047445  022466
016332  000116
016334  040445  042523  032114  FMG2:   .ASCIZ  /%ASEL4: %06%A SEL6: %06%N/
016342  020072  047445  022466
016350  020101  042523  033114
016356  020072  047445  022466
016364  000116
016366  040445  051105  047522  FMG3:   .ASCIZ  /%AERROR IN SUBROUTINE CALLED AT PC: %06%N/
016374  020122  047111  051440
016402  041125  047522  052125
016410  047111  020105  040503
016416  046114  042105  040440
016424  020124  041520  020072
016432  047445  022466  000116
016440  040445  050103  020125  FMG4:   .ASCIZ  /%ACPU MICROTEST FAILED%N/
016446  044515  051103  052117
016454  051505  020124  040506
016462  046111  042105  047045
016470     000
016471     045  046101  027125  FMG5:   .ASCIZ  /%ALU. MICROTEST FAILED%N/
016476  046440  041511  047522
016504  042524  052123  043040
016512  044501  042514  022504
016520  000116
016522  040445  040516  051513  FMG7:   .ASCIZ  /%ANAKS-NO BUFFER  RCV: %D3%A SENT: %D3%N/
016530  047055  020117  052502
016536  043106  051105  020040
016544  041522  035126  022440
016552  031504  040445  051440
016560  047105  035124  022440
016566  031504  047045     000
```

```
3816  016573     045  047101  045501  FMG8:   .ASCIZ  /%ANAKS-BAD DATA   RCV: %D3%A SENT: %D3%N/
3817  016600  026523  040502  020104
3818  016606  040504  040524  020040
3819  016614  051040  053103  020072
3820  016622  042045  022463  020101
3821  016630  042523  052116  020072
3822  016636  042045  022463  000116
3823  016644  040445  040516  051513  FMG9:   .ASCIZ  /%ANAKS-BAD HEADER RCV: %D3%A SENT: %D3%N/
3824  016652  041055  042101  044040
3825  016660  040505  042504  020122
3826  016666  041522  035126  022440
3827  016674  031504  040445  051440
3828  016702  047105  035124  022440
3829  016710  031504  047045     000
3830  016715     045  051101  050105  FMG10:  .ASCIZ  /%AREPS-RCV: %D3%A SENT: %D3%N/
3831  016722  026523  041522  035126
3832  016730  022440  031504  040445
3833  016736  051440  047105  035124
3834  016744  022440  031504  047045
3835  016752     000
3836  016753     045  054101  044515  FMG11:  .ASCIZ  /%AXMIT BACC OUT COMMAND%N/
3837  016760  020124  040502  041503
3838  016766  047440  052125  041440
3839  016774  046517  040515  042116
3840  017002  047045     000
3841  017005     045  051101  053103  FMG12:  .ASCIZ  /%ARCV BACC OUT COMMAND%N/
3842  017012  041040  041501  020103
3843  017020  052517  020124  047503
3844  017026  046515  047101  022504
3845  017034  000116
3846  017036  040445  041501  052524  FMG13:  .ASCIZ  /%AACTUAL   ADDR. %O6%A ACTUAL COUNT   %D5%N/
3847  017044  046101  020040  040440
3848  017052  042104  027122  022440
3849  017060  033117  040445  040440
3850  017066  052103  040525  020114
3851  017074  047503  047125  020124
3852  017102  020040  042045  022465
3853  017110  000116
3854  017112  040445  054105  042520  FMG14:  .ASCIZ  /%AEXPECTED ADDR. %O6%A EXPECTED COUNT %D5%N/
3855  017120  052103  042105  040440
3856  017126  042104  027122  022440
3857  017134  033117  040445  042440
3858  017142  050130  041505  042524
3859  017150  020104  047503  047125
3860  017156  020124  042045  022465
3861  017164  000116
3862  017166  040445  054105  042520  FMG15:  .ASCIZ  /%AEXPECTED ADDR. %O6%N/
3863  017174  052103  042105  040440
3864  017202  042104  027122  022440
3865  017210  033117  047045     000
3866  017215     045  051101  053103  FMG16:  .ASCIZ  /%ARCV CHAR. COUNT %D5%A XMIT CHAR. COUNT %D5%N/
3867  017222  041440  040510  027122
3868  017230  041440  052517  052116
3869  017236  022440  032504  040445
3870  017244  054040  044515  020124
3871  017252  044103  051101  020056
```

```
3872  017260  047503  047125  020124
3873  017266  042045  022465  000116
3874  017274  040445  041522  020126  FMG17:  .ASCIZ  /%ARCV BUFFER AT %O6%A XMIT BUFFER AT %O6%N/
3875  017302  052502  043106  051105
3876  017310  040440  020124  047445
3877  017316  022466  020101  046530
3878  017324  052111  041040  043125
3879  017332  042506  020122  052101
3880  017340  022440  033117  047045
3881  017346     000
3882  017347     045  042101  052101  FMG18:  .ASCIZ  /%ADATA DIFFERS AT RCV ADDR. %O6%A AND XMIT ADDR. %O6%N/
3883  017354  020101  044504  043106
3884  017362  051105  020123  052101
3885  017370  051040  053103  040440
3886  017376  042104  027122  022440
3887  017404  033117  040445  040440
3888  017412  042116  054040  044515
3889  017420  020124  042101  051104
3890  017426  020056  047445  022466
3891  017434  000116
3892  017436  040445  042504  044526  FMG19:  .ASCIZ  /%ADEVICE NOT DMR%N/
3893  017444  042503  047040  052117
3894  017452  042040  051115  047045
3895  017460     000
3896  017461     045  041101  043125  FMG21:  .ASCIZ  /%ABUFFER STATUS%N%A# OF BUFFERS:%D3%N/
3897  017466  042506  020122  052123
3898  017474  052101  051525  047045
3899  017502  040445  020043  043117
3900  017510  041040  043125  042506
3901  017516  051522  022472  031504
3902  017524  047045     000
3903  017527     045  041101  043125  FMG22:  .ASCIZ  /%ABUFFER SIZE: %D5%N/
3904  017534  042506  020122  044523
3905  017542  042532  020072  042045
3906  017550  022465  000116
3907  017554  040445  047111  020040  FMG23:  .ASCIZ  /%AIN  - RCV ASSIGNED:%D3%A   XMIT ASSIGNED:%D3%N/
3908  017562  020055  041522  020126
3909  017570  051501  044523  047107
3910  017576  042105  022472  031504
3911  017604  040445  020040  054040
3912  017612  044515  020124  051501
3913  017620  044523  047107  042105
3914  017626  022472  031504  047045
3915  017634     000
3916  017635     045  047501  052125  FMG24:  .ASCIZ  /%AOUT - RCV RETURNED:%D3%A   XMIT RETURNED:%D3%N/
3917  017642  026440  051040  053103
3918  017650  051040  052105  051125
3919  017656  042516  035104  042045
3920  017664  022463  020101  020040
3921  017672  046530  052111  051040
3922  017700  052105  051125  042516
3923  017706  035104  042045  022463
3924  017714  000116
3925
3926  017716  044524  042515  047440  EMG1:   .ASCIZ  /TIME OUT/
3927  017724  052125     000
```

```
 3928  017727     124  046511  020105  EMG2:   .ASCIZ  /TIME OUT - DURING INTERRUPT EXERCISE/
 3929  017734  052517  020124  020055
 3930  017742  052504  044522  043516
 3931  017750  044440  052116  051105
 3932  017756  052522  052120  042440
 3933  017764  042530  041522  051511
 3934  017772  000105
 3935  017774  054105  042520  052103  EMG8:   .ASCIZ  /EXPECTED CONTROL OUT - NOT RECEIVED/
 3936  020002  042105  041440  047117
 3937  020010  051124  046117  047440
 3938  020016  052125  026440  047040
 3939  020024  052117  051040  041505
 3940  020032  044505  042526  000104
 3941  020040  047125  054105  042520  EMG9:   .ASCIZ  /UNEXPECTED CONTROL OUT/
 3942  020046  052103  042105  041440
 3943  020054  047117  051124  046117
 3944  020062  047440  052125     000
 3945  020067     105  051122  051117  EMG10:  .ASCIZ  /ERROR - MULTIPLE XMITS/
 3946  020074  026440  046440  046125
 3947  020102  044524  046120  020105
 3948  020110  046530  052111  000123
 3949  020116  052502  043106  051105  EMG11:  .ASCIZ  /BUFFER ADDR. ERROR/
 3950  020124  040440  042104  027122
 3951  020132  042440  051122  051117
 3952  020140     000
 3953  020141     103  040510  040522  EMG12:  .ASCIZ  /CHARACTER COUNT ERROR/
 3954  020146  052103  051105  041440
 3955  020154  052517  052116  042440
 3956  020162  051122  051117     000
 3957  020167     105  051122  051117  EMG13:  .ASCIZ  /ERROR - MULTIPLE RCVS/
 3958  020174  026440  046440  046125
 3959  020202  044524  046120  020105
 3960  020210  041522  051526     000
 3961  020215     122  053103  020104  EMG14:  .ASCIZ  /RCVD EXTRA DATA/
 3962  020222  054105  051124  020101
 3963  020230  040504  040524     000
 3964  020235     104  052101  020101  EMG15:  .ASCIZ  /DATA ERROR/
 3965  020242  051105  047522  000122
 3966  020250  047125  054105  042520  EMG16:  .ASCIZ  /UNEXPECTED HALT RECEIVED/
 3967  020256  052103  042105  044040
 3968  020264  046101  020124  042522
 3969  020272  042503  053111  042105
 3970  020300     000
 3971  020301     103  047117  051124  EMG17:  .ASCIZ  /CONTROL IN PROBLEM - IN INTERRUPT ROUTINE/
 3972  020306  046117  044440  020116
 3973  020314  051120  041117  042514
 3974  020322  020115  020055  047111
 3975  020330  044440  052116  051105
 3976  020336  052522  052120  051040
 3977  020344  052517  044524  042516
 3978  020352     000
 3979  020353     123  052520  044522  EMG18:  .ASCIZ  /SPURIOUS RDO INTERRUPT/
 3980  020360  052517  020123  042122
 3981  020366  020117  047111  042524
 3982  020374  051122  050125  000124
 3983  020402  034115  030062  020067  EMG19:  .ASCIZ  /M8207 PROGRAM TIMER OUT OF RANGE/
```

```
 3984  020410  051120  043517  040522
 3985  020416  020115  044524  042515
 3986  020424  020122  052517  020124
 3987  020432  043117  051040  047101
 3988  020440  042507     000
 3989          020444                  .EVEN
```

```
                                .SBTTL  LOAD DEVICE PROTECTION TABLE

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

020444                                  BGNPROT
020444                                                                  L$PROT::

020444  177777                          .WORD   -1              ;DON'T CHECK CSR ADDRESS
020446  177777                          .WORD   -1              ;DON'T CHECK MASSBUS UNIT NUMBER
020450  177777                          .WORD   -1              ;DON'T CHECK DRIVE NUMBER

020452                                  ENDPROT
```

```
                                .SBTTL  INITIALIZE SECTION

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

020452                          BGNINIT
020452                                                                  L$INIT::

020452                                  SETPRI  #PRI07          ;SET DIAGNOSTIC PRIORITY = 7
020452  012700  000340                                                  MOV     #PRI07,R0
020456  104441                                                          TRAP    C$SPRI
020460  010637  002372                  MOV     SP,PSTACK       ;STORE BASE LEVEL PROGRAM STACK POINTER
020464  005037  002374                  CLR     SUBRPC          ;CLEAR STORAGE WORD FOR SUBROUTINE PC CALL
020470  005037  002366                  CLR     ERROR           ;CLEAR ERROR FLAGS
020474  005037  002274                  CLR     RESUME          ;CLEAR FLAG USED TO ALLOW BASE IN - RESUME.
020500  005037  002276                  CLR     DMCMDE          ;CLEAR FLAG USED TO INDICATE DMC MODE
020504  005037  002400                  CLR     CLRNO           ;CLEAR WORD USED TO RUN MICRO TESTS ON
                                                                ;EVERY OTHER MASTER CLEAR.
020510  005037  002352                  CLR     NXMFLG          ;FLAG USED TO MARK A NXM DMR ADDRESS.
020514  005737  002264                  TST     FRSTIM          ;IS THIS THE TIME THROUGH AFTER LOAD?
020520  001005                          BNE     1$              ;IF NOT - ERROR TRAP VECTOR ALREADY SAVED
020522  012737  000001  002264          MOV     #1,FRSTIM       ;FLAG THAT WE'VE BEEN THRU THE 1ST TIME
020530  005037  002266                  CLR     FRSPAS          ;CLEAR COUNTER FOR # OF PASSES AFTER LOAD

020534                          1$:
020534                                  CLRVEC  #4              ;ENSURE VECTOR 4 IS IN NORMAL STATE.
020534  012700  000004                                                  MOV     #4,R0
020540  104436                                                          TRAP    C$CVEC

020542                                  READEF  #EF.START       ;IS THIS JUST STARTED?
020542  012700  000040                                                  MOV     #EF.START,R0
020546  104447                                                          TRAP    C$REFG
020550                                  BCOMPLETE STARST        ;IF YES - BRANCH.
020550  103416                                                          BCS     STARST
020552                                  READEF  #EF.RESTART     ;IS THIS A RESTART ?
020552  012700  000037                                                  MOV     #EF.RESTART,R0
020556  104447                                                          TRAP    C$REFG
020560                                  BCOMPLETE STARST        ;IF YES - BRANCH.
020560  103412                                                          BCS     STARST
020562                                  READEF  #EF.NEW         ;IS THIS A NEW PASS?
020562  012700  000035                                                  MOV     #EF.NEW,R0
020566  104447                                                          TRAP    C$REFG
020570                                  BCOMPLETE NEWST         ;IF YES - BRANCH
020570  103410                                                          BCS     NEWST
020572                                  READEF  #EF.CONTINUE    ;IS THIS A CONTINUATION?
020572  012700  000036                                                  MOV     #EF.CONTINUE,R0
020576  104447                                                          TRAP    C$REFG
020600                                  BNCOMPLETE GETPRM       ;IF NOT - GET PARAMETERS
020600  103013                                                          BCC     GETPRM
020602  000137  021510                  JMP     END             ;OTHERWISE - DON'T INITIALIZE.

020606                          STARST:
020606  005037  002270                  CLR     STARES          ;CLEAR THE FLAG TO SHOW START/RESTART.
```

```
4066  020612
4067  020612  012737  177777  002370  NEWST:  MOV     #-1,LOGDEV      ;INITIALIZE LOGICAL UNIT NUMBER.
4068  020620  005237  002266          INC     FRSPAS          ;INCREMENT # OF PASSES AFTER LOAD.
4069  020624  005237  002270          INC     STARES          ;INCREMENT # OF PASSES SINCE START/RESTART.
4070  020630
4071  020630  005237  002370  GETPRM: INC     LOGDEV          ;NEXT LOGICAL UNIT TO BE TESTED
4072  020634  023737  002370  002012  CMP     LOGDEV,L$UNIT   ;IS THE MAXIMUM UNIT # EXCEEDED?
4073  020642  002363          BGE     NEWST           ;IF YES - DO A NEW START
4074  020644                  GPHARD  LOGDEV,R1       ;GET THE P-TABLE POINTER INTO R1
4075  020644  013700  002370                                          MOV     LOGDEV,R0
4076  020650  104442                                                  TRAP    C$GPHRD
4077  020652  010001                                                  MOV     R0,R1
4078  020654                  BNCOMPLETE  GETPRM      ;IF NOT AVAILABLE, GET THE NEXT ONE
4079  020654  103365                                                  BCC     GETPRM
4080  020656  012137  002252          MOV     (R1)+,WTYPE     ;MICROPROCESSOR TYPE
4081  020662  011100          MOV     (R1),R0         ;SAVE THE ADDRESS
4082  020664  032700  000007          BIT     #7,R0           ;DOES THIS DEVICE ADDRESS END IN NON-ZERO?
4083  020670  001414          BEQ     10$             ;IF NOT - OK (76XXX0)
4084  020672  042711  000007          BIC     #7,(R1)         ;MAKE IT 76XXX0
4085  020676                  PRINTB  #FINIT1,(R1),R0 ;INFORM THE USER
4086  020676  010046                                          MOV     R0,-(SP)
4087  020700  011146                                          MOV     (R1),-(SP)
4088  020702  012746  021512                                  MOV     #FINIT1,-(SP)
4089  020706  012746  000003                                  MOV     #3,-(SP)
4090  020712  010600                                          MOV     SP,R0
4091  020714  104414                                          TRAP    C$PNTB
4092  020716  062706  000010                                  ADD     #10,SP
4093  020722          10$:
4094  020722  011137  002232          MOV     (R1),CSR        ;CSR ADDRESS
4095  020726  011137  002242          MOV     (R1),BSEL1
4096  020732  005237  002242          INC     BSEL1           ;HIGH BYTE ADDRESS OF CSR
4097  020736  011137  002234          MOV     (R1),SEL2
4098  020742  062737  000002  002234  ADD     #2,SEL2         ;CONTROL OUT REGISTER ADDRESS
4099  020750  011137  002244          MOV     (R1),BSEL3
4100  020754  062737  000003  002244  ADD     #3,BSEL3        ;HIGH BYTE OF SEL2
4101  020762  011137  002236          MOV     (R1),SEL4
4102  020766  062737  000004  002236  ADD     #4,SEL4         ;PORT REG (SEL 4) ADDRESS
4103  020774  011137  002246          MOV     (R1),BSEL5
4104  021000  062737  000005  002246  ADD     #5,BSEL5        ;HIGH BYTE OF SEL4
4105  021006  011137  002240          MOV     (R1),SEL6
4106  021012  062737  000006  002240  ADD     #6,SEL6         ;PORT REG (SEL 6) ADDRESS
4107  021020  012137  002250          MOV     (R1)+,BSEL7
4108  021024  062737  000007  002250  ADD     #7,BSEL7        ;HIGH BYTE OF SEL6
4109  021032  011100          MOV     (R1),R0         ;GET VECTOR
4110  021034  032700  000007          BIT     #7,R0           ;DOES THIS VECTOR END IN NON-ZERO?
4111  021040  001414          BEQ     11$             ;IF NOT - OK (XX0)
4112  021042  042711  000007          BIC     #7,(R1)         ;MAKE IT XX0
4113  021046                  PRINTB  #FINIT2,(R1),R0 ;INFORM THE USER
4114  021046  010046                                          MOV     R0,-(SP)
4115  021050  011146                                          MOV     (R1),-(SP)
4116  021052  012746  021601                                  MOV     #FINIT2,-(SP)
4117  021056  012746  000003                                  MOV     #3,-(SP)
4118  021062  010600                                          MOV     SP,R0
4119  021064  104414                                          TRAP    C$PNTB
4120  021066  062706  000010                                  ADD     #10,SP
4121  021072          11$:
```

```
4122  021072  011137  002226                MOV     (R1),DMRVEC     ;RCV. VECTOR
4123  021076  011137  002230                MOV     (R1),DMTVEC     ;TRANSMIT VECTOR
4124  021102  011100                        MOV     (R1),R0         ;RCV. VECTOR
4125  021104  105060  000003                CLRB    3(R0)           ;CLEAR HI BYTE OF PSW FOR RCV. VECTOR.
4126  021110  105060  000007                CLRB    7(R0)           ;CLEAR HI BYTE OF PSW FOR XMIT. VECTOR.
4127                                                                ;THIS WILL ENSURE THAT WE DON'T PICK
4128                                                                ;UP ANY UNEXPECTED BITS IN PROCESSORS
4129                                                                ;WHICH USE BITS 11-15 OF THE PSW.  IE
4130                                                                ;IF BIT 11 IS SET IN AN 11/70 ANOTHER
4131                                                                ;REGISTER SET MAY BE USED.
4132  021114  062737  000004  002230        ADD     #4,DMTVEC       ;ADJUST XMIT VECTOR
4133
4134                                                                ;SET UP ISRS FOR DMR. INTERRUPTS ENABLED IN
4135                                                                ;TESTS 15-19.
4136
4137  021122                                SETVEC  DMRVEC,#INISR,#PRI05    ;INPUT ISR
4138  021122  012746  000240                                                MOV     #PRI05,-(SP)
4139  021126  012746  022064                                                MOV     #INISR,-(SP)
4140  021132  013746  002226                                                MOV     DMRVEC,-(SP)
4141  021136  012746  000003                                                MOV     #3,-(SP)
4142  021142  104437                                                        TRAP    C$SVEC
4143  021144  062706  000010                                                ADD     #10,SP
4144  021150                                SETVEC  DMTVEC,#OUTISR,#PRI05   ;OUTPUT ISR
4145  021150  012746  000240                                                MOV     #PRI05,-(SP)
4146  021154  012746  023142                                                MOV     #OUTISR,-(SP)
4147  021160  013746  002230                                                MOV     DMTVEC,-(SP)
4148  021164  012746  000003                                                MOV     #3,-(SP)
4149  021170  104437                                                        TRAP    C$SVEC
4150  021172  062706  000010                                                ADD     #10,SP
4151
4152  021176  062701  000014                ADD     #14,R1          ;INCR. P-TABLE POINTER.
4153  021202  012137  002254                MOV     (R1)+,DMTURN    ;TURNAROUND
4154
4155
4156  021206  013700  002224                MOV     SPEED,R0        ;GET THE SOFTWARE P-TABLE VALUE GIVEN
4157                                                                ;BY THE USER
4158
4159
4160  021212                        13$:
4161  021212  012701  000002                MOV     #2,R1           ;GET FIRST TIMER VALUE
4162  021216  012702  000012                MOV     #10.,R2         ;GET SECOND TIMER VALUE
4163  021222                        14$:
4164  021222  006301                        ASL     R1              ; TIMER VALUES X 2
4165  021224  006302                        ASL     R2
4166  021226  005300                        DEC     R0              ; DEC SPEED VARIABLE
4167  021230  001374                        BNE     14$             ; CONTINUE UNTIL DONE INCREASING WAIT VALUES
4168
4169  021232  010137  002312                MOV     R1,WAIT1        ;SAVE TIMER VALUE FOR $WAIT
4170  021236  006201                        ASR     R1              ;HALF THAT VALUE
4171  021240  006201                        ASR     R1              ;HALF IT AGAIN.
4172  021242  010137  002314                MOV     R1,WAIT2        ;SAVE TIMER VALUE FOR $MSCLR AND $CLRQI
4173                                                                ;SUBROUTINES.
4174  021246  010237  002316                MOV     R2,WAIT3        ;TIMER VALUE FOR $INOUT SUBROUTINE.
4175
4176                                                                ;CHECK TURNAROUND.
4177  021252  012737  000333  002304        MOV     #333,AX3        ;MASK FOR AX3-15 - BIT CLEARED WILL
```

```
4178
4179  021260  022737  000001  002254          CMP     #1,DMTURN       ;BE THE INTERFACE SELECTED.
4180  021266  001004                          BNE     20$             ;IS V.35 REQUESTED?
4181  021270  042737  000020  002304          BIC     #BIT4,AX3       ;IF NOT - CONTINUE
4182  021276  000427                          BR      30$             ;SELECT V.35
4183  021300                          20$:
4184  021300  022737  000002  002254          CMP     #2,DMTURN       ;IS INTEGRAL REQUESTED?
4185  021306  001004                          BNE     22$             ;IF NOT - CONTINUE.
4186  021310  042737  000010  002304          BIC     #BIT3,AX3       ;SELECT INTEGRAL MODEM.
4187  021316  000417                          BR      30$
4188  021320                          22$:
4189  021320  022737  000003  002254          CMP     #3,DMTURN       ;IS EIA REQUESTED?
4190  021326  001004                          BNE     25$             ;IF NOT - CONTINUE.
4191  021330  042737  000100  002304          BIC     #BIT6,AX3       ;SELECT EIA(XYZ).
4192  021336  000407                          BR      30$
4193  021340                          25$:
4194  021340  022737  000004  002254          CMP     #4,DMTURN       ;IS RS422 REQUESTED?
4195  021346  001007                          BNE     35$             ;IF NOT, DON'T ALLOW INTERFACE CHANGE.
4196  021350  042737  000200  002304          BIC     #BIT7,AX3       ;SELECT RS422.
4197  021356                          30$:
4198  021356  012737  000001  002262          MOV     #1,INFACE       ;SET FLAG THAT ALLOWS INTERFACE CHANGE.
4199  021364  000404                          BR      40$
4200  021366                          35$:
4201  021366  005037  002262                  CLR     INFACE          ;CLEAR FLAG - NO INTERFACE CHANGE.
4202  021372  005037  002304                  CLR     AX3             ;CLEAR AX3 BITS
4203  021376                          40$:
4204                                          ;*****************************************
4205  021376  005737  002310                  TST     MANUF           ;IS THIS A SPECIAL MANUFACTURING TEST CON.?
4206  021402  001410                          BEQ     42$             ;IF NOT - SET MAINT BIT ONLY FOR MODEM LOOP
4207                                          ;*****************************************
4208  021404  022737  000001  002254          CMP     #1,DMTURN       ;IS THIS V.35 WITH SPECIAL CONNECTOR?
4209  021412  001430                          BEQ     45$             ;IF YES - SET WRITE MAINT. BIT
4210  021414  022737  000003  002254          CMP     #3,DMTURN       ;IS THIS EIA WITH SPECIAL CONNECTOR?
4211  021422  001424                          BEQ     45$             ;IF YES - SET WRITE MAINT. BIT
4212  021424                          42$:
4213  021424  022737  000006  002254          CMP     #6,DMTURN       ;IS THIS LOCAL LOOP?
4214  021432  001420                          BEQ     45$             ;IF YES - SET WRITE MAINT. BIT.
4215  021434  022737  000007  002254          CMP     #7,DMTURN       ;IS THIS REMOTE LOOP?
4216  021442  001020                          BNE     50$             ;IF NOT - CLEAR MAINT. BIT FLAG
4217  021444  022737  000001  002270          CMP     #1,STARES       ;IS THIS THE FIRST PASS?
4218  021452  001010                          BNE     45$             ;IF NOT - SKIP MESSAGE
4219  021454                                  PRINTB  #FINIT3         ;WARN TO USE ONLY TESTS 17-19
4220  021454  012746  021670                                                  MOV     #FINIT3,-(SP)
4221  021460  012746  000001                                                  MOV     #1,-(SP)
4222  021464  010600                                                          MOV     SP,R0
4223  021466  104414                                                          TRAP    C$PNTB
4224  021470  062706  000004                                                  ADD     #4,SP
4225
4226  021474                          45$:
4227  021474  012737  000001  002306          MOV     #1,WMAINT       ;SET FLAG TO WRITE MODEM MAINTENANCE BITS.
4228  021502  000402                          BR      END
4229  021504                          50$:
4230  021504  005037  002306                  CLR     WMAINT          ;CLEAR FLAG - DON'T WRITE MAINT. 1 OR 2.
4231  021510                          END:
4232  021510                          ENDINIT
4233  021510                                                          L10014:
```

```
4234  021510  104411                                                                  TRAP    C$INIT
4235  021512  040445  025052  053440  FINIT1: .ASCIZ  /%A** WARNING - WILL ASSUME ADDRESS %06%A (NOT %06%A)%N/
4236  021520  051101  044516  043516
4237  021526  026440  053440  046111
4238  021534  020114  051501  052523
4239  021542  042515  040440  042104
4240  021550  042522  051523  022440
4241  021556  033117  040445  024040
4242  021564  047516  020124  047445
4243  021572  022466  024501  047045
4244  021600     000
4245  021601     045  025101  020052  FINIT2: .ASCIZ  /%A** WARNING - WILL ASSUME VECTOR  %03%A (NOT %03%A)%N/
4246  021606  040527  047122  047111
4247  021614  020107  020055  044527
4248  021622  046114  040440  051523
4249  021630  046525  020105  042526
4250  021636  052103  051117  020040
4251  021644  047445  022463  020101
4252  021652  047050  052117  022440
4253  021660  031517  040445  022451
4254  021666  000116
4255  021670  040445  025052  053440  FINIT3: .ASCIZ  /%A** WITH REMOTE LOOPBACK USE TESTS 17 - 19 ONLY **%N/
4256  021676  052111  020110  042522
4257  021704  047515  042524  046040
4258  021712  047517  041120  041501
4259  021720  020113  051525  020105
4260  021726  042524  052123  020123
4261  021734  033461  026440  030440
4262  021742  020071  047117  054514
4263  021750  025040  022452  000116
4264                                  .EVEN
```

```
                        .SBTTL  AUTO DROP UNIT SECTION

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

021756                  BGNAUTO
021756                                                          L$AUTO::

                                SETVEC  #4,#NOXMEM,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
021756  012746  000340                                                  MOV     #PRI07,-(SP)
021762  012746  023630                                                  MOV     #NOXMEM,-(SP)
021766  012746  000004                                                  MOV     #4,-(SP)
021772  012746  000003                                                  MOV     #3,-(SP)
021776  104437                                                          TRAP    C$SVEC
022000  062706  000010                                                  ADD     #10,SP
022004  005037  002352                CLR     NXMFLG          ;CLEAR FLAG THAT WILL BE SET IF NXM OCCURS.
022010  005777  160216                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.
                        ;;**************************************************************************

022014                          CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
022014  012700  000004                                                  MOV     #4,R0
022020  104436                                                          TRAP    C$CVEC
022022  005737  002352                TST     NXMFLG          ;DID NXM OCCUR?
022026  001406                        BEQ     1$              ;IF NOT EXIT
022030                                DODU    LOGDEV          ;DROP THE DEVICE
022030  013700  002370                                                  MOV     LOGDEV,R0
022034  104451                                                          TRAP    C$DODU
022036                                DOCLN                   ;DO CLEAN UP - FORCE BACK TO INIT CODE.
022036  104444                                                          TRAP    C$DCLN
022040  005037  002352                CLR     NXMFLG          ;RESTORE FLAG.
022044                          1$:
022044                  ENDAUTO
022044                                                                  L10015:
022044  104461                                                          TRAP    C$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
                                        ;//////////////////////////////////////////////////////////////////////

022046                                  BGNCLN
022046                                                                          L$CLEAN::

022046  005737  002352                          TST     NXMFLG          ;WAS THERE A NXM ERROR?
022052  001003                                  BNE     10$             ;IF YES - SKIP MASTER CLEAR.
022054  012777  040000  160150                  MOV     #MCLR,@SEL0     ;ISSUE A MASTER CLEAR.
022062                                  10$:

022062                                  ENDCLN
022062                                                                          L10016:
022062  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.
                                        ;////////////////////////////////////////////////////////////////////

022064                                  BGNSRV  INISR                   ;INPUT INTERRUPT SERVICE ROUTINE
022064                                                                                  INISR::
022064  010046                                  MOV     R0,-(SP)        ;SAVE R0
022066  010146                                  MOV     R1,-(SP)        ;SAVE R1
022070  017701  160136                          MOV     @SEL0,R1        ;SAVE THE CONTROL IN COMMAND.
022074  042701  177760                          BIC     #177760,R1      ;CLEAR ALL BUT THE COMMAND BITS (0-3)
022100  032777  000200  160124                  BIT     #RDI,@SEL0      ;IS RDI SET
022106  001002                                  BNE     1$              ;IF YES - PROCESS INPUT COMMAND.
022110  000137  022620                          JMP     NEXT            ;ISSUE NEXT INPUT COMMAND.
                                                ;*******************************************************************
                                                ;
                                                ; PROCESS INPUT COMMAND
                                                ;
                                                ;*******************************************************************
022114                                  1$:
022114  022701  000004                          CMP     #BACCR,R1       ;IS THIS A RCV. BA/CC?
022120  001533                                  BEQ     29$             ;BR IF YES.
022122  022701  000000                          CMP     #BACCT,R1       ;IS THIS A XMIT. BA/CC?
022126  001537                                  BEQ     30$             ;BR IF YES.
022130  022701  000003                          CMP     #BASEI,R1       ;IS THIS A BASE IN?
022134  001461                                  BEQ     20$             ;BR IF YES.
022136  022701  000001                          CMP     #CNTRL,R1       ;IS THIS A CONTROL IN?
022142  001444                                  BEQ     15$             ;BR IF YES.
022144  022701  000005                          CMP     #WMODEM,R1      ;IS THIS A WRITE MODEM?
022150  001417                                  BEQ     10$             ;BR IF YES.
022152  022701  000015                          CMP     #INTER,R1       ;IS THIS AN INTERFACE WRITE.
022156  001410                                  BEQ     5$              ;BR IF YES.
022160  022701  000002                          CMP     #HLT,R1         ;IS THIS A HALT?
022164  001572                                  BEQ     70$             ;EXIT - IF YES (NOTHING TO SET UP)
022166                                          ERRDF   17,EMG17,ERRG2  ;PROBLEM IF IT'S NOT ONE OF THE ABOVE.
022166  104455                                                                  TRAP    C$ERDF
022170  000021                                                                  .WORD   17
022172  020301                                                                  .WORD   EMG17
022174  015124                                                                  .WORD   ERRG2
022176  000565                                  BR      70$             ;EXIT

022200                                  5$:
                                                ;
                                                ; WRITE AX3-15
                                                ;
022200  113777  002304  160042                  MOVB    AX3,@BSEL7      ;WRITE NECESSARY AX3-15 INTERFACE.
                                                                        ;AX3 HAS BEEN DETERMINED IN THE INIT
                                                                        ;CODE.
022206  000561                                  BR      70$

022210                                  10$:
                                                ;
```

```
                                                        ; MODEM WRITE
                                                        ;
022210  022737  000006  002254                          CMP     #LLOOP,DMTURN   ;IS LOCAL MODEM LOOPBACK DESIRED?
022216  001007                                          BNE     11$             ;BR IF NOT
022220  042777  000004  160012                          BIC     #MAINT2,@SEL6   ;ENSURE REMOTE LOOPBACK IS CLEAR.
022226  052777  000110  160004                          BIS     #DTR!MAINT1,@SEL6 ;SET MAINTENANCE 1 BIT AND DTR.
022234  000546                                          BR      70$
022236                                          11$:
022236  042777  000010  157774                          BIC     #MAINT1,@SEL6   ;ENSURE LOCAL LOOPBACK IS CLEAR.
022244  052777  000104  157766                          BIS     #DTR!MAINT2,@SEL6 ;SET MAINTENANCE 2 BIT AND DTR.
022252  000537                                          BR      70$             ;CLEAR RQI
022254                                          15$:
                                                        ;
                                                        ;CONTROL IN
                                                        ;
022254  005737  002300                                  TST     MNTMDE          ;IS MAINTENANCE MODE REQUESTED
022260  001404                                          BEQ     17$             ;BR IF NOT
022262  012777  000400  157750                          MOV     #MAINT,@SEL6    ;REQUEST MAINT. MODE
022270  000530                                          BR      70$
022272                                          17$:
022272  005077  157742                                  CLR     @SEL6           ;FULL DUPLEX - NON-MAINT. MODE.
022276  000525                                          BR      70$
022300                                          20$:
                                                        ;
                                                        ;BASE IN
                                                        ;
022300  012777  002640  157730                          MOV     #BASE,@SEL4     ;BASE TABLE ADDRESS.

022306  005737  002276                                  TST     DMCMDE          ;ARE WE IN DMC MODE?
022312  001004                                          BNE     22$             ;BR IF YES
022314  012777  000522  157716                          MOV     #DMR,@SEL6      ;DMR MODE.
022322  000402                                          BR      23$             ;CHECK LOOPBACK.
022324                                          22$:
022324  005077  157710                                  CLR     @SEL6           ;DMC MODE
022330                                          23$:
022330  005737  002272                                  TST     START           ;IS THIS THE FIRST BASE IN?
022334  001004                                          BNE     24$             ;IF NOT - SET RESUME.
022336  052777  000100  157670                          BIS     #IEO,@SEL2      ;ON FIRST BASE IN SET RDO INT.ENABLE.
022344  000406                                          BR      25$
022346                                          24$:
022346  052777  010000  157664                          BIS     #RES,@SEL6      ;SET RESUME
022354  012737  177777  002360                          MOV     #-1,RESFLG      ;FLAG THAT THIS IS A BASE IN RESUME COMMAND
                                                                                ;(THIS WILL BE USED LATER IN THIS ISR TO
                                                                                ;DECIDE WHAT THE NEXT COMMAND WILL BE)
022362                                          25$:
022362  005737  002254                                  TST     DMTURN          ;IS INTERNAL LOOPACK REQUESTED?
022366  001004                                          BNE     27$             ;BR IF NOT - CLEAR LU LOOP
022370  052777  004000  157634                          BIS     #LPLU,@SEL0     ;SET THE LINE UNIT LOOPBACK BIT
022376  000465                                          BR      70$             ;CLEAR RQI AND EXIT.
022400                                          27$:
022400  042777  004000  157624                          BIC     #LPLU,@SEL0     ;CLEAR LINE UNIT LOOPBACK (CONNECTOR OR
                                                                                ;CABLE)
022406  000461                                          BR      70$             ;CLEAR RQI AND EXIT


                                                        ;
                                                        ;BA/CC IN RCV
```

```
4448                                            ;
4449  022410                                29$:
4450  022410  005337  002326                    DEC     INRCV           ;DECREMENT COUNTER
4451  022414  012277  157616                    MOV     (R2)+,@SEL4     ;RCV BUFFER ADDRESS
4452  022420  012277  157614                    MOV     (R2)+,@SEL6     ;RCV CHARACTER COUNT
4453  022424  000406                            BR      40$
4454                                            ;
4455                                            ;BA/CC IN XMIT
4456                                            ;
4457  022426                                30$:
4458  022426  005337  002330                    DEC     INXMIT          ;DECREMENT COUNTER
4459  022432  012377  157600                    MOV     (R3)+,@SEL4     ;XMIT BUFFER ADDRESS.
4460  022436  012377  157576                    MOV     (R3)+,@SEL6     ;XMIT CHARACTER COUNT.
4461  022442                                40$:
4462  022442  005737  002302                    TST     MMANAG          ;ARE THE BUFFERS MEMORY MANAGED?
4463  022446  001441                            BEQ     70$             ;IF NOT SKIP CONVERTING VIRTUAL ADDR
4464                                                                    ;TO PHYSICAL ADDR.
4465  022450  052777  040000  157562            BIS     #BIT14,@SEL6    ;SET BIT 16 OF PHSICAL ADDRESS (I.E.
4466                                                                    ;VIRTUAL ADDR 60000 = PHYSICAL ADDR 200000
4467  022456  010246                            MOV     R2,-(SP)        ;SAVE R2 (NEXT RCV BUFFER ADDRESS)
4468  022460  017702  157552                    MOV     @SEL4,R2        ;SAVE THE VIRTUAL ADDRESS.
4469  022464  042777  160000  157544            BIC     #160000,@SEL4   ;CLEAR BITS CORRESPONDING TO THE PAGE #
4470                                                                    ;IN THE VIRTUAL ADDRESS.
4471  022472  042702  017777                    BIC     #17777,R2       ;SAVE ONLY THE PAGE # IN THE SAVED ADDR.
4472  022476  022702  060000                    CMP     #60000,R2       ;IS THIS PAGE 3?
4473  022502  001421                            BEQ     44$             ;IF YES, PHYSICAL ADDRESS CALCULATED
4474  022504  022702  100000                    CMP     #100000,R2      ;IS THIS PAGE 4?
4475  022510  001004                            BNE     41$             ;IF NOT SEE IF IT'S PAGE 4 OR 5
4476  022512  052777  020000  157516            BIS     #BIT13,@SEL4    ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4477                                                                    ;ADDR 100000 = PHYSICAL ADDR. 220000
4478  022520  000412                            BR      44$
4479  022522                                41$:
4480  022522  022702  120000                    CMP     #120000,R2      ;IS THIS PAGE 4?
4481  022526  001004                            BNE     42$             ;IF NOT, MUST BE PAGE 5.
4482  022530  052777  040000  157500            BIS     #BIT14,@SEL4    ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4483                                                                    ;ADDR 120000 = PHYSICAL ADDR. 240000
4484  022536  000403                            BR      44$
4485  022540                                42$:
4486  022540  052777  060000  157470            BIS     #BIT14!BIT13,@SEL4 ;SET BIT FOR PHYSICAL ADDR (I.E. VIRTUAL
4487                                                                    ;ADDR 140000 = PHYSICAL ADDR. 260000
4488  022546                                44$:
4489  022546  012602                            MOV     (SP)+,R2        ;RESTORE R2 (NEXT RCV BUFFER ADDRESS)
4490  022550  000400                            BR      70$             ;CLEAR RQI AND EXIT
4491
4492
4493  022552                                70$:
4494  022552  010137  002364                    MOV     R1,LAST         ;SAVE THE INPUT COMMAND (USED
4495                                                                    ;TO DETERMINE NEXT INPUT COMMAND)
4496  022556  005737  002276                    TST     DMCMDE          ;ARE WE IN DMC MODE?
4497  022562  001011                            BNE     80$             ;IF YES - DON'T USE IECLR
4498                                                                    ;NOTE: INTERRUPT CAPABILITY FOR RQI
4499                                                                    ;CLEAR IS ONLY AVAILABLE IN DMR MODE.
4500  022564  012601                            MOV     (SP)+,R1        ;RESTORE R1
4501  022566  012600                            MOV     (SP)+,R0        ;RESTORE R0
4502  022570  052777  000020  157434            BIS     #IECLR,@SEL0    ;SET INTERRUPT ENABLE FOR RDI CLEAR.
4503  022576  042777  000040  157426            BIC     #RQI,@SEL0      ;CLEAR RQI - INT. GENERATED WHEN RDI
```

```
                                                        ;CLEARS IN RESPONSE.
022604  000002                          RTI             ;RETURN AND WAIT FOR RQI CLEAR INTERRUPT.

022606                          80$:
022606  042777  000020  157416          BIC     #IECLR,@SELO    ;ENSURE INTERRUPT ENABLE FOR RDI CLEAR IS CLR.
022614                                  CALL    $CLRQI          ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
                                        ;*****************************************************************
                                        ;
                                        ; RDI CLEAR - DETERMINE NEXT INPUT COMMAND.
                                        ;
                                        ;*****************************************************************
022620                          NEXT:
022620  022737  000002  002364          CMP     #HLT,LAST       ;WAS THE LAST COMMAND A HALT?
022626  001011                          BNE     110$            ;IF NOT - PROCEED.
022630  005737  002274                  TST     RESUME          ;ARE WE TESTING RESUME?
022634  001537                          BEQ     170$            ;IF NOT, DON'T ISSUE ANOTHER COMMAND.
022636  005737  002354                  TST     INFLAG          ;INPUT BUFFER DONE?
022642  001403                          BEQ     110$            ;IF NOT, PROCEED.
022644  005737  002356                  TST     OUTFLG          ;OUTPUT BUFFER DONE?
022650  001131                          BNE     170$            ;IF YES, DON'T ISSUE ANOTHER COMMAND.
022652                          110$:
022652  005737  002276                  TST     DMCMDE          ;ARE WE IN DMC MODE?
022656  001404                          BEQ     111$            ;IF NOT (DMR MODE) - CHECK INTERFACE.
022660  005737  002272                  TST     START           ;HAVE WE DONE A CONTROL IN?
022664  001434                          BEQ     130$            ;IF NOT, DO IT.
022666  000441                          BR      150$            ;OTHERWISE - KEEP CHECKING ON NEXT COMMAND.
022670                          111$:
022670  022737  000003  002364          CMP     #BASEI,LAST     ;WAS THE LAST COMMAND A BASE IN ?
022676  001411                          BEQ     115$            ;IF YES - SEE IF INTER. OR M. WRITE IS NEEDED?
022700  022737  000015  002364          CMP     #INTER,LAST     ;WAS THE LAST COMMAND AN AX3-15 WRITE?
022706  001414                          BEQ     117$            ;IF YES - CHECK FOR MODEM WRITE.
022710  022737  000005  002364          CMP     #WMODEM,LAST    ;WAS THE LAST COMMAND A WRITE MODEM.
022716  001417                          BEQ     130$            ;IF YES - ISSUE A CONTROL IN.
022720  000424                          BR      150$            ;KEEP CHECKING FOR NEXT COMMAND.
022722                          115$:
022722  005737  002262                  TST     INFACE          ;IS AN AX3-15 WRITE NEEDED?
022726  001404                          BEQ     117$            ;BR IF NOT
022730  112777  000155  157274          MOVB    #IESET!RQI!INTER,@BSELO ;ISSUE AN AX3-15 WRITE COMMAND.
022736  000476                          BR      170$
022740                          117$:
022740  005737  002306                  TST     WMAINT          ;WRITE MAINT 1 OR 2?
022744  001404                          BEQ     130$            ;IF NOT - SKIP WRITE MODEM COMMAND.
022746  112777  000145  157256          MOVB    #IESET!RQI!WMODEM,@BSELO ;ISSUE A MODEM WRITE COMMAND
022754  000467                          BR      170$
022756                          130$:
022756  005237  002272                  INC     START           ;SET FLAG THAT CONTROL IN WAS ISSUED.
022762  112777  000141  157242          MOVB    #IESET!RQI!CNTRL,@BSELO ;ISSUE A CONTROL IN
022770  000461                          BR      170$
022772                          150$:
022772  005737  002326                  TST     INRCV           ;ARE ALL THE BA/CC IN RCVS DONE?
022776  001424                          BEQ     160$            ;IF YES - BR TO SEE IF XMITS DONE.
023000  005737  002274                  TST     RESUME          ;IS A TEST OF RESUME REQUESTED?
023004  001415                          BEQ     153$            ;BR IF NOT.
023006  032737  000001  002326          BIT     #BIT0,INRCV     ;IS THIS AN ODD COUNT?
023014  001411                          BEQ     153$            ;BR IF NOT.
023016  005737  002360                  TST     RESFLG          ;WAS THE LAST COMMAND A BASE IN RESUME?
```

```
4560  023022  001004                        BNE     152$            ;IF YES, ISSUE BA/CC
4561                                                                  ;HALT - TO TEST RESUME.  NOTE: THIS WILL
4562                                                                  ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4563                                                                  ;FOLLOWING EVERY OTHER BA/CC
4564                                                                  ;COMMAND  (NEVER FOLLOWING A RESUME)
4565  023024  112777  000142  157200            MOVB    #IESET!RQI!HLT,@BSEL0 ;HALT IT
4566  023032  000440                        BR      170$
4567  023034                        152$:
4568  023034  005037  002360                  CLR     RESFLG          ;CLEAR FLAG.
4569  023040                        153$:
4570  023040  112777  000144  157164            MOVB    #IESET!RQI!BACCR,@BSEL0 ;ISSUE A BA/CC IN RCV. COMMAND.
4571  023046  000432                        BR      170$
4572  023050                        160$:
4573  023050  005737  002330                  TST     INXMIT          ;ARE ALL THE BA/CC IN XMITS DONE?
4574  023054  001424                        BEQ     165$            ;IF YES, SET THE FLAG
4575  023056  005737  002274                  TST     RESUME          ;IS A TEST OF RESUME REQUESTED?
4576  023062  001415                        BEQ     163$            ;BR IF NOT.
4577  023064  032737  000001  002330            BIT     #BIT0,INXMIT    ;IS THIS AN ODD COUNT?
4578  023072  001411                        BEQ     163$            ;BR IF NOT.
4579  023074  005737  002360                  TST     RESFLG          ;WAS THE LAST COMMAND A BASE IN RESUME?
4580  023100  001004                        BNE     162$            ;IF YES, ISSUE BA/CC
4581                                                                  ;HALT - TO TEST RESUME.  NOTE: THIS WILL
4582                                                                  ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4583                                                                  ;FOLLOWING EVERY OTHER BA/CC
4584                                                                  ;COMMAND  (NEVER FOLLOWING A RESUME)
4585  023102  112777  000142  157122            MOVB    #IESET!RQI!HLT,@BSEL0 ;HALT IT
4586  023110  000411                        BR      170$
4587  023112                        162$:
4588  023112  005037  002360                  CLR     RESFLG          ;CLEAR BASE IN RESUME FLAG.
4589  023116                        163$:
4590  023116  112777  000140  157106            MOVB    #IESET!RQI!BACCT,@BSEL0 ;ISSUE A BA/CC IN XMIT COMMAND.
4591  023124  000403                        BR      170$
4592  023126                        165$:
4593  023126  012737  177777  002354            MOV     #-1,INFLAG      ;FLAG THAT ALL BA/CC INS DONE.
4594
4595  023134                        170$:
4596  023134  012601                        MOV     (SP)+,R1        ;RESTORE R1
4597  023136  012600                        MOV     (SP)+,R0        ;RESTORE R0
4598
4599  023140                        ENDSRV
4600  023140                                                                L10017:
4601  023140  000002                                                               RTI
4602
4603                                ;******************************************************************************
4604                                ;******************************************************************************
4605
4606  023142                        BGNSRV  OUTISR                  ;OUTPUT INTERRUPT SERVICE ROUTINE
4607  023142                                                                OUTISR::
4608  023142  010046                        MOV     R0,-(SP)        ;SAVE R0
4609  023144  032777  000200  157062            BIT     #RDO,@SEL2      ;IS THE RDO OUT BIT SET?
4610  023152  001006                        BNE     5$              ;IF YES - OK TO PROCEED.
4611                                                                  ;OTHERWISE REPORT SPURIOUS INTERRUPT
4612  023154                                ERRDF   18,EMG18,ERRG2
4613  023154  104455                                                                TRAP    C$ERDF
4614  023156  000022                                                                .WORD   18
4615  023160  020353                                                                .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$:
                        TST     RESUME          ;IS A RESUME REQUESTED?
                        BEQ     16$             ;IF NOT - BRANCH TO ERROR.
                        MOV     #MCLR,@SEL0     ;ISSUE A MASTER CLEAR.
                        NOP
                        NOP
                        BIS     #IEO,@SEL2      ;RESET INTERRUPT ENABLE (MASTER
                                                ;CLEAR - CLEARS ALL BITS)
                        MOVB    #IESET!RQI!BASEI,@SEL0  ;ISSUE A BASE IN
                        BR      65$             ;BRANCH OUT.

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)
                        BNE     21$             ;PROCEED - IF BIT SET.
                        ERRDF   11,EMG11,ERRG2
                                                                    TRAP    C$ERDF
                                                                    .WORD   11
                                                                    .WORD   EMG11
                                                                    .WORD   ERRG2
                        BR      60$
21$:
                        BIC     #BIT15!BIT14,@SEL6 ;CLEAR THE EXTENDED ADDRESS BITS.
                        MOV     @SEL4,R2        ;SAVE BITS 0-15 OF THE PHYSICAL ADDRESS.
```

```
4672  023366  042702  017777              BIC     #17777,R2       ;SAVE ONLY PAGE ADDRESS BITS.
4673  023372  042777  160000  156636      BIC     #160000,@SEL4   ;CLEAR PAGE ADDRESS BITS IN SEL4
4674                                                              ;DETERMINE PAGE # FOR VIRTUAL ADDRESS.
4675  023400  005702                      TST     R2              ;IS THIS PAGE 3?
4676  023402  001004                      BNE     22$             ;IF NOT CHECK FOR OTHER PAGES
4677  023404  052777  060000  156624      BIS     #60000,@SEL4    ;SET BITS FOR PAGE 3.
4678  023412  000421                      BR      40$
4679  023414                          22$:
4680  023414  022702  020000              CMP     #20000,R2       ;IS THIS PAGE 4?
4681  023420  001004                      BNE     23$             ;IF NOT - KEEP CHECKING
4682  023422  052777  100000  156606      BIS     #100000,@SEL4   ;SET BITS FOR PAGE 4.
4683  023430  000412                      BR      40$
4684  023432                          23$:
4685  023432  022702  040000              CMP     #40000,R2       ;IS THIS PAGE 5?
4686  023436  001004                      BNE     24$             ;IF NOT - MUST BE PAGE 6
4687  023440  052777  120000  156570      BIS     #120000,@SEL4   ;SET BITS FOR PAGE 5.
4688  023446  000403                      BR      40$
4689  023450                          24$:
4690  023450  052777  140000  156560      BIS     #140000,@SEL4   ;SET BITS FOR PAGE 6.
4691  023456                          40$:
4692  023456  032777  000004  156550      BIT     #RCV,@SEL2      ;IS THIS A RECV. BUFFER?
4693  023464  001023                      BNE     50$             ;IF YES - PROCESS THE BUFFER.
4694  023466  005337  002334              DEC     OUTXMT          ;DECREMENT BA/CC OUT XMIT.
4695  023472  022577  156540              CMP     (R5)+,@SEL4     ;IS THE XMIT BUFFER ADDRESS CORRECT?
4696  023476  001406                      BEQ     41$             ;IF YES - PROCEED.
4697  023500  005725                      TST     (R5)+           ;INCR. POINTER FOR ERROR MESSAGE.
4698  023502                              ERRDF   11,EMG11,ERRG8  ;IF NOT - ERROR
4699  023502  104455                                                              TRAP    C$ERDF
4700  023504  000013                                                              .WORD   11
4701  023506  020116                                                              .WORD   EMG11
4702  023510  016062                                                              .WORD   ERRG8
4703  023512  000425                      BR      60$             ;EXIT ROUTINE
4704  023514                          41$:
4705  023514  022577  156520              CMP     (R5)+,@SEL6     ;IS THE CHAR. COUNT CORRECT?
4706  023520  001422                      BEQ     60$             ;IF OK - EXIT ROUTINE.
4707  023522                              ERRDF   12,EMG12,ERRG8  ;IF NOT - ERROR
4708  023522  104455                                                              TRAP    C$ERDF
4709  023524  000014                                                              .WORD   12
4710  023526  020141                                                              .WORD   EMG12
4711  023530  016062                                                              .WORD   ERRG8
4712  023532  000415                      BR      60$             ;EXIT
4713  023534                          50$:
4714  023534  005337  002332              DEC     OUTRCV          ;DECREMENT BA/CC OUT RCV
4715  023540  022477  156472              CMP     (R4)+,@SEL4     ;IS THE RCV BUFFER ADDRESS CORRECT?
4716  023544  001406                      BEQ     51$             ;IF OK - PROCEED
4717  023546                              ERRDF   11,EMG11,ERRG7
4718  023546  104455                                                              TRAP    C$ERDF
4719  023550  000013                                                              .WORD   11
4720  023552  020116                                                              .WORD   EMG11
4721  023554  015764                                                              .WORD   ERRG7
4722  023556  005724                      TST     (R4)+           ;UPDATE POINTER
4723  023560  000402                      BR      60$             ;EXIT ROUTINE
4724  023562                          51$:
4725  023562  017724  156452              MOV     @SEL6,(R4)+     ;CHANGE THE CHARACTER COUNT TO WHAT
4726                                                              ;WAS RECEIVED.
4727  023566                          60$:
```

```
4728  023566  005737  002334          TST     OUTXMT          ;HAVE ALL THE XMITS BEEN DONE?
4729  023572  001011                  BNE     65$             ;IF NOT, CONTINUE
4730  023574  005737  002332          TST     OUTRCV          ;HAVE ALL THE RECEIVES BEEN DONE?
4731  023600  001006                  BNE     65$             ;IF NOT, CONTINUE
4732  023602                  61$:
4733  023602  042777  000100  156424  BIC     #IEO,@SEL2      ;CLEAR THE OUTPUT INTERRUPT
4734  023610  012737  177777  002356  MOV     #-1,OUTFLG      ;FLAG AS DONE.
4735  023616                  65$:
4736  023616  042777  000207  156410  BIC     #RDO!CMD,@SEL2  ;CLEAR THE RDO BIT.
4737  023624  012600                  MOV     (SP)+,R0        ;RESTORE R0
4738  023626                  ENDSRV
4739  023626                                                          L10020:
4740  023626  000002                                                         RTI
4741
4742                          ;*****************************************************************
4743                          ;*****************************************************************
4744
4745  023630                  BGNSRV  NOXMEM
4746  023630                                                          NOXMEM::
4747
4748  023630  012737  000001  002352  MOV     #1,NXMFLG       ;SET FLAG IF MEMORY ADDRESSED IS NON-EXISTENT.
4749
4750  023636                  ENDSRV
4751  023636                                                          L10021:
4752  023636  000002                                                         RTI
4753
4754
```

```
                                .SBTTL  DROP UNIT SECTION

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

023640                          BGNDU
023640                                                                  L$DU::
                                        BRESET                  ;ISSUE UNIBUS RESET TO CLEAN UP
023640  104433                                                                  TRAP    C$RESET
                                        PRINTF  #FMDROP,LOGDEV
023642  013746  002370                                                          MOV     LOGDEV,-(SP)
023646  012746  023670                                                          MOV     #FMDROP,-(SP)
023652  012746  000002                                                          MOV     #2,-(SP)
023656  010600                                                                  MOV     SP,R0
023660  104417                                                                  TRAP    C$PNTF
023662  062706  000006                                                          ADD     #6,SP

023666                          ENDDU
023666                                                                  L10022:
023666  104453                                                                  TRAP    C$DU

023670  047045  040445  047125 FMDROP: .ASCIZ  /%N%AUNIT %D2%A DROPPED/
023676  052111  022440  031104
023704  040445  042040  047522
023712  050120  042105     000
023720                          .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.
                        ;*************************************************************************
023720                  BGNTST
023720                                                          T1::

                                SETVEC  #4,#LOCATE,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.
023720  012746  000340                                                  MOV     #PRI07,-(SP)
023724  012746  024042                                                  MOV     #LOCATE,-(SP)
023730  012746  000004                                                  MOV     #4,-(SP)
023734  012746  000003                                                  MOV     #3,-(SP)
023740  104437                                                          TRAP    C$SVEC
023742  062706  000010                                                  ADD     #10,SP
023746  005037  002352          CLR     NXMFLG          ;FLAG USED IN THE TRAP ROUTINE.
023752  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
                        ;;*************************************************************************

023754  005777  156252          TST     @SEL0           ;TEST THE CSR AT 76XXX0
023760  012701  000002          MOV     #2,R1           ;SAVE THE OFFSET OF THE NEXT CSR
023764  005777  156244          TST     @SEL2           ;TEST THE CSR AT 76XXX2
023770  012701  000004          MOV     #4,R1           ;SAVE THE OFFSET OF THE NEXT CSR
023774  005777  156236          TST     @SEL4           ;TEST THE CSR AT 76XXX4
024000  012701  000006          MOV     #6,R1           ;SAVE THE OFFSET OF THE NEXT CSR
024004  005777  156230          TST     @SEL6           ;TEST THE CSR AT 76XXX6
024010  005737  002352          TST     NXMFLG          ;WAS THERE A TRAP?
024014  001406                  BEQ     10$             ;IF NOT - EXIT.
024016                          DODU    LOGDEV          ;DROP THE DEVICE
024016  013700  002370                                                  MOV     LOGDEV,R0
024022  104451                                                          TRAP    C$DODU
024024                          DOCLN                   ;DO CLEAN UP - FORCE BACK TO INIT CODE.
024024  104444                                                          TRAP    C$DCLN
024026  005037  002352          CLR     NXMFLG          ;RESTORE THE FLAG.
024032                  10$:
024032                          CLRVEC  #4              ;RETURN VECTOR 04 TO NORMAL STATE
024032  012700  000004                                                  MOV     #4,R0
```

```
                                                                                    TRAP    C$CVEC
                        ENDTST
                                                                            L10023:
                                                                                    TRAP    C$ETST

                        BGNSRV  LOCATE                  ;INTERRUPT SERVICE ROUTINE
                                                                            LOCATE::
                                MOV     R0,-(SP)        ;SAVE R0
                                TST     NXMFLG          ;HAVE WE HAD AT LEAST 1 PREVIOUS TRAP?
                                BNE     10$             ;IF YES, DON'T BOTHER DECLARING ANOTHER
                                                        ;DEVICE FATAL ERROR
                                ERRDF   6,EMT0          ;NON-EXISTENT DEVICE ERROR
                                                                                    TRAP    C$ERDF
                                                                                    .WORD   6
                                                                                    .WORD   EMT0
                                                                                    .WORD   0
                                INC     NXMFLG          ;SET THE FLAG
                        10$:
                                PRINTX  #FMT0,R1,CSR(R1) ;PRINT THE CSR THAT DOESN'T RESPOND.
                                                                                    MOV     CSR(R1),-(SP)
                                                                                    MOV     R1,-(SP)
                                                                                    MOV     #FMT0,-(SP)
                                                                                    MOV     #3,-(SP)
                                                                                    MOV     SP,R0
                                                                                    TRAP    C$PNTX
                                                                                    ADD     #10,SP
                                MOV     (SP)+,R0        ;RESTORE R0
                        ENDSRV
                                                                            L10024:
                                                                                    RTI

024120 042101 051104 051505     EMT0:   .ASCIZ  /ADDRESS ERROR - TRAP 4/
024126 020123 051105 047522
024134 020122 020055 051124
024142 050101 032040    000
024147    045 031523 040445     FMT0:   .ASCIZ  /%S3%ACSR (SEL%D1%A) AT %O6%A DOES NOT RESPOND%N/
024154 051503 020122 051450
024162 046105 042045 022461
024170 024501 040440 020124
024176 047445 022466 020101
024204 047504 051505 047040
024212 052117 051040 051505
024220 047520 042116 047045
024226    000
024230                                .EVEN
```

```
                        .SBTTL          TEST 2 - ROM CHECK

                        ;*****************************************************************************
                        ;*              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 #.
                        ;*
                        ;*****************************************************************************
024230                  BGNTST
024230                                                                          T2::
024230                    BGNSUB
024230                                                                          T2.1:
024230  104402                                                                          TRAP    C$BSUB
024232  022737  000001  002270          CMP     #1,STARES       ;IS THIS THE FIRST PASS?
024240  001061                           BNE     5$              ;IF NOT - SKIP THIS SUBROUTINE.
                                                                ;GET VERSION # FROM EACH ROM AND PRINT IT OUT
024242  005004                           CLR     R4              ;# OF THE 1ST ROM
024244  012705  000001                   MOV     #1,R5           ;# OF NEXT ROM
024250  012737  001774  002412           MOV     #1774,ROMADR    ;ADDRESS OF BYTE CONTAINING # IN ROMS 0 & 1
024256                                   PRINTB  #FMT1,LOGDEV    ;MICROCODE VERSION
024256  013746  002370                                                           MOV     LOGDEV,-(SP)
024262  012746  025204                                                           MOV     #FMT1,-(SP)
024266  012746  000002                                                           MOV     #2,-(SP)
024272  010600                                                                   MOV     SP,R0
024274  104414                                                                   TRAP    C$PNTB
024276  062706  000006                                                           ADD     #6,SP
024302                          1$:
024302                                   CALL    $ROMO           ;GET ROM CONTENTS.
024306  117737  155726  025540           MOVB    @BSEL6,REV1     ;SAVE THE ASCII REVISION # OF THE ROM
024314  117737  155730  025542           MOVB    @BSEL7,REV2     ;SAVE THE REV. # OF THE NEXT ROM
                                                                ;PRINT
024322                                   PRINTB  #FMT2,R4,#REV1,R5,#REV2
024322  012746  025542                                                           MOV     #REV2,-(SP)
```

```
                                                                                        MOV     R5,-(SP)
                                                                                        MOV     #REV1,-(SP)
                                                                                        MOV     R4,-(SP)
                                                                                        MOV     #FMT2,-(SP)
                                                                                        MOV     #5,-(SP)
                                                                                        MOV     SP,R0
                                                                                        TRAP    C$PNTB
                                                                                        ADD     #14,SP

                                        CMP     #5,R5           ;ARE WE DONE?
                                        BEQ     5$              ;IF YES - EXIT
                                        ADD     #2,R4           ;INCR. ROM NUMBERS
                                        ADD     #2,R5           ;
                                        ADD     #2000,ROMADR    ;ADDRESS OF BYTES CONTAINING NEXT ROM REV #S.
                                        BR      1$

                                5$:
                                  ENDSUB
                                                                                L10026:
                                                                                        TRAP    C$ESUB

                                BGNSUB
                                                                                T2.2:
                                                                                        TRAP    C$BSUB
                                        CLR     FLAG            ;USE THE FLAG TO MARK WHEN AN ERRDF
                                                                ;HAS BEEN DETECTED IN THIS TEST.
                                        CLR     R4              ;START CRC CHECK WITH ROM 0
                                                                ;R4 IS THE ROM #.  THE LOCATION FOR THE
                                                                ;ROM IS CONTAINED IN THE TABLE 'ROMLOC'.
                                        CLR     ROMADR          ;BEGIN AT ROM ADDRESS 0

                                10$:
                                        MOV     #-1,LOCRC       ;INITIALIZE CRC WORD FOR THE LOW BYTE
                                                                ;CALCULATION.
                                        MOV     #-1,HICRC       ;INIT. CRC WORD FOR THE HIGH BYTE.
                                        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)

                                                        ;
                                                        ; BECAUSE A ROM OUT WILL OUTPUT THE ROM CONTENTS (I.E. 16 BITS)
                                                        ; THIS ROUTINE WILL CALCULATE/CHECK THE CRC 2 ROMS AT A TIME.
                                                        ;

                                20$:
                                        CALL    $ROMO           ;GET THE ROM CONTENTS
                                        MOVB    @BSEL6,LOWORD   ;SAVE THE LOW BYTE OF THE ROM CONTENTS.
                                        MOVB    @BSEL7,HIWORD   ;SAVE THE HIGH BYTE OF THE ROM CONTENTS.
                                        INC     ROMADR          ;INCREMENT THE ROM ADDRESS POINTER
                                        CALL    $ROMO           ;GET THE CONTENTS OF THE NEXT ROM ADDRESS
                                        MOVB    @BSEL6,LOWORD+1 ;SAVE THE NEXT LOW BYTE.
                                        MOVB    @BSEL7,HIWORD+1 ;SAVE THE NEXT HIGH BYTE.
                                                                ;NOTE: AT THIS POINT LOWORD IS A WORD WHICH
                                                                ;HAS 2 CONSECUTIVE LOW BYTES OF ROM CONTENTS.
                                        INC     ROMADR          ;INCREMENT THE ROM ADDRESS POINTER
```

```
5000  024512  005301                        DEC     R1              ;ARE WE FINISHED WITH THESE 2 ROMS?
5001  024514  001443                        BEQ     40$             ;IF YES, CHECK CRC
5002                                        ;
5003                                        ; CRC/CCITT CALCULATION - CONVERT THE WORD (LOWORD & HIWORD) TO
5004                                        ;                         A SERIAL STREAM FOR CALCULATION.
5005                                        ;
5006  024516  012703  000020                MOV     #16.,R3         ;16 BITS TO CONSIDER
5007  024522                          25$:
5008  024522  000241                        CLC                     ;CLEAR THE CARRY
5009  024524  006037  002402                ROR     LOCRC           ;ROTATE BIT0 INTO THE CARRY BIT
5010  024530  006037  002406                ROR     LOWORD          ;ROTATE BIT0 INTO C AND THE OLD C INTO BIT15
5011                                                                ;ARE THE BITS 15 & BITS 0 THE SAME?
5012                                                                ;IF YES (V IS CLEAR), DON'T DO THE CRC
5013  024534  102011                        BVC     30$             ;NOTE: V IS THE EXCLUSIVE OR OF BIT0 & BIT15.
5014  024536  012702  102010                MOV     #102010,R2      ;CRC/CCITT POLYNOMIAL
5015  024542  043702  002402                BIC     LOCRC,R2
5016  024546  042737  102010  002402        BIC     #102010,LOCRC
5017  024554  050237  002402                BIS     R2,LOCRC
5018  024560                          30$:
5019  024560  000241                        CLC                     ;CLEAR THE CARRY
5020  024562  006037  002404                ROR     HICRC           ;ROTATE BIT 0 INTO C
5021  024566  006037  002410                ROR     HIWORD          ;ROTATE OLD C INTO BIT15 (SIGN) & BIT0 INTO C
5022                                                                ;ARE THE BITS 0 OF HICRC & HIWORD THE SAME?
5023  024572  102011                        BVC     35$             ;IF YES (V IS CLEAR), DON'T DO THE CRC.
5024                                                                ;NOTE: V IS THE EXCLUSIVE OR OF BIT0 & BIT15.
5025  024574  012702  102010                MOV     #102010,R2      ;CRC/CCITT POLYNOMIAL
5026  024600  043702  002404                BIC     HICRC,R2
5027  024604  042737  102010  002404        BIC     #102010,HICRC
5028  024612  050237  002404                BIS     R2,HICRC
5029  024616                          35$:
5030  024616  005303                        DEC     R3              ;DO ALL 16 BITS
5031  024620  001340                        BNE     25$
5032  024622  000707                        BR      20$             ;GET THE CONTENTS OF THE NEXT 2 ROM ADDRESSES.
5033  024624                          40$:
5034                                        ;
5035                                        ; AT THIS POINT WE'VE READ THE CONTENTS AND CALCULATED THE CRC FOR
5036                                        ; 2 ROM ROMS (ONE LOW BYTE & ONE HIGH BYTE).  ALSO WE'VE READ THE
5037                                        ; CRC BLASTED INTO THE LAST 2 BYTES OF THE ROM (IN LOWORD/HIWORD)
5038                                        ;
5039  024624  005137  002402                COM     LOCRC           ;COMPLEMENT THE CALCULATED CRC .
5040  024630  023737  002402  002406        CMP     LOCRC,LOWORD    ;IS THE CRC IN ROM THE SAME AS THE
5041                                                                ;CALCULATED CRC?
5042  024636  001427                        BEQ     50$             ;IF YES - CHECK THE HIGH BYTE CRC (NEXT ROM)
5043  024640  005737  002344                TST     FLAG            ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
5044                                                                ;WE'RE IN A LOOP)
5045  024644  001007                        BNE     41$             ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5046  024646  012737  000001  002344        MOV     #1,FLAG         ;FLAG THAT ERRDF HAS BEEN DETECTED.
5047  024654                                ERRDF   7,EMT1          ;ROM ERROR
5048  024654  104455                                                                TRAP    C$ERDF
5049  024656  000007                                                                .WORD   7
5050  024660  025472                                                                .WORD   EMT1
5051  024662  000000                                                                .WORD   0
5052  024664                          41$:
5053  024664                                PRINTB  #FMT3,R4,LOCRC,LOWORD
5054  024664  013746  002406                                                       MOV     LOWORD,-(SP)
5055  024670  013746  002402                                                       MOV     LOCRC,-(SP)
```

```
5056  024674  010446                                                  MOV     R4,-(SP)
5057  024676  012746  025330                                          MOV     #FMT3,-(SP)
5058  024702  012746  000004                                          MOV     #4,-(SP)
5059  024706  010600                                                  MOV     SP,R0
5060  024710  104414                                                  TRAP    C$PNTB
5061  024712  062706  000012                                          ADD     #12,SP
5062  024716                          50$:
5063  024716  005204                          INC     R4              ;INCR ROM #
5064  024720  005137  002404                  COM     HICRC           ;COMPLEMENT THE CALCULATED CRC FOR THE HI BYTE
5065  024724  023737  002404  002410          CMP     HICRC,HIWORD    ;ROM CRC AND CALCULATED CRC THE SAME?
5066  024732  001427                          BEQ     60$             ;IF YES - CHECK THE ROM LOCATIONS.
5067  024734  005737  002344                  TST     FLAG            ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
5068                                                                  ;WE'RE IN A LOOP)
5069  024740  001007                          BNE     51$             ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5070  024742  012737  000001  002344          MOV     #1,FLAG         ;FLAG THAT ERRDF HAS BEEN DETECTED.
5071  024750                                  ERRDF   7,EMT1          ;ROM ERROR
5072  024750  104455                                                  TRAP    C$ERDF
5073  024752  000007                                                  .WORD   7
5074  024754  025472                                                  .WORD   EMT1
5075  024756  000000                                                  .WORD   0
5076  024760                          51$:
5077  024760                          PRINTB  #FMT3,R4,HICRC,HIWORD
5078  024760  013746  002410                                          MOV     HIWORD,-(SP)
5079  024764  013746  002404                                          MOV     HICRC,-(SP)
5080  024770  010446                                                  MOV     R4,-(SP)
5081  024772  012746  025330                                          MOV     #FMT3,-(SP)
5082  024776  012746  000004                                          MOV     #4,-(SP)
5083  025002  010600                                                  MOV     SP,R0
5084  025004  104414                                                  TRAP    C$PNTB
5085  025006  062706  000012                                          ADD     #12,SP
5086  025012                          60$:
5087  025012  022704  000005                  CMP     #5,R4           ;IF WE'VE DONE ROMS 0-5, WE'RE DONE.
5088  025016  001403                          BEQ     70$             ;EXIT WHEN DONE
5089  025020  005204                          INC     R4              ;CHECK THE NEXT ROM.
5090  025022  000137  024422                  JMP     10$
5091  025026                          70$:
5092
5093  025026                            ENDSUB
5094  025026                                                                  L10027:
5095  025026  104403                                                          TRAP    C$ESUB
5096
5097  025030                            BGNSUB
5098  025030                                                                  T2.3:
5099  025030  104402                                                          TRAP    C$BSUB
5100  025032  005037  002344                  CLR     FLAG            ;CLEAR FLAG
5101  025036  005004                          CLR     R4              ;BEGIN AT ROM 0
5102  025040  012737  001775  002412          MOV     #1775,ROMADR    ;ADDRESS OF BYTE CONTAINING ROM #
5103  025046                          10$:
5104  025046                          CALL    $ROM0                   ;GET ROM CONTENTS
5105  025052  117701  155162                  MOVB    @BSEL6,R1       ;SAVE THE CONTENTS OF THE LOW BYTE
5106                                                                  ;FOR ROMS 0,2,4
5107  025056  000402                          BR      17$
5108  025060                          15$:
5109  025060  117701  155164                  MOVB    @BSEL7,R1       ;SAVE THE CONTENTS OF THE HIGH BYTE
5110                                                                  ;FOR ROMS 1,3,5
5111  025064                          17$:
```

```
5112  025064  042701  177760            BIC     #^C17,R1        ;CONVERT THE ASCII BYTE TO AN OCTAL WORD.
5113  025070  020104                    CMP     R1,R4           ;IS THIS THE EXPECTED ROM #
5114  025072  001427                    BEQ     20$             ;IF YES - OK.
5115  025074  005737  002344            TST     FLAG            ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
5116                                                            ;WE'RE IN A LOOP)
5117  025100  001007                    BNE     18$             ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5118  025102  012737  000001  002344    MOV     #1,FLAG         ;FLAG THAT ERRDF HAS BEEN DETECTED.
5119  025110                            ERRDF   7,EMT2          ;ROM ERROR
5120  025110  104455                                                            TRAP    C$ERDF
5121  025112  000007                                                           .WORD   7
5122  025114  025512                                                           .WORD   EMT2
5123  025116  000000                                                           .WORD   0
5124  025120                    18$:
5125  025120                            PRINTB  #FMT4,<B,ROMLOC(R4)>,R1,R4
5126  025120  010446                                                           MOV     R4,-(SP)
5127  025122  010146                                                           MOV     R1,-(SP)
5128  025124  005046                                                           CLR     -(SP)
5129  025126  156416  025531                                                   BISB    ROMLOC(R4),(SP)
5130  025132  012746  025414                                                   MOV     #FMT4,-(SP)
5131  025136  012746  000004                                                   MOV     #4,-(SP)
5132  025142  010600                                                           MOV     SP,R0
5133  025144  104414                                                           TRAP    C$PNTB
5134  025146  062706  000012                                                   ADD     #12,SP
5135  025152                    20$:
5136  025152  022704  000005            CMP     #5,R4           ;DID WE FINISH THE LAST ROM?
5137  025156  001410                    BEQ     30$             ;IF YES - SKIP TO THE END
5138  025160  005204                    INC     R4              ;POINT TO THE NEXT ROM #
5139  025162  032704  000001            BIT     #BIT0,R4        ;IS THIS AN ODD #
5140  025166  001334                    BNE     15$             ;IF YES GO BACK AND READ THE HIGH BYTE
5141
5142  025170  062737  002000  002412    ADD     #2000,ROMADR    ;INCR. ADDRESS POINTER TO NEXT ROM #.
5143  025176  000723                    BR      10$
5144  025200                    30$:
5145  025200                      ENDSUB
5146  025200                                                                  L10030:
5147  025200  104403                                                                 TRAP    C$ESUB
5148
5149  025202                    ENDTST
5150  025202                                                                  L10025:
5151  025202  104401                                                                 TRAP    C$ETST
5152  025204  047045  040445  044515    FMT1:   .ASCIZ  /%N%AMICROCODE REVISION IN UNIT%D3%A:%N/
5153  025212  051103  041517  042117
5154  025220  020105  042522  044526
5155  025226  044523  047117  044440
5156  025234  020116  047125  052111
5157  025242  042045  022463  035101
5158  025250  047045     000
5159  025253     045  051101  046517    FMT2:   .ASCIZ  /%AROM%D2%A - REV. %T%N%AROM%D2%A - REV. %T%N/
5160  025260  042045  022462  020101
5161  025266  020055  042522  027126
5162  025274  022440  022524  022516
5163  025302  051101  046517  042045
5164  025310  022462  020101  020055
5165  025316  042522  027126  022440
5166  025324  022524  000116
5167  025330  040445  047522  022515    FMT3:   .ASCIZ  /%AROM%D2%A: CALCUATED CRC =%O6%A  CRC IN ROM =%O6%N/
```

```
 5168  025336  031104  040445  020072
 5169  025344  040503  041514  040525
 5170  025352  042524  020104  051103
 5171  025360  020103  022475  033117
 5172  025366  040445  020040  051103
 5173  025374  020103  047111  051040
 5174  025402  046517  036440  047445
 5175  025410  022466  000116
 5176  025414  040445  022505  031104  FMT4:   .ASCIZ  /%AE%D2%A IS ROM %D1%A (SHOULD BE ROM %D1%A)%N/
 5177  025422  040445  044440  020123
 5178  025430  047522  020115  042045
 5179  025436  022461  020101  051450
 5180  025444  047510  046125  020104
 5181  025452  042502  051040  046517
 5182  025460  022440  030504  040445
 5183  025466  022451  000116
 5184
 5185  025472  051103  026503  041503  EMT1:   .ASCIZ  /CRC-CCITT ERROR/
 5186  025500  052111  020124  051105
 5187  025506  047522  000122
 5188  025512  047514  040503  044524  EMT2:   .ASCIZ  /LOCATION ERROR/
 5189  025520  047117  042440  051122
 5190  025526  051117     000
 5191
 5192  025531     003     002     004  ROMLOC: .BYTE 3,2,4,1,5,14.      ;ROM 0 = ROM LOCATION 3 ETC.
 5193  025534     001     005     016
 5194          025540                  .EVEN
 5195  025540  000000                  REV1:   .WORD   0                ;ASCII VALUE OF THE REV. NUMBER
 5196  025542  000000                  REV2:   .WORD   0                ;ASCII VALUE OF THE REV. NUMBER
 5197
 5198
 5199
```

```
                        .SBTTL          TEST 3 - MASTER CLEAR AND MICROTEST

                        ;*************************************************************************
                        ;*                  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)
                        ;*************************************************************************
025544                  BGNTST
                                                                        T3::
025544                          CLEAR                   ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
025544  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                 ****

025550                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
                                                                        TRAP    C$ESCAPE
025550  104410                                                          .WORD   L10031-.
025552  000072
025554  105777  154464          TSTB    @BSEL3          ;IS THERE A DMR RESPONSE?
025560  001011                  BNE     1$
025562                          PRINTB  #FMG19          ;REPORT DEVICE NOT DMR.
025562  012746  017436                                                    MOV     #FMG19,-(SP)
025566  012746  000001                                                    MOV     #1,-(SP)
025572  010600                                                          MOV     SP,R0
025574  104414                                                          TRAP    C$PNTB
025576  062706  000004                                                  ADD     #4,SP
025602  000420                  BR      5$
025604                  1$:
025604  117701  154434          MOVB    @BSEL3,R1       ;SAVE THE RESULT OF THE FIRST MASTER CLEAR.
025610                          CLEAR                   ;MASTER CLEAR AGAIN.
                                                        ;**** MACRO EXPANSION ****
025610  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                 ****

025614                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
025614  104410                                                          TRAP    C$ESCAPE
```

```
5256  025616  000026                                                          .WORD   L10031-.
5257  025620  117702  154420          MOVB    @BSEL3,R2       ;SAVE THE RESULTS OF THE SECOND MASTER CLEAR
5258  025624  060102                  ADD     R1,R2           ;ADD THE RESULTS OF THE 2 CLEARS
5259                                                          ;NOTE: ONE SHOULD BE 100 - MICRO TESTS NOT
5260                                                          ;ENABLED AND ONE SHOULD BE 200 - MICRO TESTS
5261                                                          ;SUCCESFULLY RUN.
5262  025626  122702  000300          CMPB    #300,R2         ;WAS THE MICROTEST COMPLETED?
5263  025632  001404                  BEQ     5$              ;IF YES - OK
5264  025634                          ERRDF   3,EMT3,ERRG3    ;MICROTEST NOT COMPLETED
5265  025634  104455                                                          TRAP    C$ERDF
5266  025636  000003                                                          .WORD   3
5267  025640  025646                                                          .WORD   EMT3
5268  025642  015240                                                          .WORD   ERRG3
5269  025644                  5$:
5270  025644                  ENDTST
5271  025644                                                          L10031:
5272  025644  104401                                                          TRAP    C$ETST
5273
5274  025646  044515  051103  052117  EMT3:   .ASCIZ  /MICROTEST NOT COMPLETED/
5275  025654  051505  020124  047516
5276  025662  020124  047503  050115
5277  025670  042514  042524  000104
5278                          .EVEN
```

```
                                .SBTTL          TEST 4 - BASE IN COMMAND

                                ;*************************************************************************
                                ;*              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.
                                ;*
                                ;*************************************************************************
025676                          BGNTST
025676                                                                  T4::
025676                             BGNSUB
025676                                                                  T4.1:
025676  104402                                                                  TRAP    C$BSUB
025700                                  CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
                                                                ;**** MACRO EXPANSION ****
025700  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                 ****
025704                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
025704  104410                                                                  TRAP    C$ESCAPE
025706  000244                                                                  .WORD   L10032-.
                                                                ;BASE IN COMMAND WITH NO MAINTENANCE,
025710                                  BASEIN  0,BASE,DMR      ;BASE=BASE TABLE ADDRESS, AND DMR-11 MODE
                                                                ;**** MACRO EXPANSION ****
025710  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
025714  000000                                  .WORD   0       ;MAINTENANCE MODE BITS TO SET IN BSEL1
025716  002640                          .WORD   BASE            ;BASE TABLE ADDRESS
025720  000522                          .WORD   DMR             ;MODE
                                                                ;****                 ****
025722                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
025722  104410                                                                  TRAP    C$ESCAPE
025724  000226                                                                  .WORD   L10032-.
025726                                  SHUTDN
                                                                ;**** MACRO EXPANSION ****
025726  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                                                ;****                 ****
025732  132737  000020  002732          BITB    #BIT4,BASE+ISP7 ;SEE IF THE DMR MODE BIT IS SET IN THE
                                                                ;DMR SCRATCH PAD REGISTER 7 (BASE TABLE
                                                                ;LOCATION CONTAINS AN IMAGE OF SP7)
025740  001004                          BNE     10$             ;OK IF SET - BR
025742                                  ERRDF   20,EMT4
025742  104455                                                                  TRAP    C$ERDF
025744  000024                                                                  .WORD   20
025746  026374                                                                  .WORD   EMT4
025750  000000                                                                  .WORD   0
025752                          10$:
                                                                ;CHECK MESSAGE EXCHANGE VALUES
```

```
5335
5336  025752  105737  002702              TSTB    BASE+R          ;IN THE BASE TABLE.
5337  025756  001015                      BNE     20$             ; #R (MESSAGE RECEIVED) = 0?
5338  025760  105737  002703              TSTB    BASE+N          ;ERROR IF NON ZERO
5339  025764  001012                      BNE     20$             ; #N (MESSAGE TRANSMITTED) = 0?
5340  025766  105737  002704              TSTB    BASE+A          ;ERROR IF NON ZERO
5341  025772  001007                      BNE     20$             ; #A (MESSAGE ACKNOWLEDGED) = 0?
5342  025774  122737  000001  002705      CMPB    #1,BASE+T       ;ERROR IF NOT EQUAL TO 1.
5343  026002  001003                      BNE     20$             ; #T (NEXT MESSAGE # TRANSMITTED) = 1?
5344  026004  105737  002706              TSTB    BASE+X          ; #X (LAST MESSAGE TRANSMITTED) = 0?
5345  026010  001404                      BEQ     30$
5346  026012                      20$:
5347  026012                      ERRDF   20,EMT5,ERRT1
5348  026012  104455                                                      TRAP    C$ERDF
5349  026014  000024                                                      .WORD   20
5350  026016  026421                                                      .WORD   EMT5
5351  026020  026154                                                      .WORD   ERRT1
5352  026022                      30$:
5353  026022                        ENDSUB
5354  026022                                                          L10033:
5355  026022  104403                                                      TRAP    C$ESUB
5356
5357  026024                        BGNSUB
5358  026024                                                          T4.2:
5359  026024  104402                                                      TRAP    C$BSUB
5360  026026                              CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
5361                                                              ;**** MACRO EXPANSION ****
5362  026026  004737  011070              JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
5363                                                              ;****                ****
5364
5365  026032                              ESCAPE  TST             ;IF ERROR, BR TO TEST END
5366  026032  104410                                                      TRAP    C$ESCAPE
5367  026034  000116                                                      .WORD   L10032-.
5368
5369                                                              ;BASE IN COMMAND WITH NO MAINTENANCE
5370  026036                              BASEIN  0,BASE,0        ;AND DMC MODE.
5371                                                              ;**** MACRO EXPANSION ****
5372  026036  004737  011266              JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
5373  026042  000000                              .WORD   0       ;MAINTENANCE MODE BITS TO SET IN BSEL1
5374  026044  002640                              .WORD   BASE    ;BASE TABLE ADDRESS
5375  026046  000000                              .WORD   0       ;MODE
5376                                                              ;****                ****
5377
5378  026050                              ESCAPE  TST             ;IF ERROR, BR TO TEST END
5379  026050  104410                                                      TRAP    C$ESCAPE
5380  026052  000100                                                      .WORD   L10032-.
5381  026054                              SHUTDN
5382                                                              ;**** MACRO EXPANSION ****
5383  026054  004737  012562              JSR     PC, $HALT       ;DMR HALT ROUTINE.
5384                                                              ;****                ****
5385  026060  132737  000020  002732      BITB    #BIT4,BASE+ISP7 ;SEE IF THE DMR MODE BIT IS CLEAR IN THE
5386                                                              ;DMR SCRATCH PAD REGISTER 7 (BASETABLE
5387                                                              ;LOCATION CONTAINS AN IMAGE OF SP7)
5388  026066  001404                      BEQ     10$             ;OK IF CLEAR - BR
5389  026070                              ERRDF   20,EMT6
5390  026070  104455                                                      TRAP    C$ERDF
```

```
5391  026072  000024                                                                  .WORD   20
5392  026074  026467                                                                  .WORD   EMT6
5393  026076  000000                                                                  .WORD   0
5394  026100                        10$:
5395                                                  ;CHECK MESSAGE EXCHANGE VALUES
5396                                                  ;IN THE BASE TABLE.
5397  026100  105737  002702              TSTB    BASE+R          ; #R (MESSAGE RECEIVED) = 0?
5398  026104  001015                      BNE     20$             ;ERROR IF NON ZERO
5399  026106  105737  002703              TSTB    BASE+N          ; #N (MESSAGE TRANSMITTED) = 0?
5400  026112  001012                      BNE     20$             ;ERROR IF NON ZERO
5401  026114  105737  002704              TSTB    BASE+A          ; #A (MESSAGE ACKNOWLEDGED) = 0?
5402  026120  001007                      BNE     20$             ;ERROR IF NON ZERO
5403  026122  122737  000001  002705      CMPB    #1,BASE+T       ; #T (NEXT MESSAGE # TRANSMITTED) = 1?
5404  026130  001003                      BNE     20$             ;ERROR IF NOT EQUAL TO 1.
5405  026132  105737  002706              TSTB    BASE+X          ; #X (LAST MESSAGE TRANSMITTED) = 0?
5406  026136  001404                      BEQ     30$
5407  026140                        20$:
5408  026140                              ERRDF   20,EMT5,ERRT1
5409  026140  104455                                                                  TRAP    C$ERDF
5410  026142  000024                                                                  .WORD   20
5411  026144  026421                                                                  .WORD   EMT5
5412  026146  026154                                                                  .WORD   ERRT1
5413  026150                        30$:
5414  026150                           ENDSUB
5415  026150                                                                  L10034:
5416  026150  104403                                                                  TRAP    C$ESUB
5417
5418  026152                        ENDTST
5419  026152                                                                  L10032:
5420  026152  104401                                                                  TRAP    C$ETST
5421
5422  026154                        BGNMSG  ERRT1
5423  026154                                                                  ERRT1::
5424  026154  105737  002702              TSTB    BASE+R          ;IS #R = 0?
5425  026160  001413                      BEQ     1$              ;OK - IF ZERO
5426  026162                              PRINTB  #FMT5,<B,BASE+R> ;PRINT #R
5427  026162  005046                                                                  CLR     -(SP)
5428  026164  153716  002702                                                        BISB    BASE+R,(SP)
5429  026170  012746  026526                                                        MOV     #FMT5,-(SP)
5430  026174  012746  000002                                                        MOV     #2,-(SP)
5431  026200  010600                                                                 MOV     SP,R0
5432  026202  104414                                                                 TRAP    C$PNTB
5433  026204  062706  000006                                                        ADD     #6,SP
5434  026210                        1$:
5435  026210  105737  002703              TSTB    BASE+N          ;IS #N = 0?
5436  026214  001413                      BEQ     2$              ;OK - IF ZERO
5437  026216                              PRINTB  #FMT6,<B,BASE+N> ;PRINT #N
5438  026216  005046                                                                  CLR     -(SP)
5439  026220  153716  002642                                                        BISB    BASE+2,(SP)
5440  026224  012746  026557                                                        MOV     #FMT6,-(SP)
5441  026230  012746  000002                                                        MOV     #2,-(SP)
5442  026234  010600                                                                 MOV     SP,R0
5443  026236  104414                                                                 TRAP    C$PNTB
5444  026240  062706  000006                                                        ADD     #6,SP
5445  026244                        2$:
5446
```

```
5447  026244  105737  002704                  TSTB    BASE+A          ;IS #A = 0?
5448  026250  001413                          BEQ     3$              ;OK - IF ZERO
5449  026252                                  PRINTB  #FMT7,<B,BASE+A> ;PRINT #A
5450  026252  005046                                                          CLR     -(SP)
5451  026254  153716  002704                                                  BISB    BASE+A,(SP)
5452  026260  012746  026610                                                  MOV     #FMT7,-(SP)
5453  026264  012746  000002                                                  MOV     #2,-(SP)
5454  026270  010600                                                          MOV     SP,R0
5455  026272  104414                                                          TRAP    C$PNTB
5456  026274  062706  000006                                                  ADD     #6,SP
5457  026300                          3$:
5458  026300  122737  000001  002705          CMPB    #1,BASE+T       ;IS #T = 1?
5459  026306  001413                          BEQ     4$              ;OK - IF ONE
5460  026310                                  PRINTB  #FMT8,<B,BASE+T> ;PRINT #T
5461  026310  005046                                                          CLR     -(SP)
5462  026312  153716  002705                                                  BISB    BASE+T,(SP)
5463  026316  012746  026641                                                  MOV     #FMT8,-(SP)
5464  026322  012746  000002                                                  MOV     #2,-(SP)
5465  026326  010600                                                          MOV     SP,R0
5466  026330  104414                                                          TRAP    C$PNTB
5467  026332  062706  000006                                                  ADD     #6,SP
5468  026336                          4$:
5469  026336  105737  002706                  TSTB    BASE+X          ;IS #X = 0?
5470  026342  001413                          BEQ     5$              ;OK - IF ZERO
5471  026344                                  PRINTB  #FMT9,<B,BASE+X> ;PRINT #X
5472  026344  005046                                                          CLR     -(SP)
5473  026346  153716  002706                                                  BISB    BASE+X,(SP)
5474  026352  012746  026672                                                  MOV     #FMT9,-(SP)
5475  026356  012746  000002                                                  MOV     #2,-(SP)
5476  026362  010600                                                          MOV     SP,R0
5477  026364  104414                                                          TRAP    C$PNTB
5478  026366  062706  000006                                                  ADD     #6,SP
5479  026372                          5$:
5480  026372                          ENDMSG
5481  026372                                                          L10035:
5482  026372  104423                                                          TRAP    C$MSG
5483
5484  026374  046504  020122  047515  EMT4:   .ASCIZ  /DMR MODE BIT NOT SET/
5485  026402  042504  041040  052111
5486  026410  047040  052117  051440
5487  026416  052105     000
5488  026421     104  041504  050115  EMT5:   .ASCIZ  /DDCMP MESSAGE VARIABLE(S) NOT CORRECT/
5489  026426  046440  051505  040523
5490  026434  042507  053040  051101
5491  026442  040511  046102  024105
5492  026450  024523  047040  052117
5493  026456  041440  051117  042522
5494  026464  052103     000
5495  026467     104  041515  046440  EMT6:   .ASCIZ  /DMC MODE - DMR BIT NOT CLEARED/
5496  026474  042117  020105  020055
5497  026502  046504  020122  044502
5498  026510  020124  047516  020124
5499  026516  046103  040505  042522
5500  026524  000104
5501
5502  026526  040445  051043  024040  FMT5:   .ASCIZ  /%A#R (MSG. RCVD) = %D3%N/
```

```
 5503  026534  051515  027107  051040
 5504  026542  053103  024504  036440
 5505  026550  022440  031504  047045
 5506  026556     000
 5507  026557     045  021501  020116  FMT6:   .ASCIZ  /%A#N (MSG. XMIT) = %D3%N/
 5508  026564  046450  043523  020056
 5509  026572  046530  052111  020051
 5510  026600  020075  042045  022463
 5511  026606  000116
 5512  026610  040445  040443  024040  FMT7:   .ASCIZ  /%A#A (MSG. ACK)  = %D3%N/
 5513  026616  051515  027107  040440
 5514  026624  045503  020051  036440
 5515  026632  022440  031504  047045
 5516  026640     000
 5517  026641     045  021501  020124  FMT8:   .ASCIZ  /%A#T (NEXT XMIT) = %D3%N/
 5518  026646  047050  054105  020124
 5519  026654  046530  052111  020051
 5520  026662  020075  042045  022463
 5521  026670  000116
 5522  026672  040445  054043  024040  FMT9:   .ASCIZ  /%A#X (LAST XMIT) = %D3%N/
 5523  026700  040514  052123  054040
 5524  026706  044515  024524  036440
 5525  026714  022440  031504  047045
 5526  026722     000
 5527          026724                          .EVEN
```

```
                                .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.
                                ;*
                                ;*
                                ;*******************************************************************************
026724                          BGNTST
026724                            BGNSUB                                                T5::
026724                                                                                  T5.1:
026724  104402                                                                          TRAP    C$BSUB
026726                                  CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
                                                                ;**** MACRO EXPANSION ****
026726  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                ****

026732                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
026732  104410                                                                        TRAP    C$ESCAPE
026734  000330                                                                      .WORD   L10036-.

026736                                  BASEIN                  ;BASE IN COMMAND WITH  LINE UNIT LOOP,
                                                                ;**** MACRO EXPANSION ****
026736  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
026742  004000                                  .WORD   LPLU    ;SET LINE UNIT LOOP
026744  002640                                  .WORD   BASE    ;BASE TABLE ADDRESS
026746  000522                                  .WORD   DMR     ;DMR-11 MODE
                                                                ;****                ****

026750                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
026750  104410                                                                        TRAP    C$ESCAPE
026752  000312                                                                      .WORD   L10036-.
026754                                  DMRIN   EXERR           ;ENABLE EXTENDED ERROR NOTIFICATION
                                                                ;**** MACRO EXPANSION ****
026754  004737  012062                  JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
026760  000006                                  .WORD   EXERR   ;INPUT COMMAND
026762  000000                                  .WORD   0       ;NO SEL4
026764  000000                                  .WORD   0       ;NO SEL6
                                                                ;****                ****

026766                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
026766  104410                                                                        TRAP    C$ESCAPE
026770  000274                                                                      .WORD   L10036-.
026772                                  SHUTDN                  ;HALT THE DMR
                                                                ;**** MACRO EXPANSION ****
026772  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                                                ;****                ****
026776                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
```

```
5584  026776  104410                                                          TRAP    C$ESCAPE
5585  027000  000264                                                          .WORD   L10036-.
5586  027002  132737  000001  002736          BITB    #BIT0,BASE+ISP13 ;CHECK EXT ENABLE BIT IN THE BASE TABLE.
5587                                                                  ;IMAGE OF SCRATCH PAD 13.
5588  027010  001005                          BNE     10$             ;BIT SET - OK.
5589  027012                                  ERRDF   24,EMT7         ;ERROR EXT ENABLE CLEAR
5590  027012  104455                                                          TRAP    C$ERDF
5591  027014  000030                                                          .WORD   24
5592  027016  027574                                                          .WORD   EMT7
5593  027020  000000                                                          .WORD   0
5594  027022  000430                          BR      20$
5595  027024                          10$:
5596  027024                          BASEIN  LPLU,BASE,RES!DMR ;BASE IN COMMAND WITH RESUME SET.
5597                                                                  ;**** MACRO EXPANSION ****
5598  027024  004737  011266                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
5599  027030  004000                                  .WORD   LPLU    ;MAINTENANCE MODE BITS TO SET IN BSEL1
5600  027032  002640                                  .WORD   BASE    ;BASE TABLE ADDRESS
5601  027034  010522                                  .WORD   RES!DMR ;MODE
5602                                                                  ;****                   ****
5603
5604  027036                          DMRIN   DXERR           ;DISABLE EXTENDED ERROR NOTIFICATION.
5605                                                                  ;**** MACRO EXPANSION ****
5606  027036  004737  012062                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
5607  027042  000007                                  .WORD   DXERR   ;INPUT COMMAND
5608  027044  000000                                  .WORD   0       ;NO SEL4
5609  027046  000000                                  .WORD   0       ;NO SEL6
5610                                                                  ;****                   ****
5611
5612  027050                          ESCAPE  TST             ;IF ERROR, BR TO TEST END
5613  027050  104410                                                          TRAP    C$ESCAPE
5614  027052  000212                                                          .WORD   L10036-.
5615  027054                          SHUTDN                  ;HALT THE DMR
5616                                                                  ;**** MACRO EXPANSION ****
5617  027054  004737  012562                JSR     PC, $HALT       ;DMR HALT ROUTINE.
5618                                                                  ;****                   ****
5619  027060                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
5620  027060  104410                                                          TRAP    C$ESCAPE
5621  027062  000202                                                          .WORD   L10036-.
5622  027064  132737  000001  002736          BITB    #BIT0,BASE+ISP13 ;CHECK EXT ENABLE BIT IN THE BASE TABLE.
5623                                                                  ;IMAGE OF SCRATCH PAD 13.
5624  027072  001404                          BEQ     20$             ;IF CLEAR OK
5625  027074                                  ERRDF   24,EMT7         ;ERROR EXT ENABLE SET
5626  027074  104455                                                          TRAP    C$ERDF
5627  027076  000030                                                          .WORD   24
5628  027100  027574                                                          .WORD   EMT7
5629  027102  000000                                                          .WORD   0
5630  027104                          20$:
5631  027104                            ENDSUB
5632  027104                                                          L10037:
5633  027104  104403                                                          TRAP    C$ESUB
5634
5635  027106                            BGNSUB
5636  027106                                                          T5.2:
5637  027106  104402                                                          TRAP    C$BSUB
5638  027110                                  CLEAR                   ;MACRO FOR MASTER CLEAR COMMAND
5639                                                                  ;**** MACRO EXPANSION ****
```

```
5640  027110  004737  011070                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
5641                                                                  ;****                   ****
5642
5643  027114                                ESCAPE  TST             ;IF ERROR, BR TO TEST END
5644  027114  104410                                                                TRAP    C$ESCAPE
5645  027116  000146                                                                .WORD   L10036-.
5646
5647  027120                                BASEIN                  ;BASE IN COMMAND WITH  LINE UNIT LOOP,
5648                                                                  ;**** MACRO EXPANSION ****
5649  027120  004737  011266                JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
5650  027124  004000                                .WORD   LPLU    ;SET LINE UNIT LOOP
5651  027126  002640                                .WORD   BASE    ;BASE TABLE ADDRESS
5652  027130  000522                                .WORD   DMR     ;DMR-11 MODE
5653                                                                  ;****                   ****
5654
5655  027132                                ESCAPE  TST             ;IF ERROR, BR TO TEST END
5656  027132  104410                                                                TRAP    C$ESCAPE
5657  027134  000130                                                                .WORD   L10036-.
5658  027136                                DMRIN   TIMER,0,54      ;SET REP/SELECT TIMER VALUE
5659                                                                  ;**** MACRO EXPANSION ****
5660  027136  004737  012062                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
5661  027142  000012                                .WORD   TIMER   ;INPUT COMMAND
5662  027144  000000                                .WORD   0       ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
5663  027146  000054                                .WORD   54      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
5664                                                                  ;****                   ****
5665
5666  027150                                ESCAPE  TST             ;IF ERROR, BR TO TEST END
5667  027150  104410                                                                TRAP    C$ESCAPE
5668  027152  000112                                                                .WORD   L10036-.
5669
5670                                                                  ;SET THRESHOLD VALUES AS FOLLOWS:
5671                                                                  ;BSEL4 = NAKS RECEIVED (3)
5672                                                                  ;BSEL5 = NAKS TRANSMITTED (13)
5673                                                                  ;BSEL6 = REP/SEL SENT (15)
5674                                                                  ;BSEL7 = NO BUFFFER (4)
5675  027154                                DMRIN   THRESH,5403,2015
5676                                                                  ;**** MACRO EXPANSION ****
5677  027154  004737  012062                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
5678  027160  000013                                .WORD   THRESH  ;INPUT COMMAND
5679  027162  005403                                .WORD   5403    ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
5680  027164  002015                                .WORD   2015    ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
5681                                                                  ;****                   ****
5682
5683  027166                                ESCAPE  TST             ;IF ERROR, BR TO TEST END
5684  027166  104410                                                                TRAP    C$ESCAPE
5685  027170  000074                                                                .WORD   L10036-.
5686  027172                                SHUTDN                  ;HALT THE DMR.
5687                                                                  ;**** MACRO EXPANSION ****
5688  027172  004737  012562                JSR     PC, $HALT       ;DMR HALT ROUTINE.
5689                                                                  ;****                   ****
5690  027176                                ESCAPE  TST             ;IF ERROR, BR TO TEST END
5691  027176  104410                                                                TRAP    C$ESCAPE
5692  027200  000064                                                                .WORD   L10036-.
5693  027202  122737  000054  002715        CMPB    #54,BASE+PRETIM ;CHECK REP/SEL TIME IN BASE TABLE.
5694  027210  001020                        BNE     10$             ;IF NOT 54, BR TO ERROR.
5695  027212  122737  000015  002724        CMPB    #15,BASE+TH3L   ;CHECK REP. THRESH. IN BASE TABLE.
```

```
5696  027220  001014                          BNE     10$             ;IF NOT 15, BR TO ERROR.
5697  027222  122737  000003  002720          CMPB    #3,BASE+TH1L    ;CHECK NAK RCVD. THRESH. IN BASE TABLE.
5698  027230  001010                          BNE     10$             ;IF NOT 3, BR TO ERROR.
5699  027232  122737  000013  002722          CMPB    #13,BASE+TH2L   ;CHECK NAK SENT THRESH. IN BASE TABLE.
5700  027240  001004                          BNE     10$             ;IF NOT 13, BR TO ERROR
5701  027242  122737  000004  002726          CMPB    #4,BASE+TH4L    ;CHECK NO BUF. THRESH. IN BASE TABLE.
5702  027250  001404                          BEQ     20$             ;IF 4, ALL CHECKS OK - EXIT
5703  027252                          10$:
5704  027252                                  ERRDF   24,EMT8,ERRT3
5705  027252  104455                                                                  TRAP    C$ERDF
5706  027254  000030                                                                  .WORD   24
5707  027256  027625                                                                  .WORD   EMT8
5708  027260  027266                                                                  .WORD   ERRT3
5709  027262                          20$:
5710  027262                            ENDSUB
5711  027262                                                                L10040:
5712  027262  104403                                                                 TRAP    C$ESUB
5713  027264                          ENDTST
5714  027264                                                                L10036:
5715  027264  104401                                                                 TRAP    C$ETST
5716
5717  027266                          BGNMSG  ERRT3
5718  027266                                                                ERRT3::
5719  027266                                  PRINTB  #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2
5720  027266  017746  152742                                                         MOV     @SEL2,-(SP)
5721  027272  017746  152734                                                         MOV     @SEL0,-(SP)
5722  027276  012746  016302                                                         MOV     #FMG1,-(SP)
5723  027302  012746  000003                                                         MOV     #3,-(SP)
5724  027306  010600                                                                 MOV     SP,R0
5725  027310  104414                                                                 TRAP    C$PNTB
5726  027312  062706  000010                                                         ADD     #10,SP
5727  027316                                  PRINTB  #FMT11,<B,BASE+ISP13> ;PRINT OUT THE IMAGE OF SCRATCH PAD 13.
5728  027316  005046                                                                 CLR     -(SP)
5729  027320  153716  002736                                                         BISB    BASE+ISP13,(SP)
5730  027324  012746  027662                                                         MOV     #FMT11,-(SP)
5731  027330  012746  000002                                                         MOV     #2,-(SP)
5732  027334  010600                                                                 MOV     SP,R0
5733  027336  104414                                                                 TRAP    C$PNTB
5734  027340  062706  000006                                                         ADD     #6,SP
5735  027344  122737  000054  002715          CMPB    #54,BASE+PRETIM ;IS REP/SEL TIME OK?
5736  027352  001413                          BEQ     1$              ;BR IF OK
5737  027354                                  PRINTB  #FMT12,<B,BASE+PRETIM> ;PRINT IT OUT.
5738  027354  005046                                                                 CLR     -(SP)
5739  027356  153716  002715                                                         BISB    BASE+PRETIM,(SP)
5740  027362  012746  027713                                                         MOV     #FMT12,-(SP)
5741  027366  012746  000002                                                         MOV     #2,-(SP)
5742  027372  010600                                                                 MOV     SP,R0
5743  027374  104414                                                                 TRAP    C$PNTB
5744  027376  062706  000006                                                         ADD     #6,SP
5745  027402                          1$:
5746  027402  122737  000003  002720          CMPB    #3,BASE+TH1L    ;IS NAK RCVD OK?
5747  027410  001413                          BEQ     2$              ;BR IF OK.
5748  027412                                  PRINTB  #FMT13,<B,BASE+TH1L> ;PRINT IT OUT
5749  027412  005046                                                                 CLR     -(SP)
5750  027414  153716  002720                                                         BISB    BASE+TH1L,(SP)
5751  027420  012746  027750                                                         MOV     #FMT13,-(SP)
```

```
5752  027424  012746  000002                                                  MOV     #2,-(SP)
5753  027430  010600                                                          MOV     SP,R0
5754  027432  104414                                                          TRAP    C$PNTB
5755  027434  062706  000006                                                  ADD     #6,SP
5756  027440                          2$:
5757  027440  122737  000013  002722          CMPB    #13,BASE+TH2L   ;IS NAK SENT OK?
5758  027446  001413                        BEQ     3$              ;BR IF OK.
5759  027450                                PRINTB  #FMT14,<B,BASE+TH2L> ;PRINT IT OUT
5760  027450  005046                                                          CLR     -(SP)
5761  027452  153716  002722                                                  BISB    BASE+TH2L,(SP)
5762  027456  012746  030005                                                  MOV     #FMT14,-(SP)
5763  027462  012746  000002                                                  MOV     #2,-(SP)
5764  027466  010600                                                          MOV     SP,R0
5765  027470  104414                                                          TRAP    C$PNTB
5766  027472  062706  000006                                                  ADD     #6,SP
5767  027476                          3$:
5768  027476  122737  000015  002724          CMPB    #15,BASE+TH3L   ;IS REP LEVEL OK?
5769  027504  001413                        BEQ     4$              ;BR IF OK.
5770  027506                                PRINTB  #FMT15,<B,BASE+TH3L> ;PRINT IT OUT
5771  027506  005046                                                          CLR     -(SP)
5772  027510  153716  002724                                                  BISB    BASE+TH3L,(SP)
5773  027514  012746  030042                                                  MOV     #FMT15,-(SP)
5774  027520  012746  000002                                                  MOV     #2,-(SP)
5775  027524  010600                                                          MOV     SP,R0
5776  027526  104414                                                          TRAP    C$PNTB
5777  027530  062706  000006                                                  ADD     #6,SP
5778  027534                          4$:
5779  027534  122737  000004  002726          CMPB    #4,BASE+TH4L    ;IS NO BUFFER LEVEL OK?
5780  027542  001413                        BEQ     5$              ;BR IF OK.
5781  027544                                PRINTB  #FMT16,<B,BASE+TH4L> ;PRINT IT OUT
5782  027544  005046                                                          CLR     -(SP)
5783  027546  153716  002726                                                  BISB    BASE+TH4L,(SP)
5784  027552  012746  030077                                                  MOV     #FMT16,-(SP)
5785  027556  012746  000002                                                  MOV     #2,-(SP)
5786  027562  010600                                                          MOV     SP,R0
5787  027564  104414                                                          TRAP    C$PNTB
5788  027566  062706  000006                                                  ADD     #6,SP
5789  027572                          5$:
5790  027572                          ENDMSG
5791  027572                                                          L10041:
5792  027572  104423                                                          TRAP    C$MSG
5793
5794
5795  027574  054105  027124  042440  EMT7:   .ASCIZ  /EXT. ERROR BIT INCORRECT/
5796  027602  051122  051117  041040
5797  027610  052111  044440  041516
5798  027616  051117  042522  052103
5799  027624     000
5800  027625     104  051115  046440  EMT8:   .ASCIZ  /DMR MODE INPUT COMMAND ERROR/
5801  027632  042117  020105  047111
5802  027640  052520  020124  047503
5803  027646  046515  047101  020104
5804  027654  051105  047522  000122
5805
5806  027662  040445  046511  043501  FMT11:  .ASCIZ  /%AIMAGE OF SP 13 = %D3%N/
5807  027670  020105  043117  051440
```

```
 5808  027676  020120  031461  036440
 5809  027704  022440  031504  047045
 5810  027712     000
 5811  027713     045  051101  050105  FMT12:  .ASCIZ  /%AREP-SEL TIME VALUE = %D3%N/
 5812  027720  051455  046105  052040
 5813  027726  046511  020105  040526
 5814  027734  052514  020105  020075
 5815  027742  042045  022463  000116
 5816  027750  040445  040516  020113  FMT13:  .ASCIZ  /%ANAK RCVD THRESHOLD = %D3%N/
 5817  027756  041522  042126  052040
 5818  027764  051110  051505  047510
 5819  027772  042114  036440  022440
 5820  030000  031504  047045     000
 5821  030005     045  047101  045501  FMT14:  .ASCIZ  /%ANAK SENT THRESHOLD = %D3%N/
 5822  030012  051440  047105  020124
 5823  030020  044124  042522  044123
 5824  030026  046117  020104  020075
 5825  030034  042045  022463  000116
 5826  030042  040445  042522  020120  FMT15:  .ASCIZ  /%AREP SENT THRESHOLD = %D3%N/
 5827  030050  042523  052116  052040
 5828  030056  051110  051505  047510
 5829  030064  042114  036440  022440
 5830  030072  031504  047045     000
 5831  030077     045  047101  020117  FMT16:  .ASCIZ  /%ANO BUFFER THRESHOLD = %D3%N/
 5832  030104  052502  043106  051105
 5833  030112  052040  051110  051505
 5834  030120  047510  042114  036440
 5835  030126  022440  031504  047045
 5836  030134     000
 5837          030136                          .EVEN
 5838
 5839
```

```
                                .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.
                                ;*
                                ;*
                                ;*****************************************************************************
030136                          BGNTST
030136                                                                  T6::
030136                            BGNSUB
030136                                                                  T6.1:
030136  104402                                                                  TRAP    C$BSUB
030140                                  CLEAR                   ;MACRO FOR MASTER CLEAR
                                                                ;**** MACRO EXPANSION ****
030140  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                 ****

030144                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030144  104410                                                                  TRAP    C$ESCAPE
030146  000404                                                                  .WORD   L10042-.
030150                                  BASEIN                  ;MACRO FOR BASE IN COMMAND
                                                                ;**** MACRO EXPANSION ****
030150  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
030154  004000                          .WORD   LPLU            ;SET LINE UNIT LOOP
030156  002640                          .WORD   BASE            ;BASE TABLE ADDRESS
030160  000522                          .WORD   DMR             ;DMR-11 MODE
                                                                ;****                 ****

030162                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030162  104410                                                                  TRAP    C$ESCAPE
030164  000366                                                                  .WORD   L10042-.
030166                                  CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                                ;**** MACRO EXPANSION ****
030166  004737  011522                  JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
030172  000000                          .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
                                                                ;****                 ****

030174                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030174  104410                                                                  TRAP    C$ESCAPE
030176  000354                                                                  .WORD   L10042-.

030200  052777  000057  152024          BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND
030206                                  WAIT    RDI             ;WAIT FOR RDI TO BE SET
                                                                ;**** MACRO EXPANSION ****
```

```
5896  030206  004737  010276              JSR     PC, $WAIT       ;CALL WAIT ROUTINE
5897  030212  000000                      .WORD   0               ;FLAG THAT WE'RE WAITING FOR RDI
5898                                      ;****                   ****
5899  030214  032777  000020  152014      BIT     #BIT4,@SEL4     ;IS THE HDX BIT SET IN MODEM STATUS REG?
5900  030222  001404                      BEQ     10$             ;OK - IF BIT CLEAR
5901  030224                              ERRDF   21,EMT9         ;ERROR HDX BIT SET
5902  030224  104455                                                      TRAP    C$ERDF
5903  030226  000025                                                      .WORD   21
5904  030230  030554                                                      .WORD   EMT9
5905  030232  000000                                                      .WORD   0
5906  030234                      10$:
5907  030234                              WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
5908                                      ;**** MACRO EXPANSION ****
5909  030234  004737  010706              JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
5910                                      ;****                   ****
5911  030240                              SHUTDN                  ;HALT DMR
5912                                      ;**** MACRO EXPANSION ****
5913  030240  004737  012562              JSR     PC, $HALT       ;DMR HALT ROUTINE.
5914                                      ;****                   ****
5915  030244                              ESCAPE  TST             ;IF ERROR, EXIT.
5916  030244  104410                                                      TRAP    C$ESCAPE
5917  030246  000304                                                      .WORD   L10042-.
5918  030250  132737  000020  002732      BITB    #BIT4,BASE+ISP7 ;IS THE DDCMP RUN BIT SET IN IMAGE OF SP 7.
5919  030256  001004                      BNE     20$
5920  030260                              ERRDF   21,EMT10                ;ERROR DDCMP RUN BIT NOT SET
5921  030260  104455                                                      TRAP    C$ERDF
5922  030262  000025                                                      .WORD   21
5923  030264  030604                                                      .WORD   EMT10
5924  030266  000000                                                      .WORD   0
5925  030270                      20$:
5926  030270                        ENDSUB
5927  030270                                                      L10043:
5928  030270  104403                                                      TRAP    C$ESUB
5929
5930  030272                        BGNSUB
5931  030272                                                      T6.2:
5932  030272  104402                                                      TRAP    C$BSUB
5933  030274                              BASEIN  LPLU,BASE,RES!DMR ;BASE IN WITH RESUME.
5934                                                      ;**** MACRO EXPANSION ****
5935  030274  004737  011266              JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
5936  030300  004000                      .WORD   LPLU            ;MAINTENANCE MODE BITS TO SET IN BSEL1
5937  030302  002640                      .WORD   BASE            ;BASE TABLE ADDRESS
5938  030304  010522                      .WORD   RES!DMR         ;MODE
5939                                      ;****                   ****
5940
5941  030306                              CNTRIN  HDX             ;CONTROL IN COMMAND WITH HDX.
5942                                      ;**** MACRO EXPANSION ****
5943  030306  004737  011522              JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE
5944  030312  002000                      .WORD   HDX             ;SEL6 - (DUPLEX, MODE)
5945                                      ;****                   ****
5946
5947  030314                              ESCAPE  TST             ;IF ERROR, BR TO TEST END.
5948  030314  104410                                                      TRAP    C$ESCAPE
5949  030316  000234                                                      .WORD   L10042-.
5950  030320  052777  000057  151704      BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND
5951  030326                              WAIT    RDI             ;WAIT FOR RDI TO BE SET
```

```
5952
5953  030326  004737  010276          JSR     PC, $WAIT       ;**** MACRO EXPANSION ****
5954  030332  000000                  .WORD   0               ;CALL WAIT ROUTINE
5955                                                          ;FLAG THAT WE'RE WAITING FOR RDI
5956  030334  032777  000020  151674  BIT     #BIT4,@SEL4     ;****                    ****
5957  030342  001004                  BNE     10$             ;IS THE HDX BIT SET IN MODEM STATUS REG?
5958  030344                          ERRDF   21,EMT11        ;OK - IF BIT SET
5959  030344  104455                                                  ;ERROR HDX BIT CLEAR.
5960  030346  000025                                                          TRAP    C$ERDF
5961  030350  030632                                                          .WORD   21
5962  030352  000000                                                          .WORD   EMT11
5963  030354                  10$:                                            .WORD   0
5964  030354                          SHUTDN                  ;HALT THE DMR.
5965                                                          ;**** MACRO EXPANSION ****
5966  030354  004737  012562          JSR     PC, $HALT       ;DMR HALT ROUTINE.
5967                                                          ;****                    ****
5968
5969  030360                  ENDSUB
5970  030360                                                                  L10044:
5971  030360  104403                                                         TRAP    C$ESUB
5972
5973  030362                  BGNSUB
5974  030362                                                                  T6.3:
5975  030362  104402                                                         TRAP    C$BSUB
5976  030364                          CLEAR                   ;MACRO FOR MASTER CLEAR
5977                                                          ;**** MACRO EXPANSION ****
5978  030364  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
5979                                                          ;****                    ****
5980
5981  030370                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
5982  030370  104410                                                          TRAP    C$ESCAPE
5983  030372  000160                                                          .WORD   L10042-.
5984  030374                          BASEIN                  ;MACRO FOR BASE IN COMMAND
5985                                                          ;**** MACRO EXPANSION ****
5986  030374  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
5987  030400  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
5988  030402  002640                  .WORD   BASE            ;BASE TABLE ADDRESS
5989  030404  000522                  .WORD   DMR             ;DMR-11 MODE
5990                                                          ;****                    ****
5991
5992  030406                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
5993  030406  104410                                                          TRAP    C$ESCAPE
5994  030410  000142                                                          .WORD   L10042-.
5995  030412                          CNTRIN  MAINT           ;MACRO FOR CONTROL IN (MAINT. MODE)
5996                                                          ;**** MACRO EXPANSION ****
5997  030412  004737  011522          JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE
5998  030416  000400                  .WORD   MAINT           ;SEL6 - (DUPLEX, MODE)
5999                                                          ;****                    ****
6000
6001  030420                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6002  030420  104410                                                          TRAP    C$ESCAPE
6003  030422  000130                                                          .WORD   L10042-.
6004  030424                          SHUTDN                  ;HALT
6005                                                          ;**** MACRO EXPANSION ****
6006  030424  004737  012562          JSR     PC, $HALT       ;DMR HALT ROUTINE.
6007                                                          ;****                    ****
```

```
6008  030430                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6009  030430  104410                                                          TRAP    C$ESCAPE
6010  030432  000120                                                          .WORD   L10042-.
6011  030434  132737  000002  002732          BITB    #BIT1,BASE+ISP7 ;IS THE MAINTENANCE BIT SET IN IMAGE OF SP 7.
6012  030442  001004                          BNE     10$
6013  030444                                  ERRDF   21,EMT12        ;ERROR - MAINT. BIT NOT SET.
6014  030444  104455                                                          TRAP    C$ERDF
6015  030446  000025                                                          .WORD   21
6016  030450  030666                                                          .WORD   EMT12
6017  030452  000000                                                          .WORD   0
6018  030454                          10$:
6019  030454                            ENDSUB
6020  030454                                                          L10045:
6021  030454  104403                                                          TRAP    C$ESUB
6022
6023  030456                            BGNSUB
6024  030456                                                          T6.4:
6025  030456  104402                                                          TRAP    C$BSUB
6026
6027  030460                                  CLEAR                   ;MACRO FOR MASTER CLEAR
6028                                                                  ;**** MACRO EXPANSION ****
6029  030460  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
6030                                                                  ;****                 ****
6031
6032  030464                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6033  030464  104410                                                          TRAP    C$ESCAPE
6034  030466  000064                                                          .WORD   L10042-.
6035  030470  005737  002254                  TST     @#TURN          ;IS INTERNAL LOOPBACK REQUESTED?
6036  030474  001004                          BNE     1$              ;IF NOT, BR
6037  030476  052737  004000  030520          BIS     #LPLU,100$      ;SET LINE UNIT LOOPBACK.
6038  030504  000403                          BR      2$
6039  030506                          1$:
6040  030506  042737  004000  030520          BIC     #LPLU,100$      ;CLEAR LINE UNIT LOOPBACK.
6041  030514                          2$:
6042  030514                                  CALL    $BASEI          ;BASE IN COMMAND.
6043  030520  000000                  100$:           .WORD   0       ;MAINTENANCE BITS (L. U. LOOPBACK?)
6044  030522  002640                          .WORD   BASE    ;BASE TABLE ADDRESS.
6045  030524  000522                          .WORD   DMR     ;DMR MODE.
6046  030526                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6047  030526  104410                                                          TRAP    C$ESCAPE
6048  030530  000022                                                          .WORD   L10042-.
6049  030532                                  CALL    $LOOP           ;EXTENDED DMR COMMAND TO SET MAINT. BITS
6050                                                                  ;IF NEEDED. THIS WILL ALLOW MODEM LOOPBACK
6051                                                                  ;IF THE USER REQUESTED IT.
6052  030536                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6053  030536  104410                                                          TRAP    C$ESCAPE
6054  030540  000012                                                          .WORD   L10042-.
6055  030542                                  CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
6056                                                                  ;**** MACRO EXPANSION ****
6057  030542  004737  011522                  JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
6058  030546  000000                          .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
6059                                                                  ;****                 ****
6060  030550                            ENDSUB
6061  030550                                                          L10046:
6062  030550  104403                                                          TRAP    C$ESUB
6063
```

```
                                ENDTST
                                                                        L10042:
030552  104401                                                                  TRAP    C$ETST

030554  042110  020130  044502  EMT9:   .ASCIZ  /HDX BIT SET WHEN IN FDX/
030562  020124  042523  020124
030570  044127  047105  044440
030576  020116  042106  000130
030604  042104  046503  020120  EMT10:  .ASCIZ  /DDCMP RUN BIT NOT SET/
030612  052522  020116  044502
030620  020124  047516  020124
030626  042523  000124
030632  042110  020130  044502  EMT11:  .ASCIZ  /HDX BIT NOT SET WHEN IN HDX/
030640  020124  047516  020124
030646  042523  020124  044127
030654  047105  044440  020116
030662  042110  000130
030666  040515  047111  027124  EMT12:  .ASCIZ  /MAINT. MODE BIT NOT SET/
030674  046440  042117  020105
030702  044502  020124  047516
030710  020124  042523  000124
                                        .EVEN
```

```
                        .SBTTL          TEST 7 - MODEM WRITE COMMAND

                        ;*************************************************************************
                        ;*                      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.
                        ;*
                        ;*************************************************************************
030716                  BGNTST
030716                                                          T7::

030716                    BGNSUB
030716                                                          T7.1:
030716  104402                                                          TRAP    C$BSUB
030720                          CLEAR                   ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
030720  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                ****

030724                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030724  104410                                                          TRAP    C$ESCAPE
030726  000232                                                          .WORD   L10047-.
030730                          BASEIN                  ;BASE IN COMMAND.
                                                        ;**** MACRO EXPANSION ****
030730  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
030734  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
030736  002040                  .WORD   BASE            ;BASE TABLE ADDRESS
030740  000522                  .WORD   DMR             ;DMR-11 MODE
                                                        ;****                ****

030742                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030742  104410                                                          TRAP    C$ESCAPE
030744  000214                                                          .WORD   L10047-.

030746  012701  000005          MOV     #5,R1           ;COUNTER
030752  012702  031162          MOV     #MODEM,R2       ;PATTERN TO WRITE INTO MODEM
030756                  10$:
030756  012237  030772          MOV     (R2)+,15$       ;WRITE PATTERN
030762  004737  012062          JSR     PC,$DMRIN       ;ISSUE DMR MODE COMMAND
030766  000005                  .WORD   WMODEM          ;WRITE MODEM COMMNAD
030770  000377                  .WORD   377             ;CLEAR ALL BITS IN BSEL6
030772  000000          15$:    .WORD   0               ;SET THE BITS IN BSEL6 (FROM PATTERN)
030774                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
030774  104410                                                          TRAP    C$ESCAPE
030776  000162                                                          .WORD   L10047-.

031000  052777  000057  151224  BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ  MODEM COMMAND
031006                          WAIT    RDI             ;WAIT FOR RDI TO BE SET.
                                                        ;**** MACRO EXPANSION ****
031006  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
```

```
6147  031012  000000                          .WORD   0       ;FLAG THAT WE'RE WAITING FOR RDI
6148                                          ;****                   ****
6149  031014                        ESCAPE    TST             ;IF ERROR, EXIT TEST.
6150  031014  104410                                                  TRAP    C$ESCAPE
6151  031016  000142                                                  .WORD   L10047-.
6152  031020                  20$:
6153  031020  127737  151214  030772        CMPB    @BSEL6,15$      ;DID THE MICROCODE COPY THE BITS?
6154  031026  001406                        BEQ     25$             ;IF YES CONTINUE
6155  031030  013703  030772                MOV     15$,R3          ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
6156  031034                                ERRDF   22,EMT13,ERRT2  ;WRITE MODEM ERROR
6157  031034  104455                                                  TRAP    C$ERDF
6158  031036  000026                                                  .WORD   22
6159  031040  031226                                                  .WORD   EMT13
6160  031042  031174                                                  .WORD   ERRT2
6161  031044                  25$:
6162  031044                        WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
6163                                          ;**** MACRO EXPANSION ****
6164  031044  004737  010706                JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
6165                                          ;****                   ****
6166  031050                        ESCAPE    TST             ;IF ERROR, EXIT TEST.
6167  031050  104410                                                  TRAP    C$ESCAPE
6168  031052  000106                                                  .WORD   L10047-.
6169  031054  005301                        DEC     R1              ;DECREMENT COUNTER
6170  031056  001337                        BNE     10$             ;CONTINUE UNTIL ALL 5 PATTERNS TRIED.
6171  031060                  30$:
6172
6173  031060                    ENDSUB
6174  031060                                                  L10050:
6175  031060  104403                                                  TRAP    C$ESUB
6176
6177  031062                    BGNSUB
6178  031062                                                  T7.2:
6179  031062  104402                                                  TRAP    C$BSUB
6180
6181  031064                        DMRIN   WMODEM,377,21   ;ATTEMPT TO WRITE MODEM HDX AND RTS.
6182                                          ;**** MACRO EXPANSION ****
6183  031064  004737  012062                JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
6184  031070  000005                          .WORD   WMODEM  ;INPUT COMMAND
6185  031072  000377                          .WORD   377     ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
6186  031074  000021                          .WORD   21      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
6187                                          ;****                   ****
6188
6189  031076                        ESCAPE    TST             ;IF ERROR, BR TO END.
6190  031076  104410                                                  TRAP    C$ESCAPE
6191  031100  000060                                                  .WORD   L10047-.
6192  031102  052777  000057  151122        BIS     #RQI!RMODEM,@SEL0 ;SET RQI AND READ MODEM COMMAND.
6193  031110                        WAIT    RDI             ;WAIT FOR RDI TO BE SET
6194                                          ;**** MACRO EXPANSION ****
6195  031110  004737  010276                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6196  031114  000000                          .WORD   0       ;FLAG THAT WE'RE WAITING FOR RDI
6197                                          ;****                   ****
6198  031116                        ESCAPE    TST             ;IF ERROR, EXIT TEST.
6199  031116  104410                                                  TRAP    C$ESCAPE
6200  031120  000040                                                  .WORD   L10047-.
6201
6202  031122  122777  000020  151110        CMPB    #20,@BSEL6      ;IS ONLY HDX SET?
```

```
                                        BEQ     10$             ;IF YES - OK
                                        MOV     #21,R3          ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
                                        ERRDF   22,EMT13,ERRT2
                                                                                        TRAP    C$ERDF
                                                                                        .WORD   22
                                                                                        .WORD   EMT13
                                                                                        .WORD   ERRT2
                                10$:
                                        WAIT    RQI             ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
                                                                ;**** MACRO EXPANSION ****
                                        JSR     PC, $CLRQI      ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
                                                                ;****                   ****
                                        SHUTDN
                                                                ;**** MACRO EXPANSION ****
                                        JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                                                ;****                   ****

                                  ENDSUB
                                                                                L10051:
                                                                                        TRAP    C$ESUB

                                ENDTST
                                                                                L10047:
                                                                                        TRAP    C$ETST

                        000000  000376  000001  MODEM:  .WORD   0,376,1,252,357 ;PATTERN TO WRITE INTO MODEM
                        000252  000357

                                BGNMSG  ERRT2
                                                                                ERRT2::
                                        PRINTB  #FMT19,R3,<B,@BSEL6>
                        005046
                        157716  151036                                                  CLR     -(SP)
                        010346                                                          BISB    @BSEL6,(SP)
                        012746  031252                                                  MOV     R3,-(SP)
                        012746  000003                                                  MOV     #FMT19,-(SP)
                        010600                                                          MOV     #3,-(SP)
                        104414                                                          MOV     SP,R0
                        062706  000010                                                  TRAP    C$PNTB
                                                                                        ADD     #10,SP
                                ENDMSG
                                                                                L10052:
                        104423                                                          TRAP    C$MSG


                051127  052111  020105  EMT13:  .ASCIZ  /WRITE MODEM ERROR /
                047515  042504  020115
                051105  047522  020122
                   000
                031252                  .EVEN

                040445  051127  052117  FMT19:  .ASCIZ  /%AWROTE IN BSEL6: %03%A  MODEM FORMAT IN BSEL6: %03%N/
                020105  047111  041040
                042523  033114  020072
                047445  022463  020101
                046440  042117  046505
                043040  051117  040515
```

```
6259  031316  020124  047111  041040
6260  031324  042523  033114  020072
6261  031332  047445  022463  000116
6262                                  .EVEN
6263
6264
6265
```

```
                        .SBTTL          TEST 8 - NO BUFFER ERROR

                        ;*****************************************************************
                        ;*              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.
                        ;*****************************************************************
031340                  BGNTST
                                                                        T8::
031340                    BGNSUB
                                                                        T8.1:
031340  104402                                                                TRAP    C$BSUB
031342                          CLEAR                   ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
031342  004737  011070            JSR     PC, $MSCLR    ;ISSUE A DMR MASTER CLEAR
                                                        ;****                 ****

031346                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031346  104410                                                        TRAP    C$ESCAPE
031350  000416                                                        .WORD   L10053-.
031352                          BASEIN                  ;MACRO FOR BASE IN COMMAND
                                                        ;**** MACRO EXPANSION ****
031352  004737  011266            JSR     PC, $BASEI    ;CALL BASE IN ROUTINE WITH DEFAULTS
031356  004000                            .WORD   LPLU    ;SET LINE UNIT LOOP
031360  002640                            .WORD   BASE    ;BASE TABLE ADDRESS
031362  000522                            .WORD   DMR     ;DMR-11 MODE
                                                        ;****                 ****

031364                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031364  104410                                                        TRAP    C$ESCAPE
031366  000400                                                        .WORD   L10053-.
031370                          CNTRIN  MAINT           ;MACRO FOR CONTROL IN (FULL DUPLEX AND MAINT)
                                                        ;**** MACRO EXPANSION ****
031370  004737  011522            JSR     PC, $CNTIN    ;CALL CONTROL IN ROUTINE
031374  000400                            .WORD   MAINT   ;SEL6 - (DUPLEX, MODE)
                                                        ;****                 ****

031376                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031376  104410                                                        TRAP    C$ESCAPE
031400  000366                                                        .WORD   L10053-.

                                                        ;SET THRESHOLDS:
                                                        ;NAKS RCVD = 377
                                                        ;NAKS SENT = 377
                                                        ;REP SENT = 377
                                                        ;NO BUFFER = 3
031402                          DMRIN   THRESH,177777,1777
                                                        ;**** MACRO EXPANSION ****
031402  004737  012062            JSR     PC, $DMRIN    ;CALL DMR MODE INPUT ROUTINE
031406  000013                            .WORD   THRESH  ;INPUT COMMAND
```

```
6322  031410  177777                          .WORD   177777  ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
6323  031412  001777                          .WORD   1777    ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
6324                                          ;****                   ****
6325
6326  031414                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6327  031414  104410                                                  TRAP    C$ESCAPE
6328  031416  000350                                                  .WORD   L10053-.
6329  031420  012700  000003          1$:    MOV     #3,R0           ;SET UP A COUNTER
6330  031424
6331  031424                          BACCIT                  ;BA/CC IN COMMAND FOR TRANSMIT
6332                                          ;**** MACRO EXPANSION ****
6333  031424  004737  012272                  JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
6334  031430  000040                          .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
6335  031432  002522                          .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
6336  031434  000044                          .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
6337                                          ;****                   ****
6338
6339  031436                          WAIT    RDO             ;WAIT FOR RDO TO BE SET
6340                                          ;**** MACRO EXPANSION ****
6341  031436  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6342  031442  000001                          .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
6343                                          ;****                   ****
6344  031444                          ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
6345  031444  104410                                                  TRAP    C$ESCAPE
6346  031446  000320                                                  .WORD   L10053-.
6347  031450  005300                          DEC     R0              ;DEC COUNTER
6348  031452  001404                          BEQ     10$             ;TRANSMIT FOR 3 TIMES.
6349  031454  042777  000207  150552          BIC     #RDO!CMD,@SEL2  ;CLEAR BACC OUT TRANSMIT.
6350  031462  000760                          BR      1$              ;TRANSMIT AGAIN
6351  031464                          10$:
6352  031464  032777  000001  150542          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
6353  031472  001005                          BNE     20$             ;IF YES, PROCEED.
6354  031474                          ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
6355  031474  104455                                                  TRAP    C$ERDF
6356  031476  000010                                                  .WORD   8
6357  031500  017774                                                  .WORD   EMG8
6358  031502  015124                                                  .WORD   ERRG2
6359  031504  000410                          BR      30$             ;EXIT
6360  031506                          20$:
6361  031506  032777  000004  150524          BIT     #NOBFR,@SEL6    ;IS THE NO BUFFER FLAG SET?
6362  031514  001004                          BNE     30$             ;IF YES - OK, PROCEED.
6363  031516                          ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
6364  031516  104455                                                  TRAP    C$ERDF
6365  031520  000011                                                  .WORD   9
6366  031522  020040                                                  .WORD   EMG9
6367  031524  015124                                                  .WORD   ERRG2
6368                                          ;(EITHER CONTROL OUT OR NOBUF/NAKS)
6369  031526                          30$:
6370  031526  042777  000207  150500          BIC     #RDO!CMD,@SEL2  ;CLEAR CONTROL OUT
6371  031534                          WAIT    RDO             ;EXPECT ANOTHER BACC OUT.
6372                                          ;**** MACRO EXPANSION ****
6373  031534  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6374  031540  000001                          .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
6375                                          ;****                   ****
6376  031542                          ESCAPE  TST             ;IF ERROR, BR TO END.
6377  031542  104410                                                  TRAP    C$ESCAPE
```

```
                                                                                .WORD   L10053-.
031544  000222
031546  042777  000207  150460          BIC     #RDO!CMD,@SEL2  ;CLEAR BACC OUT.
031554                                  SHUTDN                  ;HALT DMR
                                                                ;**** MACRO EXPANSION ****
031554  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                                                ;****                   ****
031560                          50$:
031560                            ENDSUB
031560                                                                  L10054:
031560  104403                                                                TRAP    C$ESUB

031562                          BGNSUB
031562                                                                  T8.2:
031562  104402                                                                TRAP    C$BSUB
031564                                  CLEAR                   ;MACRO FOR MASTER CLEAR
                                                                ;**** MACRO EXPANSION ****
031564  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                   ****

031570                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031570  104410                                                                TRAP    C$ESCAPE
031572  000174                                                                .WORD   L10053-.
031574                                  BASEIN                  ;MACRO FOR BASE IN COMMAND
                                                                ;**** MACRO EXPANSION ****
031574  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
031600  004000                          .WORD   LPLU            ;SET LINE UNIT LOOP
031602  002640                          .WORD   BASE            ;BASE TABLE ADDRESS
031604  000522                          .WORD   DMR             ;DMR-11 MODE
                                                                ;****                   ****

031606                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031606  104410                                                                TRAP    C$ESCAPE
031610  000156                                                                .WORD   L10053-.
031612                                  CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                                ;**** MACRO EXPANSION ****
031612  004737  011522                  JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
031616  000000                          .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
                                                                ;****                   ****

031620                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
031620  104410                                                                TRAP    C$ESCAPE
031622  000144                                                                .WORD   L10053-.

                                                                ;SET THRESHOLDS:
                                                                ;NAKS RCVD = 3
                                                                ;NAKS SENT = 3
                                                                ;REP SENT = 377
                                                                ;NO BUFFER = 7
031624                                  DMRIN   THRESH,1403,3777
                                                                ;**** MACRO EXPANSION ****
031624  004737  012062                  JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
031630  000013                          .WORD   THRESH          ;INPUT COMMAND
031632  001403                          .WORD   1403            ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
031634  003777                          .WORD   3777            ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
                                                                ;****                   ****
```

```
6434  031636                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6435  031636  104410                                                                  TRAP    C$ESCAPE
6436  031640  000126                                                                  .WORD   L10053-.
6437  031642                                  BACCIT                  ;BA/CC IN COMMAND FOR TRANSMIT
6438                                                                  ;**** MACRO EXPANSION ****
6439  031642  004737  012272                  JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
6440  031646  000040                                  .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
6441  031650  002522                                  .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
6442  031652  000044                                  .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
6443                                                                  ;****                   ****
6444  031654                          10$:
6445  031654                                  WAIT    RDO             ;WAIT FOR RDO TO BE SET
6446                                                                  ;**** MACRO EXPANSION ****
6447  031654  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6448  031660  000001                                  .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
6449                                                                  ;****                   ****
6450  031662                                  ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
6451  031662  104410                                                                  TRAP    C$ESCAPE
6452  031664  000102                                                                  .WORD   L10053-.
6453  031666  032777  000001  150340          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
6454  031674  001005                          BNE     20$             ;IF YES, PROCEED.
6455  031676                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT NOT RECEIVED.
6456  031676  104455                                                                  TRAP    C$ERDF
6457  031700  000010                                                                  .WORD   8
6458  031702  017774                                                                  .WORD   EMG8
6459  031704  015124                                                                  .WORD   ERRG2
6460  031706  000410                          BR      30$             ;EXIT
6461  031710                          20$:
6462  031710  032777  000004  150322          BIT     #NOBFR,@SEL6    ;IS THE NO BUFFER FLAG SET?
6463  031716  001004                          BNE     30$             ;IF YES - OK, PROCEED.
6464  031720                                  ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
6465  031720  104455                                                                  TRAP    C$ERDF
6466  031722  000011                                                                  .WORD   9
6467  031724  020040                                                                  .WORD   EMG9
6468  031726  015124                                                                  .WORD   ERRG2
6469                                                                  ;(EITHER CONTROL OUT OR NOBUF/NAKS)
6470  031730                          30$:
6471  031730                                  SHUTDN
6472                                                                  ;**** MACRO EXPANSION ****
6473  031730  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
6474                                                                  ;****                   ****
6475  031734  123727  002643  000003          CMPB    BASE+3,#3       ;NAKS REC. - NO BUFFER = 3?
6476  031742  001004                          BNE     35$             ;IF NOT ERROR
6477  031744  123727  002646  000003          CMPB    BASE+6,#3       ;NAKS SENT - NO BUFFER = 3?
6478  031752  001404                          BEQ     40$             ;IF OK - SKIP.
6479  031754                          35$:
6480  031754                                  ERRDF   23,EMT20,ERRT4
6481  031754  104455                                                                  TRAP    C$ERDF
6482  031756  000027                                                                  .WORD   23
6483  031760  032026                                                                  .WORD   EMT20
6484  031762  031770                                                                  .WORD   ERRT4
6485
6486  031764                          40$:
6487  031764                            ENDSUB
6488  031764                                                                  L10055:
6489  031764  104403                                                                  TRAP    C$ESUB
```

```
 6490  031766                          ENDTST
 6491  031766                                                          L10053:
 6492  031766  104401                                                          TRAP    C$ETST
 6493
 6494
 6495  031770                          BGNMSG  ERRT4
 6496  031770                                                          ERRT4::
 6497  031770                                  PRINTB  #FMG7,<B,BASE+3>,<B,BASE+6>
 6498  031770  005046                                                          CLR     -(SP)
 6499  031772  153716  002646                                                  BISB    BASE+6,(SP)
 6500  031776  005046                                                          CLR     -(SP)
 6501  032000  153716  002643                                                  BISB    BASE+3,(SP)
 6502  032004  012746  016522                                                  MOV     #FMG7,-(SP)
 6503  032010  012746  000003                                                  MOV     #3,-(SP)
 6504  032014  010600                                                          MOV     SP,R0
 6505  032016  104414                                                          TRAP    C$PNTB
 6506  032020  062706  000010                                                  ADD     #10,SP
 6507  032024                          ENDMSG
 6508  032024                                                          L10056:
 6509  032024  104423                                                          TRAP    C$MSG
 6510
 6511  032026  040516  051513  042440  EMT20:  .ASCIZ  /NAKS ERROR/
 6512  032034  051122  051117     000
 6513          032042                  .EVEN
 6514
```

```
                                .SBTTL          TEST 9 - NON-EXISTENT MEMORY ERROR

                                ;*************************************************************************
                                ;*              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
                                ;*
                                ;*************************************************************************
032042                          BGNTST
032042                                                                  T9::
032042                            BGNSUB
032042                                                                  T9.1:
032042  104402                                                                  TRAP    C$BSUB
032044                                  CLEAR                   ;MASTER CLEAR MACRO
                                                                ;**** MACRO EXPANSION ****
032044  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                 ****

032050                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
032050  104410                                                                  TRAP    C$ESCAPE
032052  000500                                                                  .WORD   L10057-.
032054                                  BASEIN                  ;BASE IN COMMAND - DMR MODE
                                                                ;**** MACRO EXPANSION ****
032054  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
032060  004000                          .WORD   LPLU            ;SET LINE UNIT LOOP
032062  002640                          .WORD   BASE            ;BASE TABLE ADDRESS
032064  000522                          .WORD   DMR             ;DMR-11 MODE
                                                                ;****                 ****

032066                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
032066  104410                                                                  TRAP    C$ESCAPE
032070  000462                                                                  .WORD   L10057-.
032072                                  SHUTDN                  ;HALT
                                                                ;**** MACRO EXPANSION ****
032072  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
                                                                ;****                 ****
032076                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
032076  104410                                                                  TRAP    C$ESCAPE
032100  000452                                                                  .WORD   L10057-.
032102  012737  000001  002366          MOV     #CNTRL,ERROR    ;THIS FLAG WILL INHIBIT CONTROL OUT
                                                                ;ERROR REPORTING - BECAUSE WE EXPECT ONE.

                                                                ;BASE IN RESUME COMMAND WITH NXM BASE TABLE.
032110                                  BASEIN  0,160000,BIT15!BIT14!RES!DMR
                                                                ;**** MACRO EXPANSION ****
032110  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE
032114  000000                          .WORD   0               ;MAINTENANCE MODE BITS TO SET IN BSEL1
032116  160000                          .WORD   160000          ;BASE TABLE ADDRESS
032120  150522                          .WORD   BIT15!BIT14!RES!DMR     ;MODE
                                                                ;****                 ****

032122                                  WAIT    RDO             ;WAIT FOR RDO TO BE SET
```

```
6571
6572  032122  004737  010276          JSR     PC, $WAIT       ;**** MACRO EXPANSION ****
6573  032126  000001                  .WORD   1               ;CALL WAIT ROUTINE
6574                                                          ;FLAG THAT WE'RE WAITING FOR RDO
6575  032130  032777  000001  150076  BIT     #CNTRL,@SEL2    ;****                    ****
6576  032136  001005                  BNE     10$             ;IS THERE A CONTROL OUT REPORTED ?
6577  032140                          ERRDF   8,EMG8,ERRG2    ;IF YES, PROCEED.
6578  032140  104455                                                          TRAP    C$ERDF
6579  032142  000010                                                          .WORD   8
6580  032144  017774                                                          .WORD   EMG8
6581  032146  015124                                                          .WORD   ERRG2
6582  032150  000410                  BR      20$             ;EXPECTED CONTROL OUT
6583  032152                  10$:
6584  032152  032777  000400  150060  BIT     #NXM,@SEL6      ;EXIT
6585  032160  001004                  BNE     20$             ;IS THE NXM FLAG SET?
6586  032162                          ERRDF   9,EMG9,ERRG2    ;IF YES - ERROR REPORTED CORRECTLY
6587  032162  104455                                                          TRAP    C$ERDF
6588  032164  000011                                                          .WORD   9
6589  032166  020040                                                          .WORD   EMG9
6590  032170  015124                                                          .WORD   ERRG2
6591  032172                  20$:
6592  032172  042777  000207  150034  BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
6593  032200  005037  002366          CLR     ERROR           ;ALLOW ERROR REPORTING
6594  032204                  ENDSUB
6595  032204                                                                  L10060:
6596  032204  104403                                                          TRAP    C$ESUB
6597
6598  032206                  BGNSUB
6599  032206                                                                  T9.2:
6600  032206  104402                                                          TRAP    C$BSUB
6601  032210                  CLEAR                           ;MACRO FOR MASTER CLEAR
6602                                                          ;**** MACRO EXPANSION ****
6603  032210  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
6604                                                          ;****                ****
6605
6606  032214                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6607  032214  104410                                                          TRAP    C$ESCAPE
6608  032216  000334                                                          .WORD   L10057-.
6609  032220                          BASEIN                  ;MACRO FOR BASE IN COMMAND
6610                                                          ;**** MACRO EXPANSION ****
6611  032220  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
6612  032224  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
6613  032226  002640                  .WORD   BASE            ;BASE TABLE ADDRESS
6614  032230  000522                  .WORD   DMR             ;DMR-11 MODE
6615                                                          ;****                ****
6616
6617  032232                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6618  032232  104410                                                          TRAP    C$ESCAPE
6619  032234  000316                                                          .WORD   L10057-.
6620  032236                          CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
6621                                                          ;**** MACRO EXPANSION ****
6622  032236  004737  011522          JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
6623  032242  000000                  .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
6624                                                          ;****                ****
6625
6626  032244                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
```

```
                                                                                    TRAP    C$ESCAPE
                                                                                    .WORD   L10057-.
                        MOV     #CNTRL,ERROR    ;INHIBIT CONTROL OUT ERROR REPORTING AGAIN.

                                                ;BA/CC IN REC. COMMAND WITH NXM
                                                ;ADDR = 760000 AND A CHARACTER COUNT = 3.
032256                  BACCIR  160000,BIT15!BIT14!RCOUNT
                                                ;**** MACRO EXPANSION ****
032256 004737 012272    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
032262 000044                   .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
032264 160000                   .WORD   160000  ;BUFFER ADDRESS BITS 0-15
032266 140044                   .WORD   BIT15!BIT14!RCOUNT      ;BA BITS 16/17 AND CHAR. COUNT
                                                ;****                   ****

032270                  BACCIT                  ;BA/CC IN XMIT
                                                ;**** MACRO EXPANSION ****
032270 004737 012272    JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
032274 000040                   .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
032276 002522                   .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
032300 000044                   .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
                                                ;****                   ****

032302                  WAIT    RDO             ;WAIT FOR RDO
                                                ;**** MACRO EXPANSION ****
032302 004737 010276    JSR     PC, $WAIT       ;CALL WAIT ROUTINE
032306 000001                   .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
                                                ;****                   ****
032310 032777 000001 147716     BIT     #CNTRL,@SEL2    ;IS THERE A CONTROL OUT REPORTED ?
032316 001005                   BNE     10$             ;IF YES, PROCEED.
032320                          ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
                                                                                    TRAP    C$ERDF
                                                                                    .WORD   8
                                                                                    .WORD   EMG8
                                                                                    .WORD   ERRG2
032330 000410                   BR      20$             ;EXIT
032332                  10$:
032332 032777 000400 147700     BIT     #NXM,@SEL6      ;IS THE NXM FLAG SET?
032340 001004                   BNE     20$             ;IF YES - ERROR REPORTED CORRECTLY
032342                          ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
                                                                                    TRAP    C$ERDF
                                                                                    .WORD   9
                                                                                    .WORD   EMG9
                                                                                    .WORD   ERRG2
032352                  20$:
032352 042777 000207 147654     BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
032360 005037 002366            CLR     ERROR           ;ENABLE ERROR REPORTING
032364                  ENDSUB
032364                                                                      L10061:
032364 104403                                                               TRAP    C$ESUB

032366                  BGNSUB
032366                                                                      T9.3:
032366 104402                                                               TRAP    C$BSUB
032370                          CLEAR                   ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
```

```
6683  032370  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
6684                                                          ;****                   ****
6685
6686  032374                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6687  032374  104410                                                          TRAP    C$ESCAPE
6688  032376  000154                                                          .WORD   L10057-.
6689  032400                          BASEIN                  ;MACRO FOR BASE IN COMMAND
6690                                                          ;**** MACRO EXPANSION ****
6691  032400  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
6692  032404  004000                          .WORD   LPLU    ;SET LINE UNIT LOOP
6693  032406  002640                          .WORD   BASE    ;BASE TABLE ADDRESS
6694  032410  000522                          .WORD   DMR     ;DMR-11 MODE
6695                                                          ;****                   ****
6696
6697  032412                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6698  032412  104410                                                          TRAP    C$ESCAPE
6699  032414  000136                                                          .WORD   L10057-.
6700  032416                          CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
6701                                                          ;**** MACRO EXPANSION ****
6702  032416  004737  011522          JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
6703  032422  000000                          .WORD   0       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
6704                                                          ;****                   ****
6705
6706  032424                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6707  032424  104410                                                          TRAP    C$ESCAPE
6708  032426  000124                                                          .WORD   L10057-.
6709  032430                          BACCIR                  ;BA/CC IN RCV
6710                                                          ;**** MACRO EXPANSION ****
6711  032430  004737  012272          JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
6712  032434  000044                          .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
6713  032436  002572                          .WORD   RBUF    ;RECEIVE BUFFER
6714  032440  000044                          .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
6715                                                          ;****                   ****
6716
6717  032442                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
6718  032442  104410                                                          TRAP    C$ESCAPE
6719  032444  000106                                                          .WORD   L10057-.
6720  032446  012737  000001  002366  MOV     #CNTRL,ERROR    ;INHIBIT CONTROL OUT ERROR REPORTING AGAIN.
6721
6722                                                          ;BA/CC IN XMIT COMMAND WITH NXM BUFFER
6723                                                          ;ADDRESS (760000) AND A CHAR. COUNT = 1
6724  032454                          BACCIT  160000,BIT15!BIT14!1
6725                                                          ;**** MACRO EXPANSION ****
6726  032454  004737  012272          JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
6727  032460  000040                          .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
6728  032462  160000                          .WORD   160000  ;BUFFER ADDRESS BITS 0-15
6729  032464  140001                          .WORD   BIT15!BIT14!1   ;BA BITS 16 & 17 AND CHAR. COUNT
6730                                                          ;****                   ****
6731
6732  032466                          WAIT    RDO             ;WAIT FOR RDO TO BE SET.
6733                                                          ;**** MACRO EXPANSION ****
6734  032466  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6735  032472  000001                          .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
6736                                                          ;****                   ****
6737  032474  032777  000001  147532  BIT     #CNTRL,@SEL2    ;IS THERE A CONTROL OUT REPORTED ?
6738  032502  001005                  BNE     10$             ;IF YES, PROCEED.
```

```
032504                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
032504  104455                                                                  TRAP    C$ERDF
032506  000010                                                                  .WORD   8
032510  017774                                                                  .WORD   EMG8
032512  015124                                                                  .WORD   ERRG2
032514  000410                          BR      20$             ;EXIT
032516                          10$:
032516  032777  000400  147514          BIT     #NXM,@SEL6      ;IS THE NXM FLAG SET?
032524  001004                          BNE     20$             ;IF YES - ERROR REPORTED CORRECTLY
032526                                  ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
032526  104455                                                                  TRAP    C$ERDF
032530  000011                                                                  .WORD   9
032532  020040                                                                  .WORD   EMG9
032534  015124                                                                  .WORD   ERRG2
032536                          20$:
032536  042777  000207  147470          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
032544  005037  002366                  CLR     ERROR           ;DON'T INHIBIT CONTROL OUT ERRORS
032550                            ENDSUB
032550                                                                  L10062:
032550  104403                                                                  TRAP    C$ESUB

032552                          ENDTST
032552                                                                  L10057:
032552  104401                                                                  TRAP    C$ETST
```

```
                                .SBTTL          TEST 10 - TIME OUT ERROR

                                ;*****************************************************************************
                                ;*              TEST  10 - DMR-11
                                ;* TIME OUT - FORCE A TIMEOUT AND VERIFY THAT THE ERROR IS REPORTED
                                ;* THIS TEST WILL ALSO USE AN APPROXIMATE TIMER TO DETERMINE IF THE
                                ;* M8207 1 MSEC PROGRAM TIMER IS OUT OF RANGE.
                                ;*
                                ;*****************************************************************************
032554                          BGNTST
032554                                                                          T10::
032554                                  CLEAR                   ;MACRO FOR MASTER CLEAR
                                                                ;**** MACRO EXPANSION ****
032554  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                   ****

032560                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
032560  104410                                                                  TRAP    C$ESCAPE
032562  000214                                                                  .WORD   L10063-.
032564                                  BASEIN                  ;MACRO FOR BASE IN COMMAND
                                                                ;**** MACRO EXPANSION ****
032564  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
032570  004000                          .WORD   LPLU            ;SET LINE UNIT LOOP
032572  002640                          .WORD   BASE            ;BASE TABLE ADDRESS
032574  000522                          .WORD   DMR             ;DMR-11 MODE
                                                                ;****                   ****

                                                                ;SET THRESHOLD VALUES AS FOLLOWS:
                                                                ;BSEL4 = NAKS RECEIVED (377)
                                                                ;BSEL5 = NAKS TRANSMITTED (377)
                                                                ;BSEL6 = REP/SEL SENT (1)
                                                                ;BSEL7 = NO BUFFFER (377)
032576                          DMRIN   THRESH,177777,177401
                                                                ;**** MACRO EXPANSION ****
032576  004737  012062          JSR     PC, $DMRIN              ;CALL DMR MODE INPUT ROUTINE
032602  000013                  .WORD   THRESH                  ;INPUT COMMAND
032604  177777                  .WORD   177777                  ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
032606  177401                  .WORD   177401                  ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
                                                                ;****                   ****

032610                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END
032610  104410                                                                  TRAP    C$ESCAPE
032612  000164                                                                  .WORD   L10063-.
032614                          DMRIN   TIMER,0,10              ;SET REP/SEL TIMER
                                                                ;**** MACRO EXPANSION ****
032614  004737  012062          JSR     PC, $DMRIN              ;CALL DMR MODE INPUT ROUTINE
032620  000012                  .WORD   TIMER                   ;INPUT COMMAND
032622  000000                  .WORD   0                       ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
032624  000010                  .WORD   10                      ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
                                                                ;****                   ****

032626                                  ESCAPE  TST             ;IF ERROR, BR TO TEST END.
032626  104410                                                                  TRAP    C$ESCAPE
032630  000146                                                                  .WORD   L10063-.
032632                                  CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                                ;**** MACRO EXPANSION ****
```

```
6825  032632  004737  011522          JSR     PC, $CNTIN      ;CALL CONTRÓL IN ROUTINE WITH DEFAULT
6826  032636  000000                  .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
6827                                  ;****                   ****
6828
6829  032640                  ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
6830  032640  104410                                                  TRAP    C$ESCAPE
6831  032642  000134                                                  .WORD   L10063-.
6832
6833                                  ;BLIND THE RECEIVER BY GOING INTO HDX.
6834  032644                  DMRIN   WMODEM,0,BIT4           ;USE WRITE MODEM COMMAND TO SET HALF DUPLEX.
6835                                  ;**** MACRO EXPANSION ****
6836  032644  004737  012062          JSR     PC, $DMRIN      ;CALL DMR MODE INPUT ROUTINE
6837  032650  000005                  .WORD   WMODEM          ;INPUT COMMAND
6838  032652  000000                  .WORD   0               ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
6839  032654  000020                  .WORD   BIT4            ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
6840                                  ;****                   ****
6841
6842  032656                  BACCIT                          ;BA/CC IN XMIT BUFFER
6843                                  ;**** MACRO EXPANSION ****
6844  032656  004737  012272          JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
6845  032662  000040                  .WORD   RQI!BACCT               ;BA/CC IN TRANSMIT COMMAND
6846  032664  002522                  .WORD   TBUF            ;TRANSMIT BUFFER ADDRESS
6847  032666  000044                  .WORD   TCOUNT          ;TRANSMIT CHARACTER COUNT
6848                                  ;****                   ****
6849
6850  032670                  ESCAPE  TST                     ;IF ERROR, EXIT
6851  032670  104410                                                  TRAP    C$ESCAPE
6852  032672  000104                                                  .WORD   L10063-.
6853  032674                  WAIT    RDO                     ;WAIT FOR THE READY OUT.
6854                                  ;**** MACRO EXPANSION ****
6855  032674  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6856  032700  000001                  .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
6857                                  ;****                   ****
6858  032702                  ESCAPE  TST                     ;IF ERROR, EXIT.
6859  032702  104410                                                  TRAP    C$ESCAPE
6860  032704  000072                                                  .WORD   L10063-.
6861  032706  023727  002416  011610  CMP     COUNT,#5000.    ;CHECK THE SOFTWARE TIMER COUNT.
6862                                  ;THE TIMER VALUE WAS DETERMINED
6863                                  ;EMPIRICALLY ON A 11/04, 11/34, 11/40, 11/70.
6864  032714  003005                  BGT     5$              ;IF OK - PROCEED
6865                                  ;****************************************
6866  032716                  ERRDF   19,EMG19                ;
6867  032716  104455                                                  TRAP    C$ERDF
6868  032720  000023                                                  .WORD   19
6869  032722  020402                                                  .WORD   EMG19
6870  032724  000000                                                  .WORD   0
6871                                  ;1MSEC PROGRAM TIMER - OUT OF RANGE.
6872                                  ;IF THIS ERROR OCCURS, CHECK THE M8207
6873                                  ;MICROPROCESSOR AS FOLLOWS:
6874                                  ;RESET THE DMR, SCOPE E-69, PIN 4 TO VERIFY
6875                                  ;THAT THE 1MSEC TIMER IS OUT OF RANGE.
6876                                  ;****************************************
6877  032726  000423                  BR      25$
6878  032730                  5$:
6879  032730  032777  000001  147276  BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT
6880  032736  001005                  BNE     10$             ;IF YES, PROCEED.
```

```
6881  032740                                ERRDF   8,EMG8,ERRG2    ;EXPECTED A CONTROL OUT.
6882  032740  104455                                                                TRAP    C$ERDF
6883  032742  000010                                                                .WORD   8
6884  032744  017774                                                                .WORD   EMG8
6885  032746  015124                                                                .WORD   ERRG2
6886  032750  000410                BR      20$             ;EXIT
6887  032752                  10$:
6888  032752  032777  000002  147260    BIT     #TOUT,@SEL6     ;WAS THE TIME OUT REPORTED?
6889  032760  001004                    BNE     20$             ;IF YES, EXIT
6890  032762                            ERRDF   9,EMG9,ERRG2    ;UNEXPECTED ERROR.
6891  032762  104455                                                                TRAP    C$ERDF
6892  032764  000011                                                                .WORD   9
6893  032766  020040                                                                .WORD   EMG9
6894  032770  015124                                                                .WORD   ERRG2
6895  032772                  20$:
6896  032772                            SHUTDN
6897                                                    ;**** MACRO EXPANSION ****
6898  032772  004737  012562            JSR     PC, $HALT       ;DMR HALT ROUTINE.
6899                                                    ;****                   ****
6900  032776                  25$:
6901
6902  032776                  ENDTST
6903  032776                                                                L10063:
6904  032776  104401                                                                TRAP    C$ETST
```

```
                        .SBTTL          TEST 11 - MESSAGE TOO LONG ERROR

                        ;*****************************************************************
                        ;*              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.
                        ;*
                        ;*****************************************************************
033000                  BGNTST
033000                                                          T11::
033000                          CLEAR                   ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
033000  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                ****

033004                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
033004  104410                                                  TRAP    C$ESCAPE
033006  000150                                                  .WORD   L10064-.
033010                          BASEIN                  ;MACRO FOR BASE IN COMMAND
                                                        ;**** MACRO EXPANSION ****
033010  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
033014  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
033016  002640                  .WORD   BASE            ;BASE TABLE ADDRESS
033020  000522                  .WORD   DMR             ;DMR-11 MODE
                                                        ;****                ****

033022                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
033022  104410                                                  TRAP    C$ESCAPE
033024  000132                                                  .WORD   L10064-.
033026                          CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                        ;**** MACRO EXPANSION ****
033026  004737  011522          JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
033032  000000                  .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
                                                        ;****                ****

033034                          ESCAPE  TST             ;IF ERROR, BR TO TEST END.
033034  104410                                                  TRAP    C$ESCAPE
033036  000120                                                  .WORD   L10064-.
033040                          BACCIR  RBUF,RCOUNT/2   ;SET UP THE RECEIVE BUFFER WITH 1/2 BUF. SPACE
                                                        ;**** MACRO EXPANSION ****
033040  004737  012272          JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
033044  000044                  .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
033046  002572                  .WORD   RBUF            ;BUFFER ADDRESS BITS 0-15
033050  000022                  .WORD   RCOUNT/2        ;BA BITS 16/17 AND CHAR. COUNT
                                                        ;****                ****

033052  012737  000001  002366  MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
                                                        ;REPORTING BECAUSE WE ARE INTENTIONALLY
                                                        ;CAUSING ONE IN THIS TEST.
033060                          BACCIT                  ;BA/CC IN XMIT COMMAND
                                                        ;**** MACRO EXPANSION ****
033060  004737  012272          JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
033064  000040                  .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
033066  002522                  .WORD   TBUF            ;TRANSMIT BUFFER ADDRESS
033070  000044                  .WORD   TCOUNT          ;TRANSMIT CHARACTER COUNT
                                                        ;****                ****
```

```
6961  033072                          10$:
6962  033072                                  WAIT    RDO             ;WAIT FOR RDO TO BE SET
6963                                                                  ;**** MACRO EXPANSION ****
6964  033072  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
6965  033076  000001                          .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
6966                                                                  ;****                 ****
6967  033100                                  ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
6968  033100  104410                                                          TRAP    C$ESCAPE
6969  033102  000054                                                          .WORD   L10064-.
6970  033104  032777  000001  147122          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
6971  033112  001005                          BNE     20$             ;IF YES, PROCEED
6972  033114                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT.
6973  033114  104455                                                          TRAP    C$ERDF
6974  033116  000010                                                          .WORD   8
6975  033120  017774                                                          .WORD   EMG8
6976  033122  015124                                                          .WORD   ERRG2
6977  033124  000410                          BR      40$             ;EXIT
6978  033126                          20$:
6979  033126  032777  000020  147104          BIT     #TOLONG,@SEL6   ;IS THE TOO LONG BIT SET?
6980  033134  001004                          BNE     40$             ;IF YES, TEST OK - FINISH UP.
6981  033136                          30$:
6982  033136                                  ERRDF   9,EMG9,ERRG2    ;WE'RE NOT GETTING EXPECTED RESULT
6983  033136  104455                                                          TRAP    C$ERDF
6984  033140  000011                                                          .WORD   9
6985  033142  020040                                                          .WORD   EMG9
6986  033144  015124                                                          .WORD   ERRG2
6987
6988  033146                          40$:
6989  033146  005037  002366                  CLR     ERROR           ;RESTORE ERROR FLAG TO NORMAL STATE.
6990  033152                                  SHUTDN                  ;HALT THE DMR.
6991                                                                  ;**** MACRO EXPANSION ****
6992  033152  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
6993                                                                  ;****                 ****
6994
6995
6996
6997  033156                          ENDTST
6998  033156                                                  L10064:
6999  033156  104401                                                  TRAP    C$ETST
7000
7001
```

```
                                .SBTTL          TEST 12 - PROCEDURE ERRORS

                                ;*****************************************************************
                                ;*              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
                                ;*
                                ;*****************************************************************
033160                          BGNTST
033160                                                                  T12::
033160                            BGNSUB
033160                                                                  T12.1:
033160  104402                                                                  TRAP    C$BSUB

033162                                  CLEAR                   ;MASTER CLEAR MACRO
                                                                ;**** MACRO EXPANSION ****
033162  004737  011070                  JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                 ****

033166                                  BASEIN
                                                                ;**** MACRO EXPANSION ****
033166  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
033172  004000                                  .WORD   LPLU    ;SET LINE UNIT LOOP
033174  002640                                  .WORD   BASE    ;BASE TABLE ADDRESS
033176  000522                                  .WORD   DMR     ;DMR-11 MODE
                                                                ;****                 ****

033200  012737  000001  002366          MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
                                                                ;REPORTING BECAUSE WE ARE INTENTIONALLY
                                                                ;CAUSING ONE IN THIS TEST.
033206                          BASEIN                          ;SECOND BASE IN
                                                                ;**** MACRO EXPANSION ****
033206  004737  011266                  JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
033212  004000                                  .WORD   LPLU    ;SET LINE UNIT LOOP
033214  002640                                  .WORD   BASE    ;BASE TABLE ADDRESS
033216  000522                                  .WORD   DMR     ;DMR-11 MODE
                                                                ;****                 ****

033220                          WAIT    RDO                     ;WAIT FOR RDO TO BE SET
                                                                ;**** MACRO EXPANSION ****
033220  004737  010276                  JSR     PC, $WAIT       ;CALL WAIT ROUTINE
033224  000001                                  .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
                                                                ;****                 ****
033226                          ESCAPE  TST                     ;IF RDO NOT SET, BR TO TEST END.
033226  104410                                                                  TRAP    C$ESCAPE
033230  000632                                                                  .WORD   L10065-.
033232  032777  000001  146774          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
033240  001005                          BNE     10$             ;IF YES, PROCEED.
033242                                  ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
033242  104455                                                                  TRAP    C$ERDF
```

```
7058  033244  00001C                                                          .WORD   8
7059  033246  017774                                                          .WORD   EMG8
7060  033250  015124                                                          .WORD   ERRG2
7061  033252  000410                        BR      15$             ;EXIT
7062  033254                         10$:
7063  033254  032777  001000  146756        BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
7064  033262  001004                        BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
7065  033264                                ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
7066  033264  104455                                                          TRAP    C$ERDF
7067  033266  000011                                                          .WORD   9
7068  033270  020040                                                          .WORD   EMG9
7069  033272  015124                                                          .WORD   ERRG2
7070  033274                         15$:
7071  033274  042777  000207  146732        BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS
7072  033302  005037  002366                CLR     ERROR           ;RESTORE FLAG
7073  033306                   ENDSUB
7074  033306                                                                L10066:
7075  033306  104403                                                          TRAP    C$ESUB
7076
7077  033310                   BGNSUB
7078  033310                                                                T12.2:
7079  033310  104402                                                          TRAP    C$BSUB
7080
7081  033312                         CLEAR                   ;MASTER CLEAR MACRO
7082                                                         ;**** MACRO EXPANSION ****
7083  033312  004737  011070                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
7084                                                         ;****                   ****
7085
7086  033316  012737  000001  002366        MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
7087                                                         ;REPORTING BECAUSE WE ARE INTENTIONALLY
7088                                                         ;CAUSING ONE IN THIS TEST.
7089  033324  005037  002260                CLR     DMRFLG          ;CLEAR FLAG THAT IS SET IN BASEIN IN ORDER
7090                                                         ;TO FLAG THAT A CONTROL OUT-DMR RUN MODE
7091                                                         ;COMMAND IS EXPECTED (THIS FLAG WAS SET IN
7092                                                         ;THE PREVIOUS SUBTEST BASEIN)
7093  033330                         CNTRIN                  ;CONTROL IN
7094                                                         ;**** MACRO EXPANSION ****
7095  033330  004737  011522                JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
7096  033334  000000                        .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
7097                                                         ;****                   ****
7098
7099  033336                         WAIT    RDO             ;WAIT FOR RDO TO BE SET
7100                                                         ;**** MACRO EXPANSION ****
7101  033336  004737  010276                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
7102  033342  000001                        .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
7103                                                         ;****                   ****
7104  033344                         ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
7105  033344  104410                                                          TRAP    C$ESCAPE
7106  033346  000514                                                          .WORD   L10065-.
7107  033350  032777  000001  146656        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
7108  033356  001005                        BNE     10$             ;IF YES - PROCEED.
7109  033360                                ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
7110  033360  104455                                                          TRAP    C$ERDF
7111  033362  000010                                                          .WORD   8
7112  033364  017774                                                          .WORD   EMG8
7113  033366  015124                                                          .WORD   ERRG2
```

```
7114  033370  000410                        BR      15$             ;EXIT
7115  033372                          10$:
7116  033372  032777  001000  146640        BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
7117  033400  001004                        BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
7118  033402                                ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
7119  033402  104455                                                        TRAP    C$ERDF
7120  033404  000011                                                        .WORD   9
7121  033406  020040                                                        .WORD   EMG9
7122  033410  015124                                                        .WORD   ERRG2
7123  033412                          15$:
7124  033412  042777  000207  146614        BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
7125  033420  005037  002366                CLR     ERROR           ;RESTORE FLAG
7126  033424                    ENDSUB
7127  033424                                                          L10067:
7128  033424  104403                                                        TRAP    C$ESUB
7129
7130  033426                    BGNSUB
7131  033426                                                          T12.3:
7132  033426  104402                                                        TRAP    C$BSUB
7133
7134  033430                          CLEAR                   ;MASTER CLEAR MACRO
7135                                                          ;**** MACRO EXPANSION ****
7136  033430  004737  011070                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
7137                                                          ;****                   ****
7138
7139  033434  012737  000001  002366        MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
7140                                                          ;REPORTING BECAUSE WE ARE INTENTIONALLY
7141                                                          ;CAUSING ONE IN THIS TEST.
7142  033442                          BACCIR                  ;BA/CC IN RCV. COMMAND
7143                                                          ;**** MACRO EXPANSION ****
7144  033442  004737  012272                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
7145  033446  000044                                .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
7146  033450  002572                                .WORD   RBUF    ;RECEIVE BUFFER
7147  033452  000044                                .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
7148                                                          ;****                   ****
7149
7150  033454                          WAIT    RDO             ;WAIT FOR RDO TO BE SET
7151                                                          ;**** MACRO EXPANSION ****
7152  033454  004737  010276                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
7153  033460  000001                                .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
7154                                                          ;****                   ****
7155  033462                          ESCAPE  TST             ;IF RDO NOT SET, BR TO TEST END.
7156  033462  104410                                                        TRAP    C$ESCAPE
7157  033464  000376                                                        .WORD   L10065-.
7158  033466  032777  000001  146540        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
7159  033474  001005                        BNE     10$             ;IF YES - PROCEED.
7160  033476                                ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
7161  033476  104455                                                        TRAP    C$ERDF
7162  033500  000010                                                        .WORD   8
7163  033502  017774                                                        .WORD   EMG8
7164  033504  015124                                                        .WORD   ERRG2
7165  033506  000410                        BR      15$             ;EXIT
7166  033510                          10$:
7167  033510  032777  001000  146522        BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
7168  033516  001004                        BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
7169  033520                                ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
```

```
7170  033520  104455                                                          TRAP    C$ERDF
7171  033522  000011                                                          .WORD   9
7172  033524  020040                                                          .WORD   EMG9
7173  033526  015124                                                          .WORD   ERRG2
7174  033530                        15$:
7175  033530  042777  000207  146476        BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
7176  033536  005037  002366              CLR     ERROR           ;RESTORE FLAG
7177  033542                      ENDSUB
7178  033542                                                              L10070:
7179  033542  104403                                                          TRAP    C$ESUB
7180
7181  033544                      BGNSUB
7182  033544                                                              T12.4:
7183  033544  104402                                                          TRAP    C$BSUB
7184  033546                            CLEAR                   ;MASTER CLEAR
7185                                                            ;**** MACRO EXPANSION ****
7186  033546  004737  011070           JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
7187                                                            ;****                 ****
7188
7189  033552                            ESCAPE  TST             ;IF ERROR, EXIT.
7190  033552  104410                                                          TRAP    C$ESCAPE
7191  033554  000306                                                          .WORD   L10065-.
7192  033556                            BASEIN                  ;BASE IN COMMAND
7193                                                            ;**** MACRO EXPANSION ****
7194  033556  004737  011266           JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
7195  033562  004000                            .WORD   LPLU    ;SET LINE UNIT LOOP
7196  033564  002640                            .WORD   BASE    ;BASE TABLE ADDRESS
7197  033566  000522                            .WORD   DMR     ;DMR-11 MODE
7198                                                            ;****                 ****
7199
7200  033570                            ESCAPE  TST             ;IF ERROR, EXIT.
7201  033570  104410                                                          TRAP    C$ESCAPE
7202  033572  000270                                                          .WORD   L10065-.
7203  033574                            BACCIR                  ;ASSIGN A BA/CC IN RECEIVE BUFFER
7204                                                            ;**** MACRO EXPANSION ****
7205  033574  004737  012272           JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
7206  033600  000044                            .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
7207  033602  002572                            .WORD   RBUF    ;RECEIVE BUFFER
7208  033604  000044                            .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
7209                                                            ;****                 ****
7210
7211  033606                            ESCAPE  TST             ;IF ERROR, EXIT.
7212  033606  104410                                                          TRAP    C$ESCAPE
7213  033610  000252                                                          .WORD   L10065-.
7214  033612  012737  000001  002366    MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT
7215                                                            ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY
7216                                                            ;CAUSING ONE.
7217  033620                            BACCIT  TBUF,0          ;ASSIGN A BA/CC IN XMIT BUFFER LENGTH = 0.
7218                                                            ;**** MACRO EXPANSION ****
7219  033620  004737  012272           JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE
7220  033624  000040                            .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
7221  033626  002522                            .WORD   TBUF    ;BUFFER ADDRESS BITS 0-15
7222  033630  000000                            .WORD   0       ;BA BITS 16 & 17 AND CHAR. COUNT
7223                                                            ;****                 ****
7224
7225  033632                            WAIT    RDO             ;WAIT FOR RDO TO BE SET
```

```
7226
7227  033632  004737  010276          JSR     PC, $WAIT       ;**** MACRO EXPANSION ****
7228  033636  000001                  .WORD   1               ;CALL WAIT ROUTINE
7229                                                          ;FLAG THAT WE'RE WAITING FOR RDO
7230  033640                          ESCAPE  TST             ;****                    ****
7231  033640  104410                                                          ;IF RDO NOT SET, BR TO TEST END.
                                                                        TRAP    C$ESCAPE
7232  033642  000220                                                       .WORD   L10065-.
7233  033644  032777  000001  146362  BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
7234  033652  001005                  BNE     10$             ;IF YES - PROCEED.
7235  033654                          ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
7236  033654  104455                                                        TRAP    C$ERDF
7237  033656  000010                                                       .WORD   8
7238  033660  017774                                                       .WORD   EMG8
7239  033662  015124                                                       .WORD   ERRG2
7240  033664  000410                  BR      15$             ;EXIT
7241  033666                  10$:
7242  033666  032777  001000  146344  BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
7243  033674  001004                  BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
7244  033676                          ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
7245  033676  104455                                                        TRAP    C$ERDF
7246  033700  000011                                                       .WORD   9
7247  033702  020040                                                       .WORD   EMG9
7248  033704  015124                                                       .WORD   ERRG2
7249  033706                  15$:
7250  033706  042777  000207  146320  BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
7251  033714  005037  002366          CLR     ERROR           ;RESTORE FLAG
7252  033720                  ENDSUB
7253  033720                                                                  L10071:
7254  033720  104403                                                        TRAP    C$ESUB
7255
7256  033722                  BGNSUB
7257  033722                                                                  T12.5:
7258  033722  104402                                                        TRAP    C$BSUB
7259  033724                          CLEAR                   ;MASTER CLEAR
7260                                                          ;**** MACRO EXPANSION ****
7261  033724  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
7262                                                          ;****                    ****
7263
7264  033730                          ESCAPE  TST             ;IF ERROR, EXIT.
7265  033730  104410                                                        TRAP    C$ESCAPE
7266  033732  000130                                                       .WORD   L10065-.
7267  033734                          BASEIN                  ;BASE IN COMMAND
7268                                                          ;**** MACRO EXPANSION ****
7269  033734  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
7270  033740  004000                  .WORD   LPLU            ;SET LINE UNIT LOOP
7271  033742  002640                  .WORD   BASE            ;BASE TABLE ADDRESS
7272  033744  000522                  .WORD   DMR             ;DMR-11 MODE
7273                                                          ;****                    ****
7274
7275  033746                          ESCAPE  TST             ;IF ERROR, EXIT.
7276  033746  104410                                                        TRAP    C$ESCAPE
7277  033750  000112                                                       .WORD   L10065-.
7278  033752  012737  000001  002366  MOV     #CNTRL,ERROR    ;THIS FLAG WILL DISABLE ANY CONTROL OUT
7279                                                          ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY
7280                                                          ;CAUSING ONE.
7281  033760                          BACCIR  RBUF,0          ;ASSIGN A BA/CC IN REC. BUFFER LENGTH = 0
```

```
7282
7283  033760  004737  012272          JSR     PC, $BACC       ;**** MACRO EXPANSION ****
7284  033764  000044                  .WORD   RQI!BACCR       ;CALL BA/CC IN ROUTINE
7285  033766  002572                  .WORD   RBUF            ;BA/CC IN RECEIVE COMMAND
7286  033770  000000                  .WORD   0               ;BUFFER ADDRESS BITS 0-15
7287                                                          ;BA BITS 16/17 AND CHAR. COUNT
7288                                                          ;****                  ****
7289  033772                  WAIT    RDO                     ;WAIT FOR RDO TO BE SET
7290                                                          ;**** MACRO EXPANSION ****
7291  033772  004737  010276          JSR     PC, $WAIT       ;CALL WAIT ROUTINE
7292  033776  000001                  .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
7293                                                          ;****                  ****
7294  034000                  ESCAPE  TST                     ;IF RDO NOT SET, BR TO TEST END.
7295  034000  104410                                                          TRAP    C$ESCAPE
7296  034002  000060                                                          .WORD   L10065-.
7297  034004  032777  000001  146222          BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT?
7298  034012  001005                  BNE     10$             ;IF YES - PROCEED.
7299  034014                          ERRDF   8,EMG8,ERRG2    ;EXPECTED CONTROL OUT
7300  034014  104455                                                          TRAP    C$ERDF
7301  034016  000010                                                          .WORD   8
7302  034020  017774                                                          .WORD   EMG8
7303  034022  015124                                                          .WORD   ERRG2
7304  034024  000410                  BR      15$             ;EXIT
7305  034026                  10$:
7306  034026  032777  001000  146204          BIT     #HALTC,@SEL6    ;IS THE HALT - PROCEDURE ERROR BIT SET?
7307  034034  001004                  BNE     15$             ;IF YES - ERROR REPORTED CORRECTLY
7308  034036                          ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
7309  034036  104455                                                          TRAP    C$ERDF
7310  034040  000011                                                          .WORD   9
7311  034042  020040                                                          .WORD   EMG9
7312  034044  015124                                                          .WORD   ERRG2
7313  034046                  15$:
7314  034046  042777  000207  146160          BIC     #RDO!CMD,@SEL2  ;CLEAR RDO AND THE COMMAND BITS.
7315  034054  005037  002366                  CLR     ERROR           ;RESTORE FLAG
7316  034060                    ENDSUB
7317  034060                                                                  L10072:
7318  034060  104403                                                                  TRAP    C$ESUB
7319
7320  034062                  ENDTST
7321  034062                                                                  L10065:
7322  034062  104401                                                                  TRAP    C$ETST
```

```
                                .SBTTL          TEST 13 - DATA TEST

                                ;*************************************************************************
                                ;*              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.
                                ;*************************************************************************
034064                          BGNTST
034064                                                                  T13::
034064  013700  000044                MOV     RCOUNT,R0       ;BYTE COUNT FOR RECEIVE BUFFER
034070  062700  000002                ADD     #2,R0           ;2 ADDITIONAL BYTES AT END OF BUFFER ARE
                                                                ;USED FOR DELIMITOR
034074  012701  002572                MOV     #RBUF,R1        ;ADDRESS OF RECEIVE BUFFER
034100                          10$:
034100  105021                        CLRB    (R1)+           ;CLEAR A BYTE IN THE BUFFER
034102  005300                        DEC     R0              ;CONTINUE - UNTIL ENTIRE BUFFER DONE
034104  001375                        BNE     10$

034106  005037  002520                CLR     TFLAG           ;CLEAR TRANSMIT FLAG
034112  005037  002570                CLR     RFLAG           ;CLEAR RECEIVER FLAG
034116                                CLEAR                   ;MACRO FOR MASTER CLEAR
                                                                ;**** MACRO EXPANSION ****
034116  004737  011070                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                                ;****                 ****

034122                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
034122  104410                                                                  TRAP    C$ESCAPE
034124  000466                                                                  .WORD   L10073-.
034126  005737  002254                TST     DMTURN          ;IS INTERNAL LOOPBACK DESIRED?
034132  001004                        BNE     11$             ;IF NOT, CLEAR INTERNAL LOOPBACK.
034134  052737  004000  034156        BIS     #LPLU,100$      ;SET LINE UNIT LOOPBACK.
034142  000403                        BR      12$
034144                          11$:
034144  042737  004000  034156        BIC     #LPLU,100$      ;CLEAR LINE UNIT LOOPBACK.
034152                          12$:
034152                                CALL    $BASEI          ;BASE IN COMMAND.
034156  000000                100$:           .WORD   0       ;MAINTENANCE BITS (LINE UNIT LOOP)
034160  002640                                .WORD   BASE    ;BASE TABLE ADDRESS
034162  000522                                .WORD   DMR     ;DMR MODE
034164                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
034164  104410                                                                  TRAP    C$ESCAPE
034166  000424                                                                  .WORD   L10073-.

034170                                CALL    $LOOP           ;DMR COMMAND TO SET MAINT. BITS
034174                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
034174  104410                                                                  TRAP    C$ESCAPE
034176  000414                                                                  .WORD   L10073-.

034200                                CNTRIN                  ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                                ;**** MACRO EXPANSION ****
034200  004737  011522                JSR     PC, $CNTIN      ;CALL CONTROL IN ROUTINE WITH DEFAULT
034204  000000                        .WORD   0               ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
                                                                ;****                 ****
```

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7379  034206                                ESCAPE  TST             ;IF ERROR, BR TO TEST END.
7380  034206  104410                                                                TRAP    C$ESCAPE
7381  034210  000402                                                                .WORD   L10073-.
7382
7383  034212                                BACCIR                  ;BUFFER ADDRESS/CHARACTER COUNT REC. IN
7384                                                                ;**** MACRO EXPANSION ****
7385  034212  004737  012272                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
7386  034216  000044                        .WORD   RQI!BACCR       ;BA/CC IN RECEIVE COMMAND
7387  034220  002572                        .WORD   RBUF    ;RECEIVE BUFFER
7388  034222  000044                        .WORD   RCOUNT  ;RECEIVE CHARACTER COUNT
7389                                                          ;****                 ****
7390
7391  034224                                ESCAPE  TST             ;IF ERROR (I.E. RDI NOT SET), ESCAPE
7392  034224  104410                                                                TRAP    C$ESCAPE
7393  034226  000364                                                                .WORD   L10073-.
7394
7395  034230                                BACCIT                  ;BUFFER ADDRESS/CHARACTER COUNT XMIT. IN
7396                                                                ;**** MACRO EXPANSION ****
7397  034230  004737  012272                JSR     PC, $BACC       ;CALL BA/CC IN ROUTINE WITH DEFAULTS
7398  034234  000040                        .WORD   RQI!BACCT       ;BA/CC IN TRANSMIT COMMAND
7399  034236  002522                        .WORD   TBUF    ;TRANSMIT BUFFER ADDRESS
7400  034240  000044                        .WORD   TCOUNT  ;TRANSMIT CHARACTER COUNT
7401                                                          ;****                 ****
7402
7403  034242                                ESCAPE  TST             ;IF ERROR (I.E. RDI NOT SET), ESCAPE
7404  034242  104410                                                                TRAP    C$ESCAPE
7405  034244  000346                                                                .WORD   L10073-.
7406
7407  034246                        20$:
7408  034246                                WAIT    RDO             ;WAIT FOR RDO
7409                                                                ;**** MACRO EXPANSION ****
7410  034246  004737  010276                JSR     PC, $WAIT       ;CALL WAIT ROUTINE
7411  034252  000001                        .WORD   1               ;FLAG THAT WE'RE WAITING FOR RDO
7412                                                                ;****                 ****
7413  034254                                BERROR  52$             ;IF ERROR - RDO NOT SET, END TEST
7414  034254  103552                                                                BCS     52$
7415  034256  032777  000001  145750        BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT COMMAND ?
7416  034264  001405                        BEQ     25$             ;IF NOT - PROCEED
7417  034266                                ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT RECEIVED
7418  034266  104455                                                                TRAP    C$ERDF
7419  034270  000011                                                                .WORD   9
7420  034272  020040                                                                .WORD   EMG9
7421  034274  015124                                                                .WORD   ERRG2
7422  034276  000541                        BR      52$
7423  034300                        25$:
7424  034300  032777  000004  145726        BIT     #RCV,@SEL2      ;TRANSMIT OR RECEIVE ?
7425  034306  001035                        BNE     40$             ;BR FOR RECEIVE
7426
7427                                ;CHECK TRANSMIT
7428
7429  034310  005737  002520                TST     TFLAG           ;IS THIS THE FIRST TRANSMIT DONE?
7430  034314  001405                        BEQ     30$             ;YES - OK
7431  034316                                ERRDF   10,EMG10,ERRG2  ;ERROR MULTIPLE TRANSMITS
7432  034316  104455                                                                TRAP    C$ERDF
7433  034320  000012                                                                .WORD   10
7434  034322  020067                                                                .WORD   EMG10
```

```
034324  015124                                                                     .WORD   ERRG2
034326  000525                          BR      52$
034330                          30$:
034330  012737  177777  002520          MOV     #-1,TFLAG         ;FLAG THAT TRANSMIT CHECK IS DONE.
034336  022777  002522  145672          CMP     #TBUF,@SEL4       ;TRANSMIT BUFFER ADDRESS CORRECT?
034344  001405                          BEQ     32$               ;YES - PROCEED
034346                                  ERRDF   11,EMG11,ERRG2    ;BUFFER ADDRESS ERROR
034346  104455                                                                     TRAP    C$ERDF
034350  000013                                                                     .WORD   11
034352  020116                                                                     .WORD   EMG11
034354  015124                                                                     .WORD   ERRG2
034356  000511                          BR      52$
034360                          32$:
034360  022777  000044  145652          CMP     #TCOUNT,@SEL6     ;COUNT CORRECT ?
034366  001470                          BEQ     50$               ;YES - PROCEED
034370                                  ERRDF   12,EMG12,ERRG2    ;CHARACTER COUNT ERROR
034370  104455                                                                     TRAP    C$ERDF
034372  000014                                                                     .WORD   12
034374  020141                                                                     .WORD   EMG12
034376  015124                                                                     .WORD   ERRG2
034400  000500                          BR      52$

                                ;CHECK RECEIVE

034402                          40$:
034402  005737  002570                  TST     RFLAG             ;IS THIS THE FIRST RECEIVE DONE ?
034406  001405                          BEQ     41$               ;YES - PROCEED
034410                                  ERRDF   13,EMG13,ERRG2    ;MULTIPLE RECEIVES
034410  104455                                                                     TRAP    C$ERDF
034412  000015                                                                     .WORD   13
034414  020167                                                                     .WORD   EMG13
034416  015124                                                                     .WORD   ERRG2
034420  000470                          BR      52$
034422                          41$:
034422  012737  177777  002570          MOV     #-1,RFLAG         ;FLAG THAT RECEIVE CHECK HAS BEEN DONE.
034430  022777  002572  145600          CMP     #RBUF,@SEL4       ;IS THE RECEIVE BUFFER ADDRESS CORRECT?
034436  001405                          BEQ     43$               ;YES - PROCEED
034440                                  ERRDF   11,EMG11,ERRG2    ;BUFFER ADDRESS ERROR
034440  104455                                                                     TRAP    C$ERDF
034442  000013                                                                     .WORD   11
034444  020116                                                                     .WORD   EMG11
034446  015124                                                                     .WORD   ERRG2
034450  000454                          BR      52$
034452                          43$:
034452  022777  000044  145560          CMP     #RCOUNT,@SEL6     ;IS THE BUFFER COUNT CORRECT?
034460  001405                          BEQ     44$               ;YES - PROCEED
034462                                  ERRDF   12,EMG12,ERRG2    ;CHARACTER COUNT ERROR
034462  104455                                                                     TRAP    C$ERDF
034464  000014                                                                     .WORD   12
034466  020141                                                                     .WORD   EMG12
034470  015124                                                                     .WORD   ERRG2
034472  000443                          BR      52$
034474                          44$:
034474  012700  000044                  MOV     #RCOUNT,R0        ;SET UP FOR DATA CHECK (CHARCATER COUNT)
034500  012701  002522                  MOV     #TBUF,R1          ;GOOD DATA POINTER
034504  012702  002572                  MOV     #RBUF,R2          ;RECEIVE DATA POINTER
```

```
7491  034510                          45$:
7492  034510  122122                        CMPB    (R1)+,(R2)+     ;IS THE DATA THE SAME ?
7493  034512  001011                        BNE     46$             ;IF NOT, BRANCH TO DATA ERROR MESSAGE
7494  034514  005300                        DEC     R0              ;CONTINUE CHECKING UNTIL DONE WITH BUFFER.
7495  034516  001374                        BNE     45$
7496  034520  005712                        TST     @R2             ;THIS SHOULD BE 0 - REMEMBER WE CLEARED
7497                                                                ;2 EXTRA BYTES DURING BUFFER INIT.
7498  034522  001412                        BEQ     50$             ;IF OK - PROCEED
7499  034524                                ERRDF   14,EMG14,ERRG2  ;RECEIVED EXTRA DATA
7500  034524  104455                                                                    TRAP    C$ERDF
7501  034526  000016                                                                    .WORD   14
7502  034530  020215                                                                    .WORD   EMG14
7503  034532  015124                                                                    .WORD   ERRG2
7504  034534  000422                        BR      52$
7505  034536                          46$:
7506  034536                                ERRDF   15,EMG15,ERRG2  ;DATA ERROR
7507  034536  104455                                                                    TRAP    C$ERDF
7508  034540  000017                                                                    .WORD   15
7509  034542  020235                                                                    .WORD   EMG15
7510  034544  015124                                                                    .WORD   ERRG2
7511  034546  000415                        BR      52$
7512
7513                                  ; TRANSMIT OR RECEIVE CHECK DONE
7514
7515  034550                          50$:
7516  034550  042777  000213  145456        BIC     #RDO+RCV+CMD,@SEL2 ;CLEAR RDO, RCV & COMMMAND BITS (0,1)
7517  034556  005737  002570                TST     RFLAG           ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1)
7518  034562  001002                        BNE     51$             ;YES - SEE IF TRANSMIT DONE
7519  034564  000137  034246                JMP     20$             ;NO - GO BACK AND DO IT.
7520  034570                          51$:
7521  034570  005737  002520                TST     TFLAG           ;IS THE TRANSMIT DONE ?
7522  034574  001002                        BNE     52$             ;YES - BR TO SHUTDOWN
7523  034576  000137  034246                JMP     20$             ;NO - DO IT
7524  034602                          52$:
7525  034602                                SHUTDN                  ;SHUTDOWN DMR
7526                                                                ;**** MACRO EXPANSION ****
7527  034602  004737  012562                JSR     PC, $HALT       ;DMR HALT ROUTINE.
7528                                                                ;****                   ****
7529
7530  034606                                CALL    $ERROR          ;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS
7531
7532  034612                          ENDTST
7533  034612                                                                  L10073:
7534  034612  104401                                                                  TRAP    C$ETST
7535
7536
7537
```

```
                                .SBTTL          TEST 14 - EXTENDED ADDRESSING DATA TEST

                                ;*******************************************************************
                                ;*              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.
                                ;*
                                ;*******************************************************************
034614                          BGNTST
034614                                                                  T14::
                                        .ENABL  LSB             ;ENABLE LOCAL BLOCK - NEEDED BECAUSE OF
                                                                ;USE  OF SYMBOLIC LABELS 'RSEL4'' ETC.
034614                                  SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP VECTOR 4
034614  012746  000340                                                  MOV     #PRI07,-(SP)
034620  012746  023630                                                  MOV     #NOXMEM,-(SP)
034624  012746  000004                                                  MOV     #4,-(SP)
034630  012746  000003                                                  MOV     #3,-(SP)
034634  104437                                                          TRAP    C$SVEC
034636  062706  000010                                                  ADD     #10,SP
034642  005037  002352                  CLR     NXMFLG          ;CLEAR FLAG - SET IF TRAP TO 4.
034646  005737  177572                  TST     @#177572        ;ADDRESS MEMORY MANAGEMENT REGISTER.
034652                                  CLRVEC  #4              ;RESTORE TRAP VECTOR 4.
034652  012700  000004                                                  MOV     #4,R0
034656  104436                                                          TRAP    C$CVEC
034660  005737  002352                  TST     NXMFLG          ;IS THE FLAG STILL CLEARED?
                                                                ;NOTE: THE FLAG WILL BE SET BY TRAP 4
                                                                ;IF THERE IS NO MEMORY MANAGEMENT.
034664  001404                          BEQ     10$             ;IF FLAG IS CLEARED, PROCEED WITH TEST.
034666  005037  002352                  CLR     NXMFLG          ;RESTORE FLAG
034672  000137  036236                  JMP     85$             ;EXIT - CAN'T TEST WITHOUT MEM. MANAG.
034676                          10$:
                                                                ;NOTE: L$HIMEM IS SIZE OF TOTAL MEMORY IN
                                                                ;PAGE ADDRESS REGISTER FORM - DETERMINED BY
                                                                ;BY DIAGNOSTIC SUPERVISOR AT STARTUP.
034676  023727  002120  002200      CMP     L$HIMEM,#2200   ;DO WE HAVE ENOUGH MEMORY TO ADDRESS BIT 16?
034704  002002                          BGE     15$             ;IF YES - PROCEED WITH TEST
034706  000137  036236                  JMP     85$             ;IF NOT - EXIT
034712                          15$:
034712                                  SETPRI  #PRI07          ;MAKE SURE WE ARE IN KERNEL MODE.
034712  012700  000340                                                  MOV     #PRI07,R0
034716  104441                                                          TRAP    C$SPRI
                                                                ;SETTING PRI SHOULD ALSO CLEAR BITS 14 &15
                                                                ;IN PSW WHICH PLACES PROCESSOR IN KERNEL MODE.
034720  012701  172300                  MOV     #172300,R1      ;GET ADDRESS OF KERNEL PDR  REG 0
034724  012700  000010                  MOV     #8.,R0          ;GOING TO WRITE PDR REG 0-7
034730                          20$:
034730  012721  077406                  MOV     #77406,(R1)+    ;WRITE BITS FOR THE FOLLOWING PAGE DESCRIPTION
                                                                ;READ/WRITE ACCESS, 128. BLOCK PAGE LENGTH.
034734  005300                          DEC     R0              ;WRITE ALL PDRS
034736  001374                          BNE     20$
034740  012701  172340                  MOV     #172340,R1      ;GET ADDRESS OF KERNAL PAR 0
034744  005011                          CLR     (R1)            ;PAR 0, ADDRS      0  -  17776
034746  012761  000200  000002          MOV     #200,2(R1)      ;PAR 1, ADDRS  20000  -  37776
```

```
 7594  034754  012761  000400  000004          MOV     #400,4(R1)      ;PAR 2, ADDRS  40000  -  57776
 7595  034762  012761  000600  000006          MOV     #600,6(R1)      ;PAR 3, ADDRS  60000  -  77776
 7596  034770  012761  001000  000010          MOV     #1000,10(R1)    ;PAR 4, ADDRS 100000  - 117776
 7597  034776  012761  002000  000012          MOV     #2000,12(R1)    ;PAR 5, ADDRS 200000  - 217776
 7598  035004  012761  004000  000014          MOV     #4000,14(R1)    ;PAR 6, ADDRS 400000  - 417776
 7599  035012  012761  007600  000016          MOV     #7600,16(R1)    ;PAR 7, ADDRS 160000  - 177776 (I/O PAGE)
 7600
 7601  035020  012703  000100                  MOV     #64.,R3         ;COUNTER FOR OUTER LOOP OF TEST PATTERN GEN.
 7602  035024  012704  120000                  MOV     #120000,R4      ;USE VIRTUAL ADDRESS TO MAP TO PAR 5
 7603                                                                  ;GENERATE A TEST PATTERN IN THE 1ST 4K
 7604                                                                  ;BYTES OF PAR 5 (VIRTUAL ADDR 120000 - 127776)
 7605  035030  005037  002352                  CLR     NXMFLG          ;ENSURE FLAG IS CLEARED
 7606  035034                                  SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP VECTOR 4 (WILL SET FLAG)
 7607  035034  012746  000340                                                  MOV     #PRI07,-(SP)
 7608  035040  012746  023630                                                  MOV     #NOXMEM,-(SP)
 7609  035044  012746  000004                                                  MOV     #4,-(SP)
 7610  035050  012746  000003                                                  MOV     #3,-(SP)
 7611  035054  104437                                                          TRAP    C$SVEC
 7612  035056  062706  000010                                                  ADD     #10,SP
 7613  035062  012737  000001  177572          MOV     #1,@#177572     ;ENABLE MEMORY MANAGEMENT
 7614  035070                          21$:
 7615  035070  012701  000040                  MOV     #32.,R1         ;COUNTER FOR INNER LOOP OF TEST PATTERN GEN.
 7616  035074  012702  002420                  MOV     #$CCITT,R2      ;ADDRESS FOR 32. WORD TEST PATTERN
 7617  035100                          22$:
 7618  035100  012224                          MOV     (R2)+,(R4)+     ;WRITE TEST PATTERN INTO 4K BYTES
 7619                                                                  ;(PHYSICAL ADDRESS 200000 - 207776)
 7620  035102  005737  002352                  TST     NXMFLG          ;NXM TRAP 4?
 7621  035106  001014                          BNE     24$             ;IF YES - EXIT
 7622  035110  005301                          DEC     R1              ;DO THE INNER LOOP 32. TIMES
 7623  035112  001372                          BNE     22$
 7624  035114  005303                          DEC     R3              ;DO THE OUTER LOOP 128. TIMES
 7625  035116  001364                          BNE     21$
 7626  035120  012701  004000                  MOV     #4000,R1        ;COUNTER TO CLEAR THE NEXT 4K BYTES.
 7627  035124                          23$:
 7628  035124  005024                          CLR     (R4)+           ;CLEAR OUT THE ENTIRE PAR
 7629                                                                  ;(PHYSICAL ADDRESS 210000 - 217776)
 7630  035126  005737  002352                  TST     NXMFLG          ;NXM TRAP 4?
 7631  035132  001002                          BNE     24$             ;IF YES - EXIT
 7632  035134  005301                          DEC     R1
 7633  035136  001372                          BNE     23$
 7634  035140                          24$:
 7635  035140  005037  177572                  CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
 7636  035144                                  CLRVEC  #4              ;RESTORE TRAP 4 TO SUPERVISOR
 7637  035144  012700  000004                                                  MOV     #4,R0
 7638  035150  104436                                                          TRAP    C$CVEC
 7639  035152  005737  002352                  TST     NXMFLG          ;WAS THIS AN ERROR EXIT
 7640  035156  001417                          BEQ     25$             ;IF NOT, PROCEED.
 7641  035160                                  ERRDF   19,EMT22
 7642  035160  104455                                                          TRAP    C$ERDF
 7643  035162  000023                                                          .WORD   19
 7644  035164  036240                                                          .WORD   EMT22
 7645  035166  000000                                                          .WORD   0
 7646  035170                                  PRINTB  #FMT25,R4
 7647  035170  010446                                                          MOV     R4,-(SP)
 7648  035172  012746  036276                                                  MOV     #FMT25,-(SP)
 7649  035176  012746  000002                                                  MOV     #2,-(SP)
```

```
                                                                                    MOV     SP,R0
                                                                                    TRAP    C$PNTB
                                                                                    ADD     #6,SP
                        JMP     85$
                25$:
                        CLEAR                           ;MACRO FOR MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
                        JSR     PC, $MSCLR              ;ISSUE A DMR MASTER CLEAR
                                                        ;****                 ****

                        ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
                                                                                    TRAP    C$ESCAPE
                                                                                    .WORD   L10074-.

                        TST     DMTURN                  ;IS INTERNAL LOOPBACK DESIRED?
                        BNE     30$                     ;IF NOT, CLEAR INTERNAL LOOPBACK.
                        BIS     #LPLU,100$              ;SET LINE UNIT LOOPBACK.
                        BR      32$
                30$:
                        BIC     #LPLU,100$              ;CLEAR LINE UNIT LOOPBACK.
                32$:
                        CALL    $BASEI                  ;BASE IN COMMAND.
                100$:           .WORD   0               ;MAINTENANCE BITS (LINE UNIT LOOP)
                                .WORD   BASE            ;BASE TABLE ADDRESS
                                .WORD   DMR             ;DMR MODE
                        ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
                                                                                    TRAP    C$ESCAPE
                                                                                    .WORD   L10074-.

                        CALL    $LOOP                   ;DMR COMMAND TO SET MAINT. BITS
                        ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
                                                                                    TRAP    C$ESCAPE
                                                                                    .WORD   L10074-.

                        CNTRIN                          ;MACRO FOR CONTROL IN (FULL DUPLEX)
                                                        ;**** MACRO EXPANSION ****
                        JSR     PC, $CNTIN              ;CALL CONTROL IN ROUTINE WITH DEFAULT
                        .WORD   0                       ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
                                                        ;****                 ****
                        ESCAPE  TST                     ;IF ERROR, BR TO TEST END.
                                                                                    TRAP    C$ESCAPE
                                                                                    .WORD   L10074-.

                        CLR     TFLAG                   ;CLEAR TRANSMIT FLAG
                        CLR     RFLAG                   ;CLEAR RECEIVE FLAG
                        CLR     SFLAG                   ;CLEAR SECOND LOOP FLAG
                                                        ;IF SFLAG = 0, THEN THIS IS A TEST OF BIT 16
                                                        ;IF SFLAG = -1, THEN THIS IS A TEST OF BIT 17
                        MOV     #10000,RSEL4            ;RECEIVE BUFFER ADDRESS (BITS 0-15)
                        MOV     #BIT14!10000,RSEL6      ;REC BUFFER ADDR BIT 16 SET AND 4K
                                                        ;BYTE RECEIVE CHARACTER COUNT
                        CLR     TSEL4                   ;TRANSMIT BUFFER ADDRESS (BITS 0-15)
                        MOV     #BIT14!10000,TSEL6      ;XMIT BUFFER ADDR BIT 16 SET AND 4K
                                                        ;BYTE XMIT CHARACTER COUNT
                35$:
                        CALL    $BACC                   ;ISSUE THE BUFFER ADDR/ CHAR COUNT COMMAND
```

```
7706  035360  000044                          .WORD   RQI!BACCR       ;COMMAND FOR BA/CC IN RECEIVE
7707  035362  000000                RSEL4:    .WORD   0       ;BUFFER ADDRESS BITS 0-15
7708  035364  000000                RSEL6:    .WORD   0       ;BUFFER ADDR BIT 16 + CHAR. COUNT
7709  035366                        ESCAPE  TST             ;IF ERROR, END TEST
7710  035366  104410                                                          TRAP    C$ESCAPE
7711  035370  000646                                                          .WORD   L10074-.
7712
7713  035372                        CALL    $BACC           ;ISSUE THE BUFFER ADDR/ CHAR COUNT COMMAND
7714  035376  000040                          .WORD   RQI!BACCT       ;COMMAND FOR BA/CC IN TRANSMIT
7715  035400  000000                TSEL4:    .WORD   0       ;BUFFER ADDRESS BITS 0-15
7716  035402  000000                TSEL6:    .WORD   0       ;BUFFER ADDR BIT 16 + CHAR. COUNT
7717  035404                        ESCAPE  TST             ;IF ERROR, END TEST
7718  035404  104410                                                          TRAP    C$ESCAPE
7719  035406  000630                                                          .WORD   L10074-.
7720  035410                        40$:
7721  035410                        WAIT    RDO             ;WAIT FOR RDO TO BE SET
7722                                                        ;**** MACRO EXPANSION ****
7723  035410  004737  010276       JSR     PC, $WAIT       ;CALL WAIT ROUTINE
7724  035414  000001                          .WORD   1       ;FLAG THAT WE'RE WAITING FOR RDO
7725                                                        ;****                   ****
7726  035416                        ESCAPE  TST             ;IF RDO NOT SET BEFORE TIMEOUT, END TEST
7727  035416  104410                                                          TRAP    C$ESCAPE
7728  035420  000616                                                          .WORD   L10074-.
7729
7730  035422  032777  000001  144604       BIT     #CNTRL,@SEL2    ;IS THIS A CONTROL OUT COMMAND?
7731  035430  001406                       BEQ     50$             ;NO - PROCEED
7732  035432                               ERRDF   9,EMG9,ERRG2    ;UNEXPECTED CONTROL OUT.
7733  035432  104455                                                          TRAP    C$ERDF
7734  035434  000011                                                          .WORD   9
7735  035436  020040                                                          .WORD   EMG9
7736  035440  015124                                                          .WORD   ERRG2
7737  035442  000137  036226               JMP     80$             ;EXIT
7738  035446                        50$:
7739  035446  032777  000004  144560       BIT     #RCV,@SEL2      ;IS THIS A TRANSMIT OR RECEIVE?
7740  035454  001040                       BNE     60$             ;BR FOR RECEIVE
7741  035456  005737  002520               TST     TFLAG           ;IS THIS THE 1ST TRANSMIT DONE
7742  035462  001406                       BEQ     55$             ;IF YES, PROCEED
7743  035464                               ERRDF   10,EMG10,ERRG2  ;MULTIPLE TRANSMITS
7744  035464  104455                                                          TRAP    C$ERDF
7745  035466  000012                                                          .WORD   10
7746  035470  020067                                                          .WORD   EMG10
7747  035472  015124                                                          .WORD   ERRG2
7748  035474  000137  036226               JMP     80$             ;EXIT
7749  035500                        55$:
7750  035500  012737  177777  002520       MOV     #-1,TFLAG       ;FLAG THAT THE TRANSMIT IS DONE.
7751  035506  023777  035400  144522       CMP     TSEL4,@SEL4     ;IS THE BUFFER ADDRESS CORRECT?
7752  035514  001406                       BEQ     56$             ;IF OK, PROCEED WITH CHECK.
7753  035516                               ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
7754  035516  104455                                                          TRAP    C$ERDF
7755  035520  000013                                                          .WORD   11
7756  035522  020116                                                          .WORD   EMG11
7757  035524  015124                                                          .WORD   ERRG2
7758  035526  000137  036226               JMP     80$             ;EXIT
7759  035532                        56$:
7760  035532  023777  035402  144500       CMP     TSEL6,@SEL6     ;IS THE CHAR. COUNT CORRECT?
7761  035540  001502                       BEQ     70$             ;IF OK, PROCEED
```

```
7762  035542                                    ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR - OR EXT MEM PROBLEM
7763  035542  104455                                                    TRAP    C$ERDF
7764  035544  000014                                                    .WORD   12
7765  035546  020141                                                    .WORD   EMG12
7766  035550  015124                                                    .WORD   ERRG2
7767  035552  000137  036226              JMP     80$             ;EXIT
7768  035556                        60$:
7769  035556  005737  002570              TST     RFLAG           ;IS THIS THE 1ST RECEIVE DONE
7770  035562  001406                      BEQ     61$             ;IF YES, PROCEED
7771  035564                              ERRDF   13,EMG13,ERRG2  ;MULTIPLE RECEIVES
7772  035564  104455                                                    TRAP    C$ERDF
7773  035566  000015                                                    .WORD   13
7774  035570  020167                                                    .WORD   EMG13
7775  035572  015124                                                    .WORD   ERRG2
7776  035574  000137  036226              JMP     80$             ;EXIT
7777  035600                        61$:
7778  035600  012737  177777  002570      MOV     #-1,RFLAG       ;FLAG THAT THE RECEIVE IS DONE.
7779  035606  023777  035362  144422      CMP     RSEL4,@SEL4     ;IS THE BUFFER ADDRESS CORRECT?
7780  035614  001405                      BEQ     62$             ;IF OK, PROCEED WITH CHECK.
7781  035616                              ERRDF   11,EMG11,ERRG2  ;BUFFER ADDRESS ERROR
7782  035616  104455                                                    TRAP    C$ERDF
7783  035620  000013                                                    .WORD   11
7784  035622  020116                                                    .WORD   EMG11
7785  035624  015124                                                    .WORD   ERRG2
7786  035626  000577                      BR      80$             ;EXIT
7787  035630                        62$:
7788  035630  023777  035364  144402      CMP     RSEL6,@SEL6     ;IS THE CHAR. COUNT CORRECT?
7789  035636  001404                      BEQ     63$             ;IF OK, PROCEED
7790  035640                              ERRDF   12,EMG12,ERRG2  ;CHARACTER COUNT ERROR
7791  035640  104455                                                    TRAP    C$ERDF
7792  035642  000014                                                    .WORD   12
7793  035644  020141                                                    .WORD   EMG12
7794  035646  015124                                                    .WORD   ERRG2
7795  035650                        63$:
7796  035650  005737  002346              TST     SFLAG           ;WHICH EXTENDED ADDRESS ARE WE CHECKING?
7797  035654  001007                      BNE     65$             ;BR FOR BIT 17 CHECK
7798  035656  012700  004000              MOV     #4000,R0        ;IN THE TEST OF BIT 16 WE SENT 4K BYTES
7799  035662  012701  120000              MOV     #120000,R1      ;THE XMIT BUFFER BEGAN AT THIS VIRTUAL ADDR
7800                                                              ;WHICH WILL MAP TO 200000
7801  035666  012702  130000              MOV     #130000,R2      ;THE REC BUF. MAPS TO 210000
7802  035672  000406                      BR      66$             ;GO COMPARE THE XMIT AND REC BUFFERS
7803  035674                        65$:
7804  035674  012700  010000              MOV     #10000,R0       ;IN THE TEST OF BIT 17 WE SENT 8K BYTES
7805  035700  012701  120000              MOV     #120000,R1      ;THE XMIT BUFFER MAPS TO 200000
7806  035704  012702  140000              MOV     #140000,R2      ;THE REC BUF. MAPS TO 400000
7807  035710                        66$:
7808  035710  012737  000001  177572      MOV     #1,@#177572     ;TURN MEMORY MANAGEMENT BACK ON.
7809  035716                        67$:
7810  035716  022122                      CMP     (R1)+,(R2)+     ;IS THE DATA THE SAME?
7811  035720  001003                      BNE     68$             ;IF NOT THERE IS A DATA ERROR.
7812  035722  005300                      DEC     R0              ;CHECK ENTIRE BUFFER
7813  035724  001374                      BNE     67$
7814  035726  000407                      BR      70$             ;IF DATA OK, PROCEED WITH TEST.
7815  035730                        68$:
7816  035730  005037  177572              CLR     @#177572        ;TURN MEMORY MANAGEMENT OFF.
7817  035734                              ERRDF   15,EMG15,ERRG2  ;DATA ERROR
```

```
 7818  035734  104455                                                          TRAP    C$ERDF
 7819  035736  000017                                                          .WORD   15
 7820  035740  020235                                                          .WORD   EMG15
 7821  035742  015124                                                          .WORD   ERRG2
 7822  035744  000530                      BR      80$             ;EXIT
 7823  035746                      70$:
 7824  035746  005037  177572              CLR     @#177572        ;TURN MEMORY MANAGEMENT OFF.
 7825  035752  042777  000213  144254      BIC     #RDO+RCV+CMD,@SEL2 ;CLEAR RDO, RCV & COMMMAND BITS (0,1)
 7826  035760  005737  002570              TST     RFLAG           ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1)
 7827  035764  001002                      BNE     71$             ;YES - SEE IF TRANSMIT DONE
 7828  035766  000137  035410              JMP     40$             ;NO - GO BACK AND DO IT.
 7829  035772                      71$:
 7830  035772  005737  002520              TST     TFLAG           ;IS THE TRANSMIT DONE ?
 7831  035776  001002                      BNE     72$             ;YES - SEE IF THERE IS MORE
 7832  036000  000137  035410              JMP     40$             ;NO - DO IT
 7833  036004                      72$:
 7834  036004  005737  002346              TST     SFLAG           ;HAVE WE ALREADY TESTED BIT 17
 7835  036010  001106                      BNE     80$             ;IF SO - END OF TEST
 7836
 7837  036012  012737  177777  002346      MOV     #-1,SFLAG       ;FLAG SO WE DON'T COME THIS WAY AGAIN.
 7838  036020  023727  002120  004200      CMP     L$HIMEM,#4200   ;IS THERE ENOUGH MEMORY TO TEST BIT 17?
 7839  036026  002477                      BLT     80$             ;IF NOT - END OF TEST.
 7840  036030  005037  002520              CLR     TFLAG           ;CLEAR FLAGS FOR NEXT TEST
 7841  036034  005037  002570              CLR     RFLAG
 7842                              ;
 7843                              ;SET UP TO TEST BIT 17, IF THERE IS ENOUGH MEMORY.
 7844                              ;THIS TEST WILL TRANSMIT 8K BYTES STARTING AT PHYSICAL ADDRESS 200000
 7845                              ;TO PHYSICAL ADDRESS 400000.  THE TRANSMITTED BUFFER STILL CONTAINS
 7846                              ;THE TEST PATTERN GENERATED IN THE BIT 16 TEST.
 7847                              ;
 7848  036040  005037  035362              CLR     RSEL4           ;RECEIVE BUFFER ADDRESS (BITS 0-15)
 7849  036044  012737  120000  035364      MOV     #BIT15!20000,RSEL6 ;REC BUFFER ADDR BIT 17 SET AND 8K
 7850                                                              ;BYTE RECEIVE CHARACTER COUNT
 7851  036052  005037  035400              CLR     TSEL4           ;TRANSMIT BUFFER ADDRESS (BITS 0-15)
 7852  036056  012737  060000  035402      MOV     #BIT14!20000,TSEL6 ;XMIT BUFFER ADDR BIT 16 SET AND 8K
 7853                                                              ;BYTE XMIT CHARACTER COUNT
 7854  036064  012701  010000              MOV     #10000,R1       ;COUNTER TO CLEAR 8K BYTES
 7855  036070  012704  140000              MOV     #140000,R4      ;VIRTUAL ADDRESS THAT WILL MAP INTO PAR 6
 7856                                                              ;WITH THE PHYSICAL ADDRESS 400000
 7857  036074  005037  002352              CLR     NXMFLG          ;ENSURE FLAG IS CLEAR
 7858  036100                              SETVEC  #4,#NOXMEM,#PRI07 ;SET UP TRAP TO VECTOR 4 (WILL SET FLAG)
 7859  036100  012746  000340                                                          MOV     #PRI07,-(SP)
 7860  036104  012746  023630                                                          MOV     #NOXMEM,-(SP)
 7861  036110  012746  000004                                                          MOV     #4,-(SP)
 7862  036114  012746  000003                                                          MOV     #3,-(SP)
 7863  036120  104437                                                                  TRAP    C$SVEC
 7864  036122  062706  000010                                                          ADD     #10,SP
 7865  036126  012737  000001  177572      MOV     #1,@#177572     ;TURN ON MEMORY MANAGEMENT
 7866  036134                      74$:
 7867  036134  005024                      CLR     (R4)+           ;CLEAR 400000 - 417776
 7868  036136  005737  002352              TST     NXMFLG          ;DOES A NXM TRAP 4 OCCUR?
 7869  036142  001002                      BNE     75$             ;IF YES, EXIT
 7870  036144  005300                      DEC     R0
 7871  036146  001372                      BNE     74$
 7872  036150                      75$:
 7873  036150  005037  177572              CLR     @#177572        ;TURN OFF MEMORY MANAGEMENT
```

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7874  036154                                  CLRVEC  #4              ;RESTORE TRAP 4
7875  036154  012700  000004                                                  MOV     #4,R0
7876  036160  104436                                                         TRAP    C$CVEC
7877  036162  005737  002352                  TST     NXMFLG          ;WAS THIS AN ERROR EXIT?
7878  036166  001002                          BNE     76$             ;IF YES - REPORT ERROR
7879  036170  000137  035354                  JMP     35$             ;START THE SECOND TEST
7880  036174                          76$:
7881  036174                                  ERRDF   19,EMT22
7882  036174  104455                                                         TRAP    C$ERDF
7883  036176  000023                                                         .WORD   19
7884  036200  036240                                                         .WORD   EMT22
7885  036202  000000                                                         .WORD   0
7886  036204                                  PRINTB  #FMT25,R4
7887  036204  010446                                                         MOV     R4,-(SP)
7888  036206  012746  036276                                                 MOV     #FMT25,-(SP)
7889  036212  012746  000002                                                 MOV     #2,-(SP)
7890  036216  010600                                                         MOV     SP,R0
7891  036220  104414                                                         TRAP    C$PNTB
7892  036222  062706  000006                                                 ADD     #6,SP
7893  036226                          80$:
7894  036226                                  SHUTDN                  ;SHUTDOWN DMR
7895                                                                  ;**** MACRO EXPANSION ****
7896  036226  004737  012562                  JSR     PC, $HALT       ;DMR HALT ROUTINE.
7897                                                                  ;****                   ****
7898  036232                                  CALL    $ERROR          ;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS
7899
7900  036236                          85$:
7901                                          .DSABL  LSB             ;DISABLE LOCAL SYMBOL BLOCK
7902  036236                          ENDTST
7903  036236                                                                  L10074:
7904  036236  104401                                                         TRAP    C$ETST
7905
7906
7907  036240  040503  023516  020124  EMT22:  .ASCIZ  /CAN'T ADDRESS EXTENDED MEMORY/
7908  036246  042101  051104  051505
7909  036254  020123  054105  042524
7910  036262  042116  042105  046440
7911  036270  046505  051117  000131
7912  036276  040445  042515  047515  FMT25:  .ASCIZ  /%AMEMORY ADDRESS %O6% DOES NOT RESPOND - TRAP 4%N/
7913  036304  054522  040440  042104
7914  036312  042522  051523  022440
7915  036320  033117  020045  047504
7916  036326  051505  047040  052117
7917  036334  051040  051505  047520
7918  036342  042116  026440  052040
7919  036350  040522  020120  022464
7920  036356  000116
7921                                          .EVEN
```

```
                                .SBTTL          TEST 15 - DMC MODE TEST

                                ;*************************************************************************
                                ;*              TEST 15 - DMR-11
                                ;* DMC MODE
                                ;* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS.
                                ;*
                                ;*      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 $BUFFS.  THIS
                                ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
                                ;*      SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS.  THE ROUTINE WILL
                                ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
                                ;*      HIERARCHY:
                                ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
                                ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
                                ;*                 THAN 2K BYTES, USE THAT MEMORY
                                ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
                                ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
                                ;*
                                ;*************************************************************************
036360                          BGNTST
036360                                                                          T15::
036360  005737  002306                  TST     WMAINT          ;DO WE NEED TO WRITE MODEM
                                                                ;MAINTENANCE 1 OR 2 ?
036364  001035                  BNE     40$             ;IF YES, WE CAN'T RUN THIS TEST.
036366  012737  000007  002324  MOV     #7,BUFNUM       ;# OF RCV & XMIT BUFFERS.
036374  005037  002274          CLR     RESUME          ;FLAG NOT TO USE RESUME.
036400  012737  000001  002276  MOV     #1,DMCMDE       ;FLAG SET TO REQUEST DMC MODE.
036406  005037  002300          CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.

036412                          CALL    $BUFFS          ;DETERMINE 7 RCV &  7 XMIT BUFFERS

036416                          CLEAR                   ;MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
036416  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                   ****

036422                          ESCAPE  TST             ;IF ERROR, EXIT TEST
036422  104410                                                          TRAP    C$ESCAPE
036424  000034                                                          .WORD   L10075-.

                                                        ;ISSUE A DMR MODE BASEIN
                                                        ;IN DMR MODE, IF A INTERFACE IS REQUIRED
036426                          BASEIN                  ;TO BE WRITTEN - IT WILL BE DONE.
                                                        ;**** MACRO EXPANSION ****
036426  004737  011266          JSR     PC, $BASEI      ;CALL BASE IN ROUTINE WITH DEFAULTS
036432  004000                          .WORD   LPLU    ;SET LINE UNIT LOOP
036434  002640                          .WORD   BASE    ;BASE TABLE ADDRESS
036436  000522                          .WORD   DMR     ;DMR-11 MODE
                                                        ;****                   ****

036440                          ESCAPE  TST             ;IF ERROR, EXIT TEST
036440  104410                                                          TRAP    C$ESCAPE
```

```
 7978  036442  000016                                                          .WORD   L10075-.
 7979  036444                          SHUTDN                          ;HALT
 7980                                                                  ;**** MACRO EXPANSION ****
 7981  036444  004737  012562          JSR     PC, $HALT               ;DMR HALT ROUTINE.
 7982                                                                  ;****                ****
 7983  036450                          ESCAPE  TST                     ;IF ERROR, EXIT TEST.
 7984  036450  104410                                                          TRAP    C$ESCAPE
 7985  036452  000006                                                          .WORD   L10075-.
 7986                                                                  ;AFTER SETTING INTERFACE OR LOOPBACK MAINT.
 7987                                                                  ;(CAN'T BE DONE IN DMC MODE), START IN
 7988                                                                  ;DMC MODE.
 7989
 7990
 7991  036454                          CALL    $INOUT                  ;THIS ROUTINE WILL MANAGE ALL THE DMR
 7992                                                                  ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
 7993                                                                  ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
 7994                                                                  ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
 7995                                                                  ;ROUTINE WILL ALSO CHECK THAT BUFFER
 7996                                                                  ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
 7997                                                                  ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
 7998
 7999  036460                  40$:
 8000  036460                  ENDTST
 8001  036460                                                                  L10075:
 8002  036460  104401                                                          TRAP    C$ETST
 8003
 8004
 8005
```

```
                                .SBTTL          TEST 16 - DMR MODE (RESUME) INTERRUPT TEST

                                ;*************************************************************************
                                ;*              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    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN RECEIVE
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN RECEIVE
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN RECEIVE
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      1 BA/CC IN RECEIVE
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN TRANSMIT
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN TRANSMIT
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      2 BA/CC IN TRANSMIT
                                ;*      HALT    MASTER CLEAR    BASE IN RESUME
                                ;*      1 BA/CC IN TRANSMIT
                                ;*      HALT    MASTER CLEAR    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.
                                ;*
                                ;*
                                ;*************************************************************************
036462                          BGNTST
036462                                                                          T16::
036462  013737  002254  002336          MOV     DMTURN,TEMP1    ;SAVE OFF LOOP TYPE
036470  005037  002254                  CLR     DMTURN          ;FORCE INTERNAL LOOP
036474  012737  000007  002324          MOV     #7,BUFNUM       ;# OF RCV & XMIT BUFFERS.
036502  012737  000001  002274          MOV     #1,RESUME       ;FLAG SET TO REQUEST USE OF RESUME.
036510  005037  002276                  CLR     DMCMDE          ;FLAG CLEARED - DMR MODE.
036514  005037  002300                  CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.

036520                                  CALL    $BUFFS          ;DETERMINE 7 RCV &  7 XMIT BUFFERS
```

```
8062  036524                                CLEAR                   ;MASTER CLEAR
8063                                                                ;**** MACRO EXPANSION ****
8064  036524  004737  011070                JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
8065                                                                ;****                 ****
8066
8067  036530                                ESCAPE  TST             ;IF ERROR, EXIT TEST
8068  036530  104410                                                       TRAP    C$ESCAPE
8069  036532  000014                                                       .WORD   L10076-.
8070
8071  036534                                CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
8072                                                                ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
8073                                                                ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
8074                                                                ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
8075                                                                ;ROUTINE WILL ALSO CHECK THAT BUFFER
8076                                                                ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
8077                                                                ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
8078
8079
8080  036540  013737  002336  002254          MOV     TEMP1,DMTURN    ;RESTORE LOOP TYPE
8081  036546                        ENDTST
8082  036546                                                                L10076:
8083  036546  104401                                                       TRAP    C$ETST
8084
```

```
8085                                .SBTTL          TEST 17 - DMR MODE INTERRUPT EXERCISE
8086
8087                                ;*****************************************************************************
8088                                ;*                      TEST 17 - DMR-11
8089                                ;* INTERRUPT DRIVEN EXERCISE
8090                                ;* IN THIS TEST 64 BUFFERS WILL BE TRANSMITTED AND RECEIVED
8091                                ;*
8092                                ;* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
8093                                ;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
8094                                ;* THE RECEIVE/TRANSMIT TABLE.
8095                                ;*
8096                                ;*      THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS.  THIS
8097                                ;*      SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
8098                                ;*      64 RECEIVE AND 64 TRANSMIT BUFFERS.  THE ROUTINE WILL
8099                                ;*      ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
8100                                ;*      HIERARCHY:
8101                                ;*              A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
8102                                ;*              B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
8103                                ;*                 THAN 2K BYTES, USE THAT MEMORY
8104                                ;*              C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
8105                                ;*                 THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
8106                                ;*
8107                                ;*****************************************************************************
8108  036550                        BGNTST
8109  036550                                                                          T17::
8110  036550  012737  000100  002324        MOV     #64.,BUFNUM     ;# OF RCV & XMIT BUFFERS.
8111
8112  036556  005037  002274              CLR     RESUME          ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
8113  036562  005037  002276              CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
8114  036566  005037  002300              CLR     MNTMDE          ;FLAG NOT TO REQUEST MAINTENANCE MODE.
8115
8116  036572                              CALL    $BUFFS          ;DETERMINE 64 RCV &  64 XMIT BUFFERS
8117
8118  036576                              CLEAR                   ;MASTER CLEAR
8119                                                              ;**** MACRO EXPANSION ****
8120  036576  004737  011070              JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
8121                                                              ;****                   ****
8122
8123  036602                              ESCAPE  TST             ;IF ERROR, EXIT TEST
8124  036602  104410                                                          TRAP    C$ESCAPE
8125  036604  000012                                                          .WORD   L10077-.
8126
8127  036606                              CALL    $INOUT          ;THIS ROUTINE WILL MANAGE ALL THE DMR
8128                                                              ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
8129                                                              ;(FROM BASE IN UNTIL SHUT DOWN).  BESIDES
8130                                                              ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
8131                                                              ;ROUTINE WILL ALSO CHECK THAT BUFFER
8132                                                              ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
8133                                                              ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
8134
8135  036612                              CALL    $ERROR          ;CHECK BASE TABLE FOR SOFT ERRORS
8136
8137
8138  036616                        ENDTST
8139  036616                                                                  L10077:
8140  036616  104401                                                                  TRAP    C$ETST
```

```
8141
```

```
                                .SBTTL          TEST 18 - DMR MODE LARGE MESSAGE

                                ;*************************************************************************
                                ;*              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.
                                ;*
                                ;*************************************************************************
036620                          BGNTST
036620                                                                  T18::

036620  012737  000001  002324          MOV     #1,BUFNUM       ;# OF RCV & XMIT BUFFERS.

036626  005037  002274          CLR     RESUME          ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
036632  005037  002276          CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
036636  005037  002300          CLR     MAINTMDE        ;FLAG NOT TO REQUEST MAINTENANCE MODE.

036642                          CALL    $BUFFS          ;DETERMINE 1 RCV &  1 XMIT BUFFER

036646                          CLEAR                   ;MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
036646  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                   ****

036652                          ESCAPE  TST             ;IF ERROR, EXIT TEST
036652  104410                                                  TRAP    C$ESCAPE
036654  000012                                                  .WORD   L10100-.

036656                          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

036662                          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.
```

```
 8198
 8199
 8200  036666                          ENDTST
 8201  036666                                                  L10100:
 8202  036666  104401                                                  TRAP    C$ETST
 8203
```

```
                                .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.
                                ;*
                                ;*****************************************************************************
036670                          BGNTST
036670                                                                          T19::
036670  012737  000001  002324          MOV     #1,BUFNUM       ;# OF RCV & XMIT BUFFERS.

036676  005037  002274          CLR     RESUME          ;DON'T ALLOW RESUME
036702  005037  002276          CLR     DMCMDE          ;FLAG CLEARED TO ALLOW DMR MODE.
036706  012737  000001  002300  MOV     #1,MNTMDE       ;FLAG SET TO REQUEST MAINTENANCE MODE.

036714                          CALL    $BUFFS          ;DETERMINE 1 RCV &  1 XMIT BUFFER

036720                          CLEAR                   ;MASTER CLEAR
                                                        ;**** MACRO EXPANSION ****
036720  004737  011070          JSR     PC, $MSCLR      ;ISSUE A DMR MASTER CLEAR
                                                        ;****                 ****

036724                          ESCAPE  TST             ;IF ERROR, EXIT TEST
036724  104410                                                          TRAP    C$ESCAPE
036726  000012                                                          .WORD   L10101-.

036730                          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

036734                          CALL    $ERROR          ;CHECK BASE TABLE FOR SOFT ERRORS


036740                          ENDTST
036740                                                                  L10101:
036740  104401                                                          TRAP    C$ETST
```

```
                                .SBTTL  HARDWARE PARAMETER CODING SECTION


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

036742                                  BGNHRD
036742  000015                                                          .WORD L10102-L$HARD/2
036744                                                          L$HARD::

036744                                  GPRMA   P1,2,0,160000,177776,YES
036744  001031                                                          .WORD   T$CODE
036746  036776                                                          .WORD   P1
036750  160000                                                          .WORD   T$LOLIM
036752  177776                                                          .WORD   T$HILIM
036754                                  GPRMA   P2,4,0,0,776,YES
036754  002031                                                          .WORD   T$CODE
036756  037014                                                          .WORD   P2
036760  000000                                                          .WORD   T$LOLIM
036762  000776                                                          .WORD   T$HILIM
036764                                  GPRMD   P3,20,0,7,0,7,YES
036764  010032                                                          .WORD   T$CODE
036766  037035                                                          .WORD   P3
036770  000007                                                          .WORD   7
036772  000000                                                          .WORD   T$LOLIM
036774  000007                                                          .WORD   T$HILIM

036776                                  ENDHRD
                                                                        .EVEN
036776                                                          L10102:

036776  051503  020122  042101  P1:     .ASCIZ  /CSR ADDRESS: /
037004  051104  051505  035123
037012  000040
037014  042526  052103  051117  P2:     .ASCIZ  /VECTOR ADDRESS: /
037022  040440  042104  042522
037030  051523  020072     000
037035     124  051505  020124  P3:     .ASCII  /TEST CONFIGURATION -/<CR><LF>
037042  047503  043116  043511
037050  051125  052101  047511
037056  020116  006455     012
037063     040  030040  036440          .ASCII  /  0 = INTERNAL (NO CONNECTOR)/<CR><LF>
037070  044440  052116  051105
037076  040516  020114  047050
037104  020117  047503  047116
037112  041505  047524  024522
037120  005015
037122  020040  020061  020075          .ASCII  /  1 = H3254 - V.35      (NOTE: MODE 1-4 ALLOWS/<CR><LF>
037130  031510  032462  020064
037136  020055  027126  032463
```

```
 8315  037144  020040  020040  020040
 8316  037152  047050  052117  035105
 8317  037160  020040  047515  042504
 8318  037166  030440  032055  040440
 8319  037174  046114  053517  006523
 8320  037202     012
 8321  037203     040  031040  036440          .ASCII  /  2 = H3254 - INTEGRAL   PROGRAM INTERFACE SELECTION)/
 8322  037210  044040  031063  032065
 8323  037216  026440  044440  052116
 8324  037224  043505  040522  020114
 8325  037232  020040  051120  043517
 8326  037240  040522  020115  047111
 8327  037246  042524  043122  041501
 8328  037254  020105  042523  042514
 8329  037262  052103  047511  024516
 8330  037270  005015  020040  020063          .ASCII  <CR><LF>/  3 = H3255 - RS232C/<57>/423/<CR><LF>
 8331  037276  020075  031510  032462
 8332  037304  020065  020055  051522
 8333  037312  031462  041462  032057
 8334  037320  031462  005015
 8335
 8336  037324  020040  020064  020075          .ASCII  /  4 = H3255 - RS422/<CR><LF>
 8337  037332  031510  032462  020065
 8338  037340  020055  051522  031064
 8339  037346  006462     012
 8340  037351     040  032440  036440          .ASCII  /  5 = CABLE AND SW PACK INTERFACE SELECTED/<CR><LF>
 8341  037356  041440  041101  042514
 8342  037364  040440  042116  051440
 8343  037372  020127  040520  045503
 8344  037400  044440  052116  051105
 8345  037406  040506  042503  051440
 8346  037414  046105  041505  042524
 8347  037422  006504     012
 8348  037425     040  020040  020040          .ASCII  /      (V.35-H3250, INTEGRAL-BC55A-10,/
 8349  037432  024040  027126  032463
 8350  037440  044055  031063  030065
 8351  037446  020054  047111  042524
 8352  037454  051107  046101  041055
 8353  037462  032503  040465  030455
 8354  037470  026060
 8355  037472  051040  031123  031063          .ASCII  / RS232C-H325, RS423/<57>/422-H3251)/<CR><LF>
 8356  037500  026503  031510  032462
 8357  037506  020054  051522  031064
 8358  037514  027463  031064  026462
 8359  037522  031510  032462  024461
 8360  037530  005015
 8361  037532  020052  042523  042514          .ASCII  /* SELECT THE FOLLOWING ONLY IF THE MODEM SUPPORTS LOOPBACK */
 8362  037540  052103  052040  042510
 8363  037546  043040  046117  047514
 8364  037554  044527  043516  047440
 8365  037562  046116  020131  043111
 8366  037570  052040  042510  046440
 8367  037576  042117  046505  051440
 8368  037604  050125  047520  052122
 8369  037612  020123  047514  050117
 8370  037620  040502  045503  025040
```

```
 8371  037626  005015  020040  020066          .ASCII  <CR><LF>/  6 = LOCAL LOOP/<CR><LF>
 8372  037634  020075  047514  040503
 8373  037642  020114  047514  050117
 8374  037650  005015
 8375  037652  020040  020067  020075          .ASCIZ  /  7 = REMOTE LOOP/<CR><LF>
 8376  037660  042522  047515  042524
 8377  037666  046040  047517  006520
 8378  037674  000012
 8379                                          .EVEN
 8380
```

```
                                .SBTTL  SOFTWARE PARAMETER CODING SECTION


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

037676                                  BGNSFT
037676  000005                                                          .WORD L10103-L$SOFT/2
037700                                                          L$SOFT::

037700                                  GPRMD   S1,0,0,7,1,5,YES
037700  000032                                                          .WORD   T$CODE
037702  037712                                                          .WORD   S1
037704  000007                                                          .WORD   7
037706  000001                                                          .WORD   T$LOLIM
037710  000005                                                          .WORD   T$HILIM

037712                                  ENDSFT
                                                                        .EVEN
037712                                                          L10103:

037712  042523  042514  052103  S1:     .ASCII  /SELECTABLE PROGRAM LOOP TIME-OUT VARIABLE/<CR><LF>
037720  041101  042514  050040
037726  047522  051107  046501
037734  046040  047517  020120
037742  044524  042515  047455
037750  052125  053040  051101
037756  040511  046102  006505
037764     012
037765     133  042522  042506          .ASCIZ  /[REFER TO LISTING 6.3.13]   (MAX=5; MIN=1) /
037772  020122  047524  046040
040000  051511  044524  043516
040006  033040  031456  030456
040014  056463  020040  024040
040022  040515  036530  035465
040030  046440  047111  030475
040036  020051     000
        040042                          .EVEN

                                ;********************      PATCH AREA      *********************************
040042                          PATCH:
        040066                          .=.+20.
040066  000240                          NOP
040070  000240                          NOP
040072  000240                          NOP
                                ;*************************************************************************
040074                          ENDMOD

040074                                  LASTAD
                                                                        .EVEN
```

```
 8437  040074  00000C                                                  .WORD   0
 8438  040076  000000                                                  .WORD   0
 8439  040100                        L$LAST::
 8440          000001                .END
```

```
A      = 000044          1640#  5340   5401   5447   5451
ADR    = 000020 G        1516#
ASSEMB= 000010           1231
AX3      002304          1724#  2533   4177*  4181*  4186*  4191*  4196*  4202*  4384
BACCR  = 000004          1612#  4359   4570   6636   6712   6946   7145   7206   7284   7386   7706
BACCT  = 000000          1608#  4361   4590   6334   6440   6644   6727   6845   6957   7220   7398   7714
BASE     002640          1857#  2840   3607   3609   3614   3616   3623   3625   3630   3632   3639   3641   3646
                         3648   3655   3657   3662   3664   4418   5313   5324   5336   5338   5340   5342   5344
                         5374   5385   5397   5399   5401   5403   5405   5424   5428   5435   5439   5447   5451
                         5458   5462   5469   5473   5561   5586   5600   5622   5651   5693   5695   5697   5699
                         5701   5729   5735   5739   5746   5750   5757   5761   5768   5772   5779   5783   5876
                         5918   5937   5988   6011   6044   6123   6296   6404   6475   6477   6499   6501   6544
                         6613   6693   6792   6927   7031   7042   7196   7271   7363   7673   7972
BASEI  = 000003          1611#  2483   3300   4363   4531   4646
BASEUP= 020000           1576#
BIGBUF   004240          1869#  3176
BIT0   = 000001 G        1489#  1601   2396   3173   3244   4557   4577   5139   5586   5622
BIT00  = 000001 G        1478#  1489
BIT01  = 000002 G        1477#  1488
BIT02  = 000004 G        1476#  1487
BIT03  = 000010 G        1475#  1486
BIT04  = 000020 G        1474#  1485
BIT05  = 000040 G        1473#  1484
BIT06  = 000100 G        1472#  1483
BIT07  = 000200 G        1471#  1482
BIT08  = 000400 G        1470#  1481
BIT09  = 001000 G        1469#  1480
BIT1   = 000002 G        1488#  1600   6011
BIT10  = 002000 G        1468#  1558   1583   1584
BIT11  = 004000 G        1467#  1557   1581
BIT12  = 010000 G        1466#  1556   1578   1580
BIT13  = 020000 G        1465#  1555   1576   4476   4486
BIT14  = 040000 G        1464#  1554   4465   4482   4486   4659   4670   6567   6638   6729   7699   7702   7852
BIT15  = 100000 G        1463#  1553   4670   6567   6638   6729   7849
BIT2   = 000004 G        1487#  1569   1598   1599
BIT3   = 000010 G        1486#  1596   1597   4186
BIT4   = 000020 G        1485#  1566   1595   4181   5324   5385   5899   5918   5956   6839
BIT5   = 000040 G        1484#  1565   1594
BIT6   = 000100 G        1483#  1563   1573   1592   1593   4191
BIT7   = 000200 G        1482#  1562   1572   1591   4196
BIT8   = 000400 G        1481#  1560   1586   1587   1590
BIT9   = 001000 G        1480#  1559   1585
BOE    = 000400 G        1520#
BSEL0  = 002232          1685#  2483*  2525*  2581*  2703*  2781*  3300*  4541*  4546*  4550*  4565*  4570*  4585*
                         4590*
BSEL1    002242          1686#  4095*  4096*
BSEL2  = 002234          1687#
BSEL3    002244          1688#  2389*  3553   3563   3581   4099*  4100*  5238   5248   5257
BSEL4  = 002236          1689#
BSEL5    002246          1690#  4103*  4104*
BSEL6  = 002240          1691#  2508   4939   4991   4995   5105   6153   6202   6235
BSEL7    002250          1692#  2533*  4107*  4108*  4384*  4940   4992   4996   5109
BUFNUM   002324          1753#  3143   3148   3182   3184   3225   3236   3283   3284   3285   3286   3339   3457
                         3474   3475   3476   3477   7950*  8055*  8110*  8168*  8228*
BUFSIZ   002322          1752#  3145*  3150*  3153*  3197*  3198*  3200*  3228   3229   3240   3242   3464
CD     = 002000          1584#
```

```
CHIPNO  002414          1801#
CLRNO   002400          1791#   2396    2409*   4028*
CMD   = 000007          1629#   2639    2940    4736    6349    6370    6379    6592    6672    6754    7071    7124    7175
                        7250    7314    7516    7825
CNTRL = 000001          1609#   2216    2224    2519    2581    2621    2923    4365    4550    4619    6352    6453    6558
                        6575    6629    6654    6720    6737    6879    6951    6970    7035    7054    7086    7107    7139
                        7158    7214    7233    7278    7297    7415    7730
COUNT   002416          1802#   2169*   2191*   6861
CR    = 000015          1662#   8302    8306    8312    8330    8336    8340    8355    8371    8375    8408
CSR     002232          1680#   1684    1685    4094*   4283    4962
CTS   = 010000          1580#
C$AU  = 000052          1231#
C$AUTO= 000061          1231#   4306
C$BRK = 000022          1231#   2190    2314    2418    3305
C$BSEG= 000004          1231#
C$BSUB= 000002          1231#   4923    4968    5099    5299    5359    5547    5637    5863    5932    5975    6025    6110
                        6179    6283    6391    6531    6600    6680    7020    7079    7132    7183    7258
C$CEFG= 000045          1231#
C$CLCK= 000062          1231#
C$CLEA= 000012          1231#   4332
C$CLOS= 000035          1231#
C$CLP1= 000006          1231#
C$CVEC= 000036          1231#   3162    4039    4294    4841    7564    7638    7876
C$DCLN= 000044          1231#   4301    4836
C$DODU= 000051          1231#   4299    4834
C$DRPT= 000024          1231#
C$DU  = 000053          1231#   4777
C$EDIT= 000003          1231#   1310
C$ERDF= 000055          1231#   2207    2227    2329    2433    2624    2633    2926    2935    3328    3354    3373    4374
                        4613    4628    4651    4664    4699    4708    4718    4855    5048    5072    5120    5265    5329
                        5348    5390    5409    5590    5626    5705    5902    5921    5959    6014    6157    6206    6355
                        6364    6456    6465    6481    6578    6587    6657    6666    6740    6749    6867    6882    6891
                        6973    6983    7057    7066    7110    7119    7161    7170    7236    7245    7300    7309    7418
                        7432    7442    7451    7463    7473    7482    7500    7507    7642    7733    7744    7754    7763
                        7772    7782    7791    7818    7882
C$ERHR= 000056          1231#
C$ERRO= 000060          1231#
C$ERSF= 000054          1231#
C$ERSO= 000057          1231#   2863
C$ESCA= 000010          1231#   5236    5255    5306    5318    5366    5379    5554    5566    5577    5584    5613    5620
                        5644    5656    5667    5684    5691    5870    5881    5890    5916    5948    5982    5993    6002
                        6009    6033    6047    6053    6117    6128    6140    6150    6167    6190    6199    6290    6301
                        6310    6327    6345    6377    6398    6409    6418    6435    6451    6538    6549    6556    6607
                        6618    6627    6687    6698    6707    6718    6786    6810    6821    6830    6851    6859    6921
                        6932    6941    6968    7052    7105    7156    7190    7201    7212    7231    7265    7276    7295
                        7352    7366    7371    7380    7392    7404    7661    7676    7681    7690    7710    7718    7727
                        7963    7977    7984    8068    8124    8182    8242
C$ESEG= 000005          1231#
C$ESUB= 000003          1231#   4963    5095    5147    5355    5416    5633    5712    5928    5971    6021    6062    6175
                        6222    6387    6489    6596    6676    6758    7075    7128    7179    7254    7318
C$ETST= 000001          1231#   4845    5151    5272    5420    5715    6068    6226    6492    6762    6904    6999    7322
                        7534    7904    8002    8083    8140    8202    8258
C$EXIT= 000032          1231#
C$GETB= 000026          1231#
C$GETW= 000027          1231#
C$GMAN= 000043          1231#
```

```
C$GPHR= 000042            1231#   4076
C$GPLO= 000030            1231#
C$GPRI= 000040            1231#
C$INIT= 000011            1231#   4234
C$INLP= 000020            1231#
C$MANI= 000050            1231#
C$MEM = 000031            1231#   3164
C$MSG = 000023            1231#   3496    3529    3592    3673    3702    3730    3745    3759    3775    5482    5792    6244
                          6509
C$OPEN= 000034            1231#
C$PNTB= 000014            1231#   2222    2240    2617    3438    3446    3454    3461    3468    3484    3492    3508    3517
                          3525    3540    3549    3559    3569    3577    3587    3604    3620    3636    3652    3668    3683
                          3691    3698    3710    3718    3726    3741    3755    3771    4091    4119    4223    4935    4950
                          5060    5084    5133    5244    5432    5443    5455    5466    5477    5725    5733    5743    5754
                          5765    5776    5787    6240    6505    7651    7891
C$PNTF= 000017            1231#   4772
C$PNTS= 000016            1231#
C$PNTX= 000015            1231#   4867
C$QIO = 000377            1231#
C$RDBU= 000007            1231#
C$REFG= 000047            1231#   4043    4048    4053    4058
C$RESE= 000033            1231#   4766
C$REVI= 000003            1231#   1309
C$RFLA= 000021            1231#
C$RPT = 000025            1231#
C$SEFG= 000046            1231#
C$SPRI= 000041            1231#   3095    3297    3412    4022    7581
C$SVEC= 000037            1231#   3082    4142    4149    4280    4811    7558    7611    7863
C$TPRI= 000013            1231#
DDMC  = 000010            1616#
DFPTBL  002174 G          1409#
DIAGMC= 000000            1231
DISCON= 000100            1592#
DMCMDE  002276            1719#   3012    4027*   4420    4496    4525    7952*   8057*   8113*   8171*   8231*
DMR   = 000522            1587#   4422    5314    5562    5601    5652    5877    5938    5989    6045    6124    6297    6405
                          6545    6567    6614    6694    6793    6928    7032    7043    7197    7272    7364    7674    7973
DMRFLG  002260            1706#   2513*   2516*   2597*   2603    2605*   7089*
DMRRUN= 000040            1594#   2630    4623
DMRVEC  002226            1678#   4122*   4140
DMTURN  002254            1698#   3018    4153*   4179    4184    4189    4194    4208    4210    4213    4215    4394    4437
                          6035    7354    7664    8053    8054*   8080*
DMTVEC  002230            1679#   4123*   4132*   4147
DTR   = 000100            1593#   4397    4401
DXERR = 000007            1615#   5607
EF.CON= 000036 G          1496#   4057
EF.NEW= 000035 G          1497#   4052
EF.PWR= 000034 G          1498#
EF.RES= 000037 G          1495#   4047
EF.STA= 000040 G          1494#   4042
EMG1    017716            2209    2331    2435    3926#
EMG10   020067            3945#   7434    7746
EMG11   020116            3949#   4666    4701    4720    7444    7475    7756    7784
EMG12   020141            3356    3953#   4710    7453    7484    7765    7793
EMG13   020167            3957#   7465    7774
EMG14   020215            3961#   7502
EMG15   020235            3375    3964#   7509    7820
```

```
EMG16   020250          3966#   4653
EMG17   020301          3971#   4376
EMG18   020353          3979#   4615
EMG19   020402          3983#   6869
EMG2    017727          3330    3928#
EMG8    017774          2626    3935#   6357    6458    6580    6659    6742    6884    6975    7059    7112    7163    7238
                        7302
EMG9    020040          2229    2635    3941#   4630    6366    6467    6589    6668    6751    6893    6985    7068    7121
                        7172    7247    7311    7420    7735
EMS3    012540          2865    2876#
EMS4    012724          2928    2937    2945#
EMT0    024120          4857    4874#
EMT1    025472          5050    5074    5185#
EMT10   030604          5923    6074#
EMT11   030632          5961    6078#
EMT12   030666          6016    6083#
EMT13   031226          6159    6208    6247#
EMT2    025512          5122    5188#
EMT20   032026          6483    6511#
EMT22   036240          7644    7884    7907#
EMT3    025646          5267    5274#
EMT4    026374          5331    5484#
EMT5    026421          5350    5411    5488#
EMT6    026467          5392    5495#
EMT7    027574          5592    5628    5795#
EMT8    027625          5707    5800#
EMT9    030554          5904    6070#
END     021510          4061    4228    4231#
ERRFLG  002362          1779#   2168*   2211*   2231*   2249    2297*   2333*   2341
ERRG1   014616 G        3331    3432#
ERRG10  016164 G        3357    3734#
ERRG11  016216 G        3748#
ERRG12  016250 G        3376    3762#
ERRG2   015124 G        2210    2230    2332    2627    2636    2929    2938    3500#   4377    4616    4631    4667    6358
                        6367    6459    6468    6581    6590    6660    6669    6743    6752    6885    6894    6976    6986
                        7060    7069    7113    7122    7164    7173    7239    7248    7303    7312    7421    7435    7445
                        7454    7466    7476    7485    7503    7510    7736    7747    7757    7766    7775    7785    7794
                        7821
ERRG3   015240 G        2436    3532#   5268
ERRG4   015470 G        2866    3596#
ERRG7   015764 G        3678#   4721
ERRG8   016062 G        3705#   4702    4711
ERROR   002366          1785#   2216    2519    4025*   6558*   6593*   6629*   6673*   6720*   6755*   6951*   6989*   7035*
                        7072*   7086*   7125*   7139*   7176*   7214*   7251*   7278*   7315*
ERRT1   026154 G        5351    5412    5423#
ERRT2   031174 G        6160    6209    6232#
ERRT3   027266 G        5708    5718#
ERRT4   031770 G        6484    6496#
EVL  =  000004 G        1514#
EXERR =  000006         1614#   5571
E$END =  002100         1231#
E$LOAD=  000035         1231#   1333
FINIT1  021512          4088    4235#
FINIT2  021601          4116    4245#
FINIT3  021670          4220    4255#
FLAG    002344          1766#   4969*   5043    5046*   5067    5070*   5100*   5115    5118*
```

```
FMDROP  023670              4769    4780#
FMG1    016302              3443    3514    3546    3782#   5722
FMG10   016715              3665    3830#
FMG11   016753              3707    3836#
FMG12   017005              3680    3841#
FMG13   017036              3688    3715    3846#
FMG14   017112              3723    3854#
FMG15   017166              3695    3862#
FMG16   017215              3738    3866#
FMG17   017274              3752    3874#
FMG18   017347              3768    3882#
FMG19   017436              3584    3892#   5241
FMG2    016334              3451    3522    3787#
FMG21   017461              3458    3896#
FMG22   017527              3465    3903#
FMG23   017554              3481    3907#
FMG24   017635              3489    3916#
FMG3    016366              3435    3505    3537    3601    3792#
FMG4    016440              3556    3799#
FMG5    016471              3566    3574    3804#
FMG7    016522              3617    3809#   6502
FMG8    016573              3633    3816#
FMG9    016644              3649    3823#
FMS1    010620              2219    2255#
FMS2    010653              2237    2260#
FMS3    011746              2614    2645#
FMT0    024147              4864    4878#
FMT1    025204              4932    5152#
FMT11   027662              5730    5806#
FMT12   027713              5740    5811#
FMT13   027750              5751    5816#
FMT14   030005              5762    5821#
FMT15   030042              5773    5826#
FMT16   030077              5784    5831#
FMT19   031252              6237    6253#
FMT2    025253              4947    5159#
FMT25   036276              7648    7888    7912#
FMT3    025330              5057    5081    5167#
FMT4    025414              5130    5176#
FMT5    026526              5429    5502#
FMT6    026557              5440    5507#
FMT7    026610              5452    5512#
FMT8    026641              5463    5517#
FMT9    026672              5474    5522#
FRSPAS  002266              1712#   4034*   4068*
FRSTIM  002264              1711#   4031    4033*
F$AU  = 000015              1231#
F$AUTO= 000020              1231#   4273    4305
F$BGN = 000040              1231#   1234    3432    3500    3532    3596    3678    3705    3734    3748    3762    3998    4018
                            4273    4323    4345    4607    4746    4763    4804    4844    4849    4920    4922    4962    4967
                            5094    5098    5146    5150    5229    5236    5255    5271    5296    5298    5306    5318    5354
                            5358    5366    5379    5415    5419    5423    5544    5546    5554    5566    5577    5584    5613
                            5620    5632    5636    5644    5656    5667    5684    5691    5711    5714    5718    5860    5862
                            5870    5881    5890    5916    5927    5931    5948    5970    5974    5982    5993    6002    6009
                            6020    6024    6033    6047    6053    6061    6067    6106    6109    6117    6128    6140    6150
                            6167    6174    6178    6190    6199    6221    6225    6232    6280    6282    6290    6301    6310
```

```
                        6327  6345  6377  6386  6390  6398  6409  6418  6435  6451  6488  6491  6496
                        6528  6530  6538  6549  6556  6595  6599  6607  6618  6627  6675  6679  6687
                        6698  6707  6718  6757  6761  6779  6786  6810  6821  6830  6851  6859  6903
                        6914  6921  6932  6941  6968  6998  7017  7019  7052  7074  7078  7105  7127
                        7131  7156  7178  7182  7190  7201  7212  7231  7253  7257  7265  7276  7295
                        7317  7321  7334  7352  7366  7371  7380  7392  7404  7533  7550  7661  7676
                        7681  7690  7710  7718  7727  7903  7946  7963  7977  7984  8001  8052  8068
                        8082  8109  8124  8139  8166  8182  8201  8227  8242  8257  8272  8394  8434
F$CLEA= 000007           1231#  4323  4331
F$DU  = 000016           1231#  4763  4776
F$END = 000041           1231#  1234  3497  3530  3593  3674  3703  3731  3746  3760  3776  4235  4307
                        4333  4602  4741  4753  4778  4804  4844  4846  4873  4920  4922  4962  4964
                        4967  5094  5096  5098  5146  5148  5150  5152  5229  5236  5255  5271  5273
                        5296  5298  5306  5318  5354  5356  5358  5366  5379  5415  5417  5419  5421
                        5483  5544  5546  5554  5566  5577  5584  5613  5620  5632  5634  5636  5644
                        5656  5667  5684  5691  5711  5713  5714  5716  5793  5860  5862  5870  5881
                        5890  5916  5927  5929  5931  5948  5970  5972  5974  5982  5993  6002  6009
                        6020  6022  6024  6033  6047  6053  6061  6063  6067  6069  6106  6109  6117
                        6128  6140  6150  6167  6174  6176  6178  6190  6199  6221  6223  6225  6227
                        6245  6280  6282  6290  6301  6310  6327  6345  6377  6386  6388  6390  6398
                        6409  6418  6435  6451  6488  6490  6491  6493  6510  6528  6530  6538  6549
                        6556  6595  6597  6599  6607  6618  6627  6675  6677  6679  6687  6698  6707
                        6718  6757  6759  6761  6763  6779  6786  6810  6821  6830  6851  6859  6903
                        6905  6914  6921  6932  6941  6968  6998  7000  7017  7019  7052  7074  7076
                        7078  7105  7127  7129  7131  7156  7178  7180  7182  7190  7201  7212  7231
                        7253  7255  7257  7265  7276  7295  7317  7319  7321  7323  7334  7352  7366
                        7371  7380  7392  7404  7533  7535  7550  7661  7676  7681  7690  7710  7718
                        7727  7903  7905  7946  7963  7977  7984  8001  8003  8052  8068  8082  8084
                        8109  8124  8139  8141  8166  8182  8201  8203  8227  8242  8257  8259  8295
                        8407  8434
F$HARD= 000004           1231#  8272  8293
F$HW  = 000013           1231#  1407  1424
F$INIT= 000006           1231#  4018  4233
F$JMP = 000050           1231#
F$MOD = 000000           1231#  1234  8434
F$MSG = 000011           1231#  3432  3495  3500  3528  3532  3591  3596  3672  3678  3701  3705  3729
                        3734  3744  3748  3758  3762  3774  5423  5481  5718  5791  6232  6243  6496
                        6508
F$PROT= 000021           1231#  3998  4005
F$PWR = 000017           1231#
F$RPT = 000012           1231#
F$SEG = 000003           1231#
F$SOFT= 000005           1231#  8394  8405
F$SRV = 000010           1231#  4345  4600  4607  4739  4746  4751  4849  4871
F$SUB = 000002           1231#  4923  4962  4968  5094  5099  5146  5299  5354  5359  5415  5547  5632
                        5637  5711  5863  5927  5932  5970  5975  6020  6025  6061  6110  6174  6179
                        6221  6283  6386  6391  6488  6531  6595  6600  6675  6680  6757  7020  7074
                        7079  7127  7132  7178  7183  7253  7258  7317
F$SW  = 000014           1231#  1439  1446
F$TEST= 000001           1231#  4805  4844  4921  5150  5230  5271  5297  5419  5545  5714  5861  6067
                        6107  6225  6281  6491  6529  6761  6780  6903  6915  6998  7018  7321  7335
                        7533  7551  7903  7947  8001  8053  8082  8110  8139  8167  8201  8228  8257
GETPRM  020630           4060  4070#  4079
G$CNTO= 000200           1231#
G$DELM= 000372           1231#  2195  2318  2422  3315
G$DISP= 000003           1231#
```

```
G$EXCP= 000400          1231#
G$HILI= 000002          1231#
G$LOLI= 000001          1231#
G$NO  = 000000          1231#
G$OFFS= 000400          1231#   8276    8281    8286    8398
G$OFSI= 000376          1231#   8276    8281    8286    8398
G$PRMA= 000001          1231#   8276    8281
G$PRMD= 000002          1231#   8286    8398
G$PRML= 000000          1231#
G$RADA= 000140          1231#
G$RADB= 000000          1231#
G$RADD= 000040          1231#
G$RADL= 000120          1231#
G$RADO= 000020          1231#   8276    8281    8286    8398
G$XFER= 000004          1231#
G$YES = 000010          1231#   8276    8281    8286    8398
HALTC = 001000          1585#   2932    4621    7063    7116    7167    7242    7306
HDX   = 002000          1583#   5944
HELP  = 000000          1224#   1251    1351    1392    1904
HICRC   002404          1797#   4979*   5020*   5026    5027*   5028*   5064*   5065    5079
HIWORD  002410          1799#   4992*   4996*   5021*   5065    5078
HLT   = 000002          1610#   2900    4371    4516    4565    4585
HOE   = 100000 G        1527#
IBE   = 010000 G        1524#
IDU   = 000040 G        1517#
IECLR = 000020          1566#   3382    4502    4508
IEO   = 000100          1573#   3383    4429    4644    4733
IER   = 020000 G        1525#
IESET = 000100          1563#   3300    3382    4541    4546    4550    4565    4570    4585    4590    4646
INFACE  002262          1709#   2517    4198*   4201*   4539
INFLAG  002354          1772#   3287*   3309    4520    4593*   4634
INISR   022064 G        4139    4345#
INRCV   002326          1756#   3283*   3470*   3474*   3480    4450*   4553    4557
INTER = 000015          1625#   2525    4369    4533    4541
INXMIT  002330          1757#   3284*   3471*   3475*   3479    4458*   4573    4577
ISP13 = 000076          1649#   5586    5622    5729
ISP7  = 000072          1648#   5324    5385    5918    6011
ISR   = 000100 G        1518#
IXE   = 004000 G        1523#
I$AU  = 000041          1231#
I$AUTO= 000041          1231#   4273#   4307#
I$CLN = 000041          1231#   4323#   4333#
I$DU  = 000041          1231#   4763#   4778#
I$HRD = 000041          8272#   8295#
I$INIT= 000041          1231#   4018#   4235#
I$MOD = 000041          1231#   1234#   8434#
I$MSG = 000041          1231#   3432#   3497#   3500#   3530#   3532#   3593#   3596#   3674#   3678#   3703#   3705#   3731#
                        3734#   3746#   3748#   3760#   3762#   3776#   5423#   5483#   5718#   5793#   6232#   6245#   6496#
                        6510#
I$PROT= 000040          1231#   3998#
I$PTAB= 000041          1231#
I$PWR = 000041          1231#
I$RPT = 000041          1231#
I$SEG = 000041          1231#   4804    4920    4922    4967    5098    5229    5296    5298    5358    5544    5546    5636
                        5860    5862    5931    5974    6024    6106    6109    6178    6280    6282    6390    6528    6530
                        6599    6679    6779    6914    7017    7019    7078    7131    7182    7257    7334    7550    7946
```

```
                    8052    8109    8166    8227
I$SETU= 000041      1231#
I$SFT = 000041      8394#   8407#
I$SRV = 000041      1231#   4345#   4602#   4607#   4741#   4746#   4753#   4849#   4873#
I$SUB = 000041      1231#   4804    4920    4922#   4962#   4964#   4967#   5094#   5096#   5098#   5146#   5148#   5229
                    5296    5298#   5354#   5356#   5358#   5415#   5417#   5544    5546#   5632#   5634#   5636#   5711#
                    5713#   5860    5862#   5927#   5929#   5931#   5970#   5972#   5974#   6020#   6022#   6024#   6061#
                    6063#   6106    6109#   6174#   6176#   6178#   6221#   6223#   6280    6282#   6386#   6388#   6390#
                    6488#   6490#   6528    6530#   6595#   6597#   6599#   6675#   6677#   6679#   6757#   6759#   6779
                    6914    7017    7019#   7074#   7076#   7078#   7127#   7129#   7131#   7178#   7180#   7182#   7253#
                    7255#   7257#   7317#   7319#   7334    7550    7946    8052    8109    8166    8227
I$TST = 000041      1231#   4804#   4844#   4846#   4920#   4922    4967    5098    5150#   5152#   5229#   5236    5255
                    5271#   5273#   5296#   5298    5306    5318    5358    5366    5379    5419#   5421#   5544#   5546
                    5554    5566    5577    5584    5613    5620    5636    5644    5656    5667    5684    5691    5714#
                    5716#   5860#   5862    5870    5881    5890    5916    5931    5948    5974    5982    5993    6002
                    6009    6024    6033    6047    6053    6067#   6069#   6106#   6109    6117    6128    6140    6150
                    6167    6178    6190    6199    6225#   6227#   6280#   6282    6290    6301    6310    6327    6345
                    6377    6390    6398    6409    6418    6435    6451    6491#   6493#   6528#   6530    6538    6549
                    6556    6599    6607    6618    6627    6679    6687    6698    6707    6718    6761#   6763#   6779#
                    6786    6810    6821    6830    6851    6859    6903#   6905#   6914#   6921    6932    6941    6968
                    6998#   7000#   7017#   7019    7052    7078    7105    7131    7156    7182    7190    7201    7212
                    7231    7257    7265    7276    7295    7321#   7323#   7334#   7352    7366    7371    7380    7392
                    7404    7533#   7535#   7550#   7661    7676    7681    7690    7710    7718    7727    7903#   7905#
                    7946#   7963    7977    7984    8001#   8003#   8052#   8068    8082#   8084#   8109#   8124    8139#
                    8141#   8166#   8182    8201#   8203#   8227#   8242    8257#   8259#
J$JMP = 000167       1231#
LAST    002364      1783#   4494*   4516    4531    4533    4535
LF    = 000012      1663#   8302    8306    8312    8330    8336    8340    8355    8371    8375    8408
LLOOP = 000006      1660#   3018    4394
LOCATE  024042  G   4808    4849#
LOCRC   002402      1796#   4977*   5009*   5015    5016*   5017*   5039*   5040    5055
LOE   = 040000  G   1526#
LOGDEV  002370      1786#   4067*   4071*   4072    4075    4298    4768    4833    4931
LOT   = 000010  G   1515#
LOWORD  002406      1798#   4991*   4995*   5010*   5040    5054
LPLU  = 004000      1557#   4439    4442    5560    5599    5650    5875    5936    5987    6037    6040    6122    6295
                    6403    6543    6612    6692    6791    6926    7030    7041    7195    7270    7356    7359    7666
                    7669    7971
L$ACP   002110  G   1340#
L$APT   002036  G   1298#
L$AUT   002070  G   1324#
L$AUTO  021756  G   1341    4273#
L$CCP   002106  G   1338#
L$CLEA  022046  G   1339    4323#
L$CO    002032  G   1294#
L$DEPO  002011  G   1276#
L$DESC  010246  G   1331    1891#
L$DESP  002076  G   1330#
L$DEVP  002060  G   1316#
L$DISP  002124  G   1301    1371#
L$DLY   002116  G   1346#   2197    2320    2424    3317
L$DTP   002040  G   1300#
L$DTYP  002034  G   1296#
L$DU    023640  G   1327    4763#
L$DUT   002072  G   1326#
L$DVTY  010240  G   1317    1883#
```

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L$EF    002052 G        1311#
L$ENVI  002044 G        1304#
L$ETP   002102 G        1334#
L$EXP1  002046 G        1306#
L$EXP4  002064 G        1320#
L$EXP5  002066 G        1322#
L$HARD  036744 G        1283    8272    8273#
L$HIME  002120 G        1348#   3089    7575    7838
L$HPCP  002016 G        1282#
L$HPTP  002022 G        1286#
L$HW    002174 G        1287    1407    1408#
L$ICP   002104 G        1336#
L$INIT  020452 G        1337    4018#
L$LADP  002026 G        1290#
L$LAST  040100 G        1291    8439#
L$LOAD  002100 G        1332#
L$LUN   002074 G        1328#
L$MREV  002050 G        1308#
L$NAME  002000 G        1265#
L$PRIO  002042 G        1302#
L$PROT  020444 G        1343    3998#
L$PRT   002112 G        1342#
L$REPP  002062 G        1318#
L$REV   002010 G        1274#
L$SOFT  037700 G        1285    8394    8395#
L$SPC   002056 G        1314#
L$SPCP  002020 G        1284#
L$SPTP  002024 G        1288#
L$STA   002030 G        1292#
L$SW    002224 G        1289    1439    1440#
L$TEST  002114 G        1344#   2849    2851    3384
L$TIML  002014 G        1280#
L$UNIT  002012 G        1278#   4072
L10000  002222          1407    1424#
L10001  002226          1439    1446#
L10002  015122          3495#
L10003  015236          3528#
L10004  015466          3591#
L10005  015762          3672#
L10006  016060          3701#
L10007  016162          3729#
L10010  016214          3744#
L10011  016246          3758#
L10012  016300          3774#
L10014  021510          4233#
L10015  022044          4305#
L10016  022062          4331#
L10017  023140          4600#
L10020  023626          4739#
L10021  023636          4751#
L10022  023666          4776#
L10023  024040          4844#
L10024  024116          4871#
L10025  025202          5150#
L10026  024404          4962#
L10027  025026          5094#
```

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L10030  025200          5146#
L10031  025644          5237    5256    5271#
L10032  026152          5307    5319    5367    5380    5419#
L10033  026022          5354#
L10034  026150          5415#
L10035  026372          5481#
L10036  027264          5555    5567    5578    5585    5614    5621    5645    5657    5668    5685    5692    5714#
L10037  027104          5632#
L10040  027262          5711#
L10041  027572          5791#
L10042  030552          5871    5882    5891    5917    5949    5983    5994    6003    6010    6034    6048    6054    6067#
L10043  030270          5927#
L10044  030360          5970#
L10045  030454          6020#
L10046  030550          6061#
L10047  031160          6118    6129    6141    6151    6168    6191    6200    6225#
L10050  031060          6174#
L10051  031156          6221#
L10052  031224          6243#
L10053  031766          6291    6302    6311    6328    6346    6378    6399    6410    6419    6436    6452    6491#
L10054  031560          6386#
L10055  031764          6488#
L10056  032024          6508#
L10057  032552          6539    6550    6557    6608    6619    6628    6688    6699    6708    6719    6761#
L10060  032204          6595#
L10061  032364          6675#
L10062  032550          6757#
L10063  032776          6787    6811    6822    6831    6852    6860    6903#
L10064  033156          6922    6933    6942    6969    6998#
L10065  034062          7053    7106    7157    7191    7202    7213    7232    7266    7277    7296    7321#
L10066  033306          7074#
L10067  033424          7127#
L10070  033542          7178#
L10071  033720          7253#
L10072  034060          7317#
L10073  034612          7353    7367    7372    7381    7393    7405    7533#
L10074  036236          7662    7677    7682    7691    7711    7719    7728    7903#
L10075  036460          7964    7978    7985    8001#
L10076  036546          8069    8082#
L10077  036616          8125    8139#
L10100  036666          8183    8201#
L10101  036740          8243    8257#
L10102  036776          8272    8294#
L10103  037712          8394    8406#
MAINT =  000400         1586#   2595    4409    5998    6306
MAINT1=  000010         1596#   3021    3026    4397    4400
MAINT2=  000004         1599#   3020    3027    4396    4401
MANUF    002310         1735#   4205
MCLR  =  040000         1554#   2398    2401    4327    4641
MDIAG =  020000         1555#   2401
MICRO    002256         1699#
MMANAG   002302         1721#   3092*   3159*   3340    3349    3368    3378    4462    4657
MNTMDE   002300         1720#   4407    7953*   8058*   8114*   8172*   8232*
MNTREC=  000010         1597#
MODEM    031162         6132    6228#
N     =  000043         1639#   5338    5399    5435
```

```
NAKS  = 000001          1601#
NESTPC  002376          1789#   2170    2243    2299    2335    2484*   2540*   2582*   2641*   2697    2706    2707*   2714*
                        2740    2783*   2804*   2832    2868    2902*   2941*   3029*   3036*   3282*   3413*
NEWST   020612          4055    4066#   4073
NEXT    022620          4352    4515#
NOBFR = 000004          1598#   6361    6462
NOXMEM  023630 G        3079    4277    4746#   7555    7608    7860
NXM   = 000400          1590#   6584    6663    6746
NXMFLG  002352          1770#   3076*   3085    3126    3135    3255*   4030*   4282*   4295    4302*   4325    4748*   4813*
                        4830    4837*   4851    4859*   7560*   7565    7569*   7605*   7620    7630    7639    7857*   7868
                        7877
OUTFLG  002356          1775#   3288*   3311    4522    4636    4734*
OUTISR  023142 G        4146    4607#
OUTRCV  002332          1758#   3285*   3472*   3476*   3488    4714*   4730
OUTXMT  002334          1759#   3286*   3473*   3477*   3487    4694*   4728
O$APTS= 000000          1231#   1292
O$AU  = 000000          1231#   1324
O$BGNR= 000000          1231#   1318
O$BGNS= 000001          1231#   1250#   1284
O$DU  = 000001          1231#   1250#   1326
O$ERRT= 000000          1231#   1334
O$GNSW= 000001          1231#   1250#   1288
O$POIN= 000001          1231#   1250#   1350
O$SETU= 000000          1231#   1278    8437
PATCH   040042          8427#
PNT   = 001000 G        1521#
PRETIM= 000055          1643#   5693    5735    5739
PRI   = 002000 G        1522#
PRI00 = 000000 G        1510#
PRI01 = 000040 G        1509#
PRI02 = 000100 G        1508#
PRI03 = 000140 G        1507#
PRI04 = 000200 G        1506#   3296
PRI05 = 000240 G        1505#   4138    4145
PRI06 = 000300 G        1504#
PRI07 = 000340 G        1503#   3078    3094    3411    4021    4276    4807    7554    7580    7607    7859
PSTACK  002372          1787#   4023*
P1      036776          8277    8296#
P2      037014          8282    8299#
P3      037035          8287    8302#
R     = 000042          1638#   5336    5397    5424    5428
RBUF    002572          1850#   6713    6947    7146    7207    7285    7338    7387    7470    7490
RCOUNT= 000044          1849#   6638    6714    6948    7147    7208    7335    7388    7479    7488
RCV   = 000004          1569#   4692    7424    7516    7739    7825
RCVBUF  003640          1864#   3142*   3179*   3180*   3215    3223    3224    3291    3293    3337
RDI   = 000200          1562#   2187    2311    4350
RDO   = 000200          1572#   2185    2522    2639    2940    4609    4736    6349    6370    6379    6592    6672    6754
                        7071    7124    7175    7250    7314    7516    7825
RES   = 010000          1578#   2510    4432    5601    5938    6567
RESFLG  002360          1777#   4433*   4559    4568*   4579    4588*
RESUME  002274          1718#   4026*   4518    4555    4575    4639    7951*   8056*   8112*   8170*   8230*
RETURN= 000207          1654#
REV1    025540          4939*   4945    5195#
REV2    025542          4940*   4943    5196#
RFLAG   002570          1848#   7345*   7460    7469*   7517    7694*   7769    7778*   7826    7841*
RLOOP = 000007          1661#
```

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RMODEM= 000017          1626#   5893    5950    6143    6192
ROMADR  002412          1800#   2967    2976    4929*   4957*   4974*   4993*   4999*   5102*   5142*
ROMI   = 001000          1559#   2968    2974    2977    2983
ROMLOC  025531          5129    5192#
ROMO   = 002000          1558#   2984
RQI    = 000040          1565#   2298    2483    2525    2581    2705    2900    3300    4503    4541    4546    4550    4565
                        4570    4585    4590    4646    5893    5950    6143    6192    6334    6440    6636    6644    6712
                        6727    6845    6946    6957    7145    7206    7220    7284    7386    7398    7706    7714
RRAM   = 000014          1624#
RSEL4   035362          7698*   7707#   7779    7848*
RSEL6   035364          7699*   7708#   7788    7849*
RUN    = 100000          1553#   2415    3551
SAVE    002342          1765#   2702*   2720    2744*
SECN   = 004000          1581#
SEL0   = 002232          1684#   2187    2298*   2311    2398*   2401*   2415    2495*   2522    2705*   2900*   2966*   2968*
                        2973*   2974*   2977*   2981*   2983*   2984*   3382*   3442    3513    3545    3551    4327*   4348
                        4350    4439*   4442*   4502*   4503*   4508*   4641*   4646*   4823    5721    5893*   5950*   6143*
                        6192*
SEL2    002234          1681#   1687    2185    2224    2621    2639*   2901*   2923    2940*   2967*   3383*   3441    3512
                        3544    4097*   4098*   4429*   4609    4619    4644*   4692    4733*   4736*   4825    5720    6349*
                        6352    6370*   6379*   6453    6575    6592*   6654    6672*   6737    6754*   6879    6970    7054
                        7071*   7107    7124*   7158    7175*   7233    7250*   7297    7314*   7415    7424    7516*   7730
                        7739    7825*
SEL4    002236          1682#   1689    2497*   2722*   2794*   3450    3521    3687    3714    4101*   4102*   4418*   4451*
                        4459*   4468    4469*   4476*   4482*   4486*   4671    4673*   4677*   4682*   4687*   4690*   4695
                        4715    4827    5899    5956    7439    7470    7751    7779
SEL6    002240          1683#   1691    2499*   2510    2593*   2595    2630    2725*   2730*   2732*   2796*   2932    2969*
                        2978*   3449    3520    3686    3713    4105*   4106*   4396*   4397*   4400*   4401*   4409*   4412*
                        4422*   4425*   4432*   4452*   4460*   4465*   4621    4623    4659    4670*   4705    4725    4829
                        6361    6462    6584    6663    6746    6888    6979    7063    7116    7167    7242    7306    7448
                        7479    7760    7788
SFLAG   002346          1767#   7695*   7796    7834    7937*
SFPTBL  002224 G        1441#
SKIP    002350          1768#
SPEED   002224          1443#   4156
STARES  002270          1713#   4064*   4069*   4217    4924
STARST  020606          4045    4050    4063#
START   002272          1717#   3289*   4427    4527    4549*
STLU   = 010000          1556#
STREC  = 000200          1591#
STUP   = 000400          1560#   2973    2974    2981    2983
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                        2579*   2580*   2642*   2699*   2700*   2742*   2779*   2780*   2805*   2834*   2835*   2870*   2898*
                        2899*   2942*   3016*   3017*   3037*   3074*   3075*   3256*   3280*   3281*   3414*   3434    3501
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                        1307    1309    1310    1312    1313    1315    1317    1319    1321    1323    1325    1327    1329
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2222	2223	2227	2228	2229	2230	2237	2238	2239	2240	2241	2314	2318
2319	2320	2321	2322	2323	2324	2325	2329	2330	2331	2332	2418	2422
2423	2424	2425	2426	2427	2428	2429	2433	2434	2435	2436	2491	2507
2532	2589	2612	2614	2615	2616	2617	2618	2624	2625	2626	2627	2633
2634	2635	2636	2716	2790	2863	2864	2865	2866	2909	2915	2922	2926
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SW01  = 000002       1547#
SW02  = 000004       1546#
SW03  = 000010       1545#
SW04  = 000020       1544#
SW05  = 000040       1543#
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SW07  = 000200       1541#
SW08  = 000400       1540#
SW09  = 001000       1539#
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SW10   = 002000          1538#
SW11   = 004000          1537#
SW12   = 010000          1536#
SW13   = 020000          1535#
SW14   = 040000          1534#
SW15   = 100000          1533#
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                         8258#  8295#  8407#
S1       037712          8399   8408#
T      = 000045          1641#  5342   5403   5458   5462
TBUF     002522          1835#  6335   6441   6645   6846   6958   7221   7399   7439   7489
TCOUNT= 000044           1834#  6336   6442   6646   6847   6959   7400   7448
TEMP     002340          1764#  2175*  2214   2234
TEMP1    002336          1763#  8053*  8080
TFLAG    002520          1833#  7344*  7429   7438*  7521   7693*  7741   7750*  7830   7840*
THRESH= 000013           1619#  5678   6321   6429   6804
TH1L   = 000060          1644#  5697   5746   5750
TH2L   = 000062          1645#  5699   5757   5761
TH3L   = 000064          1646#  5695   5768   5772
TH4L   = 000066          1647#  5701   5779   5783
TIMER  = 000012          1618#  5661   6815
TOLONG= 000020           1595#  6979
TOUT   = 000002          1600#  6888
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TSEL6    035402          7702*  7716#  7760   7852*
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                         7764#  7773#  7783#  7792#  7819#  7883#
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                8258   8295   8407
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T$NS1 = 000005  1407#  1424   1439#  1446   3432#  3495   3500#  3528   3532#  3591   3596#  3672   3678#
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                4844   4849#  4871   4921#  5150   5230#  5271   5297#  5419   5423#  5481   5545#  5714
                5718#  5791   5861#  6067   6107#  6225   6232#  6243   6281#  6491   6496#  6508   6529#
                6761   6780#  6903   6915#  6998   7018#  7321   7335#  7533   7551#  7903   7947#  8001
                8053#  8082   8110#  8139   8167#  8201   8228#  8257   8272#  8293   8394#  8405
T$NS2 = 000002  4923#  4962   4968#  5094   5099#  5146   5299#  5354   5359#  5415   5547#  5632   5637#
                5711   5863#  5927   5932#  5970   5975#  6020   6025#  6061   6110#  6174   6179#  6221
                6283#  6386   6391#  6488   6531#  6595   6600#  6675   6680#  6757   7020#  7074   7079#
                7127   7132#  7178   7183#  7253   7258#  7317
T$PTNU= 000000  1231#
T$SAVL= 177777  1231#
T$SEGL= 177777  1231#
T$SUBN= 000000  1231#  4804#  4920#  4922#  4967#  5098#  5229#  5296#  5298#  5358#  5544#  5546#  5636#
                5860#  5862#  5931#  5974#  6024#  6106#  6109#  6178#  6280#  6282#  6390#  6528#  6530#
                6599#  6679#  6779#  6914#  7017#  7019#  7078#  7131#  7182#  7257#  7334#  7550#  7946#
                8052#  8109#  8166#  8227#
T$TAGL= 177777  1231#
T$TAGN= 010104  1231#  1407#  1439#  3432#  3500#  3532#  3596#  3678#  3705#  3734#  3748#  3762#  3998#
                4018#  4273#  4323#  4345#  4607#  4746#  4763#  4805#  4849#  4921#  4923#  4968#  5099#
                5230#  5297#  5299#  5359#  5423#  5545#  5547#  5637#  5718#  5861#  5863#  5932#  5975#
                6025#  6107#  6110#  6179#  6232#  6281#  6283#  6391#  6496#  6529#  6531#  6600#  6680#
                6780#  6915#  7018#  7020#  7079#  7132#  7183#  7258#  7335#  7551#  7947#  8053#  8110#
                8167#  8228#  8272#  8394#
T$TEMP= 000000  1372#  1373#  1374#  1375#  1376#  1377#  1378#  1379#  1380#  1381#  1382#  1383#  1384#
                1385#  1386#  1387#  1388#  1389#  1390#  1391#  1424#  1446#  3495#  3528#  3591#  3672#
                3701#  3729#  3744#  3758#  3774#  4005#  4233#  4305#  4331#  4600#  4739#  4751#  4776#
                4844#  4871#  4962#  5094#  5146#  5150#  5236#  5237   5255#  5256   5271#  5306#  5307
                5318#  5319   5354#  5366#  5367   5379#  5380   5415#  5419#  5481#  5554#  5555   5566#
                5567   5577#  5578   5584#  5585   5613#  5614   5620#  5621   5632#  5644#  5645   5656#
                5657   5667#  5668   5684#  5685   5691#  5692   5711#  5714#  5791#  5870#  5871   5881#
                5882   5890#  5891   5916#  5917   5927#  5948#  5949   5970#  5982#  5983   5993#  5994
```

```
                    6002#  6003   6009#  6010   6020#  6033#  6034   6047#  6048   6053#  6054   6061#  6067#
                    6117#  6118   6128#  6129   6140#  6141   6150#  6151   6167#  6168   6174#  6190#  6191
                    6199#  6200   6221#  6225#  6243#  6290#  6291   6301#  6302   6310#  6311   6327#  6328
                    6345#  6346   6377#  6378   6386#  6398#  6399   6409#  6410   6418#  6419   6435#  6436
                    6451#  6452   6488#  6491#  6508#  6538#  6539   6549#  6550   6556#  6557   6595#  6607#
                    6608   6618#  6619   6627#  6628   6675#  6687#  6688   6698#  6699   6707#  6708   6718#
                    6719   6757#  6761#  6786#  6787   6810#  6811   6821#  6822   6830#  6831   6851#  6852
                    6859#  6860   6903#  6921#  6922   6932#  6933   6941#  6942   6968#  6969   6998#  7052#
                    7053   7074#  7105#  7106   7127#  7156#  7157   7178#  7190#  7191   7201#  7202   7212#
                    7213   7231#  7232   7253#  7265#  7266   7276#  7277   7295#  7296   7317#  7321#  7352#
                    7353   7366#  7367   7371#  7372   7380#  7381   7392#  7393   7404#  7405   7533#  7661#
                    7662   7676#  7677   7681#  7682   7690#  7691   7710#  7711   7718#  7719   7727#  7728
                    7903#  7963#  7964   7977#  7978   7984#  7985   8001#  8068#  8069   8082#  8124#  8125
                    8139#  8182#  8183   8201#  8242#  8243   8257#  8276#  8281#  8286#  8293#  8398#  8405#
                    8434#
T$TEST= 000023       1231#  4804#  4920#  4922   4967   5098   5229#  5296#  5298   5358   5544#  5546   5636
                    5860#  5862   5931   5974   6024   6106#  6109   6178   6280#  6282   6390   6528#  6530
                    6599   6679   6779#  6914#  7017#  7019   7078   7131   7182   7257   7334#  7550#  7946#
                    8052#  8109#  8166#  8227#  8440
T$TSTM= 177777       1231#  2190   2207   2222   2227   2240   2314   2329   2418   2433   2617   2624   2633
                    2863   2926   2935   3082   3095   3162   3164   3297   3305   3328   3354   3373   3412
                    3438   3446   3454   3461   3468   3484   3492   3496   3508   3517   3525   3529   3540
                    3549   3559   3569   3577   3587   3592   3604   3620   3636   3652   3668   3673   3683
                    3691   3698   3702   3710   3718   3726   3730   3741   3745   3755   3759   3771   3775
                    4022   4039   4043   4048   4053   4058   4076   4091   4119   4142   4149   4223   4234
                    4280   4294   4299   4301   4306   4332   4374   4613   4628   4651   4664   4699   4708
                    4718   4766   4772   4777   4811   4834   4836   4841   4845   4855   4867   4923   4935
                    4950   4963   4968   5048   5060   5072   5084   5095   5099   5120   5133   5147   5151
                    5236   5244   5255   5265   5272   5299   5306   5318   5329   5348   5355   5359   5366
                    5379   5390   5409   5416   5420   5432   5443   5455   5466   5477   5482   5547   5554
                    5566   5577   5584   5590   5613   5620   5626   5633   5637   5644   5656   5667   5684
                    5691   5705   5712   5715   5725   5733   5743   5754   5765   5776   5787   5792   5863
                    5870   5881   5890   5902   5916   5921   5928   5932   5948   5959   5971   5975   5982
                    5993   6002   6009   6014   6021   6025   6033   6047   6053   6062   6068   6110   6117
                    6128   6140   6150   6157   6167   6175   6179   6190   6199   6206   6222   6226   6240
                    6244   6283   6290   6301   6310   6327   6345   6355   6364   6377   6387   6391   6398
                    6409   6418   6435   6451   6456   6465   6481   6489   6492   6505   6509   6531   6538
                    6549   6556   6578   6587   6596   6600   6607   6618   6627   6657   6666   6676   6680
                    6687   6698   6707   6718   6740   6749   6758   6762   6786   6810   6821   6830   6851
                    6859   6867   6882   6891   6904   6921   6932   6941   6968   6973   6983   6999   7020
                    7052   7057   7066   7075   7079   7105   7110   7119   7128   7132   7156   7161   7170
                    7179   7183   7190   7201   7212   7231   7236   7245   7254   7258   7265   7276   7295
                    7300   7309   7318   7322   7352   7366   7371   7380   7392   7404   7418   7432   7442
                    7451   7463   7473   7482   7500   7507   7534   7558   7564   7581   7611   7638   7642
                    7651   7661   7676   7681   7690   7710   7718   7727   7733   7744   7754   7763   7772
                    7782   7791   7818   7863   7876   7882   7891   7904   7963   7977   7984   8002   8068
                    8083   8124   8140   8182   8202   8242   8258
T$TSTS= 000001       1231#  4805#  4921#  5230#  5297#  5545#  5861#  6107#  6281#  6529#  6780#  6915#  7018#
                    7335#  7551#  7947#  8053#  8110#  8167#  8228#
T$$AUT= 010015       4273#  4305
T$$CLE= 010016       4323#  4331
T$$DU = 010022       4763#  4776
T$$HAR= 010102       8272#  8294
T$$HW = 010000       1407#  1424
T$$INI= 010014       4018#  4233
T$$MSG= 010056       3432#  3495   3500#  3528   3532#  3591   3596#  3672   3678#  3701   3705#  3729   3734#
```

```
                    3744    3748#   3758    3762#   3774    5423#   5481    5718#   5791    6232#   6243    6496#   6508
T$$PRO= 010013      3998#
T$$SOF= 010103      8394#   8406
T$$SRV= 010024      4345#   4600    4607#   4739    4746#   4751    4849#   4871
T$$SUB= 010072      4923#   4962    4968#   5094    5099#   5146    5299#   5354    5359#   5415    5547#   5632    5637#
                    5711    5863#   5927    5932#   5970    5975#   6020    6025#   6061    6110#   6174    6179#   6221
                    6283#   6386    6391#   6488    6531#   6595    6600#   6675    6680#   6757    7020#   7074    7079#
                    7127    7132#   7178    7183#   7253    7258#   7317
T$$SW = 010001      1439#   1446
T$$TES= 010101      4805#   4844    4921#   5150    5230#   5236    5255    5271    5297#   5306    5318    5366    5379
                    5419    5545#   5554    5566    5577    5584    5613    5620    5644    5656    5667    5684    5691
                    5714    5861#   5870    5881    5890    5916    5948    5982    5993    6002    6009    6033    6047
                    6053    6067    6107#   6117    6128    6140    6150    6167    6190    6199    6225    6281#   6290
                    6301    6310    6327    6345    6377    6398    6409    6418    6435    6451    6491    6529#   6538
                    6549    6556    6607    6618    6627    6687    6698    6707    6718    6761    6780#   6786    6810
                    6821    6830    6851    6859    6903    6915#   6921    6932    6941    6968    6998    7018#   7052
                    7105    7156    7190    7201    7212    7231    7265    7276    7295    7321    7335#   7352    7366
                    7371    7380    7392    7404    7533    7551#   7661    7676    7681    7690    7710    7718    7727
                    7903    7947#   7963    7977    7984    8001    8053#   8068    8082    8110#   8124    8139    8167#
                    8182    8201    8228#   8242    8257
T1          023720 G    1372    4804#
T10         032554 G    1381    6779#
T11         033000 G    1382    6914#
T12         033160 G    1383    7017#
T12.1       033160      7019#
T12.2       033310      7078#
T12.3       033426      7131#
T12.4       033544      7182#
T12.5       033722      7257#
T13         034064 G    1384    7334#
T14         034614 G    1385    7550#
T15         036360 G    1386    7946#
T16         036462 G    1387    8052#
T17         036550 G    1388    8109#
T18         036620 G    1389    8166#
T19         036670 G    1390    8227#
T2          024230 G    1373    4920#
T2.1        024230      4922#
T2.2        024406      4967#
T2.3        025030      5098#
T3          025544 G    1374    5229#
T4          025676 G    1375    5296#
T4.1        025676      5298#
T4.2        026024      5358#
T5          026724 G    1376    5544#
T5.1        026724      5546#
T5.2        027106      5636#
T6          030136 G    1377    5860#
T6.1        030136      5862#
T6.2        030272      5931#
T6.3        030362      5974#
T6.4        030456      6024#
T7          030716 G    1378    6106#
T7.1        030716      6109#
T7.2        031062      6178#
T8          031340 G    1379    6280#
```

```
T8.1    031340          6282#
T8.2    031562          6390#
T9      032042 G        1380    6528#
T9.1    032042          6530#
T9.2    032206          6599#
T9.3    032366          6679#
UAM   = 000200 G        1519#
UPDATE= 000011          1617#   3394
WAIT1   002312          1746#   2180    4169*
WAIT2   002314          1748#   2306    2410    4172*
WAIT3   002316          1750#   3299    4174*
WAIT4   002320          1751#   3299*   3325*
WMAINT  002306          1732#   3014    4227*   4230*   4544    7947
WMODEM= 000005          1613#   2720    3031    4367    4535    4546    6136    6184    6837
WTYPE   002252          1697#   4080*
X     = 000046          1642#   5344    5405    5469    5473
XMTBUF  003240          1862#   3141*   3171*   3176*   3179    3203    3234    3235    3292    3294    3338
X$ALWA= 000000          1231#
X$FALS= 000040          1231#
X$OFFS= 000400          1231#
X$TRUE= 000020          1231#
$BACC   012272          2778#   6333    6439    6635    6643    6711    6726    6844    6945    6956    7144    7205    7219
                        7283    7385    7397    7706    7714
$BASEI  011266          2479#   5311    5372    5559    5598    5649    5874    5935    5986    6043    6121    6294    6402
                        6542    6564    6611    6691    6790    6925    7029    7040    7194    7269    7362    7672    7970
$BUFFS  013206          3073#   7956    8061    8117    8175    8235
$CCITT  002420          1817#   3122    3205    7616
$CLRQI  010706          2296#   2504    2537    2601    2737    2801    2912    4510    5909    6164    6213
$CNTIN  011522          2578#   5885    5943    5997    6057    6305    6413    6622    6702    6825    6936    7095    7376
                        7686
$DMRIN  012062          2696#   3031    3393    5570    5606    5660    5677    6135    6183    6320    6428    6803    6814
                        6836
$ERROR  012404          2831#   7531    7899    8136    8194    8254
$HALT   012562          2897#   3407    5322    5383    5581    5617    5688    5913    5966    6006    6217    6382    6473
                        6553    6898    6992    7527    7896    7981
$INOUT  014140          3279#   7992    8072    8128    8186    8246
$LOOP   013064          3011#   6050    7370    7680
$LSTIN= 000001          1236#
$LSTTA= 000001          1237#
$MSCLR  011070          2383#   5232    5251    5302    5362    5550    5640    5866    5978    6029    6113    6286    6394
                        6534    6603    6683    6782    6917    7024    7083    7136    7186    7261    7348    7657    7959
                        8064    8120    8178    8238
$ROMO   012744          2965#   4939    4991    4995    5105
$WAIT   010276          2167#   2487    2528    2585    2608    2711    2786    2905    2918    3400    5896    5953    6146
                        6195    6341    6373    6447    6572    6651    6734    6855    6964    7048    7101    7152    7227
                        7291    7410    7723
.     = 040100          1224#   1842#   1850#   1857#   1862#   1864#   1869#   2200    2202    2323    2325    2427    2429
                        2948#   3320    3322    3989#   4784#   4887#   5194#   5237    5256    5307    5319    5367    5380
                        5527#   5555    5567    5578    5585    5614    5621    5645    5657    5668    5685    5692    5837#
                        5871    5882    5891    5917    5949    5983    5994    6003    6010    6034    6048    6054    6118
                        6129    6141    6151    6168    6191    6200    6251#   6291    6302    6311    6328    6346    6378
                        6399    6410    6419    6436    6452    6513#   6539    6550    6557    6608    6619    6628    6688
                        6699    6708    6719    6787    6811    6822    6831    6852    6860    6922    6933    6942    6969
                        7053    7106    7157    7191    7202    7213    7232    7266    7277    7296    7353    7367    7372
                        7381    7393    7405    7662    7677    7682    7691    7711    7719    7728    7964    7978    7985
                        8069    8125    8183    8243    8424#   8428#
```

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BACCIR  2086#  6633  6709  6943  7142  7203  7281  7383
BACCIT  2112#  6331  6437  6641  6724  6842  6954  7217  7395
BASEIN  1991#  5309  5370  5557  5596  5647  5872  5933  5984  6119  6292  6400  6540  6562  6609
        6689   6788  6923  7027  7038  7192  7267  7968
BCOMPL     1#  1231#  4044  4049  4054
BERROR     1#  1231#  2506  2531  2908  2914  2921  7413
BGNAU      1#  1231#
BGNAUT     1#  1231#  4272
BGNCLN     1#  1231#  4322
BGNDU      1#  1231#  4762
BGNHRD     1#  1231#  8271
BGNHW      1#  1231#  1406
BGNINI     1#  1231#  4017
BGNMOD     1#  1231#  1233
BGNMSG     1#  1231#  3431  3499  3531  3595  3677  3704  3733  3747  3761  5422  5717  6231  6495
BGNPRO     1#  1231#  3997
BGNPTA     1#  1231#
BGNRPT     1#  1231#
BGNSEG     1#  1231#
BGNSET     1#  1231#
BGNSFT     1#  1231#  8393
BGNSRV     1#  1231#  4344  4606  4745  4848
BGNSUB     1#  1231#  4921  4966  5097  5297  5357  5545  5635  5861  5930  5973  6023  6108  6177
        6281   6389  6529  6598  6678  7018  7077  7130  7181  7256
BGNSW      1#  1231#  1438
BGNTST     1#  1231#  4803  4919  5228  5295  5543  5859  6105  6279  6527  6778  6913  7016  7333
        7549   7945  8051  8108  8165  8226
BNCOMP     1#  1231#  4059  4078
BNERRO     1#  1231#  2490  2588  2611  2715  2789
BREAK      1#  1231#  2189  2313  2417  3304
BRESET     1#  1231#  4765
CALL    1932#  3030  4509  4938  4990  4994  5104  6042  6049  7361  7369  7530  7671  7679  7705
        7713   7898  7955  7991  8060  8071  8116  8127  8135  8174  8185  8193  8234  8245  8253
CKLOOP     1#  1231#
CLEAR   1976#  5230  5249  5300  5360  5548  5638  5864  5976  6027  6111  6284  6392  6532  6601
        6681   6780  6915  7022  7081  7134  7184  7259  7346  7655  7957  8062  8118  8176  8236
CLOCK      1#  1231#
CLOSE      1#  1231#
CLRVEC     1#  1231#  3160  4037  4292  4839  7562  7636  7874
CNTRIN  2019#  5883  5941  5995  6055  6303  6411  6620  6700  6823  6934  7093  7374  7684
COMMEN     1#  1231#
DELAY      1#  1231#  2194  2317  2421  3314
DESCRI     1#  1231#  1890
DEVTYP     1#  1231#  1882
DISPAT     1#  1231#  1369
DISPLA     1#  1231#
DMRIN   2039#  3391  5568  5604  5658  5675  6181  6318  6426  6801  6812  6834
DOCLN      1#  1231#  4300  4835
DODU       1#  1231#  4297  4832
DORPT      1#  1231#
ENDAU      1#  1231#
ENDAUT     1#  1231#  4304
ENDCLN     1#  1231#  4330
ENDCOM     1#  1231#
ENDDU      1#  1231#  4775
ENDHRD     1#  1231#  8292
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ENDHW       1#    1231#   1423
ENDINI      1#    1231#   4232
ENDMOD      1#    1231#   8433
ENDMSG      1#    1231#   3494    3527    3590    3671    3700    3728    3743    3757    3773    5480    5790    6242    6507
ENDPRO      1#    1231#   4004
ENDPTA      1#    1231#
ENDRPT      1#    1231#
ENDSEG      1#    1231#
ENDSET      1#    1231#
ENDSFT      1#    1231#   8404
ENDSRV      1#    1231#   4599    4738    4750    4870
ENDSUB      1#    1231#   4961    5093    5145    5353    5414    5631    5710    5926    5969    6019    6060    6173    6220
         6385     6487    65?4    6674    6756    7073    7126    7177    7252    7316
ENDSW       1#    1231#   1?.5
ENDTST      1#    1231#   4843    5149    5270    5418    5713    6066    6224    6490    6760    6902    6997    7320    7532
         7902     8000    8081    8138    8200    8256
EQUALS      1#    1231#   1459
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```

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            4666   4667   4699#  4700   4701   4702   4708#  4709   4710   4711   4718#  4719   4720   4721   4855#
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POINTE        1#  1231#  1249
PRINTB        1#  1231#  2218   2236   2613   3433   3440   3448   3456   3463   3478   3486   3503   3511   3519
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            3712   3720   3735   3749   3765   4085   4113   4219   4930   4942   5053   5077   5125   5240   5426
            5437   5449   5460   5471   5719   5727   5737   5748   5759   5770   5781   6233   6497   7646   7886
PRINTF        1#  1231#  4767
PRINTS        1#  1231#
PRINTX        1#  1231#  4861
READBU        1#  1231#
READEF        1#  1231#  4041   4046   4051   4056
RFLAGS        1#  1231#
SETPRI        1#  1231#  3093   3295   3410   4020   7579
SETVEC        1#  1231#  3077   4137   4144   4275   4806   7553   7606   7858
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SHUTDN   2071#  3405  5320  5381  5579  5615  5686  5911  5964  6004  6215  6380  6471  6551  6896
         6990   7525  7894  7979
SLASH       1#  1231#
STARS       1#  1231#
SVC         1#  1229#  1230
WAIT     1947#  2485  2502  2526  2535  2583  2599  2606  2709  2735  2784  2799  2903  2910  2916
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         6962   7046  7099  7150  7225  7289  7408  7721
XFER        1#  1231#
XFERF       1#  1231#
XFERT       1#  1231#


. ABS.  040100     000


 ERRORS DETECTED:  0

 CZDMID/I,CZDMID.SEQ/DOC/CRF/NL:TOC/SOL=SVC34R.MLB,CZDMID.P11
 RUN-TIME: 34 42 4 SECONDS
 RUN-TIME RATIO: 140/81=1.7
 CORE USED:  19K  (37 PAGES)

 DOCUMENT PAGES:  208
```