

DMR11-DMP11 DMR11 FCTNL DIAG
CZDMIAO

AH-F832A-MC
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Table with multiple columns and rows, containing technical data and diagrams. The content is dense and appears to be a technical manual or a data sheet. The table is organized into a grid of approximately 15 columns and 15 rows. Each cell contains a small diagram or a block of text. The diagrams are mostly rectangular and contain various symbols and lines. The text is small and difficult to read, but it appears to be technical in nature. The overall layout is very structured and repetitive.

.NLIST
.TITLE CZDMIAO DMR-11 FUNCTIONAL TESTS
.SBTTL PROGRAM DOCUMENT
.LIST
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IDENTIFICATION

PRODUCT CODE: AC-F830A-MC
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1.0 INTRODUCTION

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

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

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

2.0 HARDWARE REQUIREMENTS

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

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

3.0 PRELIMINARY PROGRAM REQUIREMENTS

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

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

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

4.0 GENERAL PROGRAM CONSIDERATIONS

4.1 DIAGNOSTIC SUPERVISOR

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

4.2 EXECUTION TIME

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

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

4.3 XXDP+

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

4.4 ACT/SLIDE

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

4.5 APT

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

4.6 MEMORY MANAGEMENT

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

4.7 MEMORY PARITY OPTION

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

4.8 ERROR LOGGING

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

5.0 PROGRAM LOAD MEDIA

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

6.0 OPERATING INSTRUCTIONS

6.1 LOADING AND STARTING PROCEDURES

6.1.1 LOADING PROCEDURES

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

6.1.2 STARTING PROCEDURES

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

6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION

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

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

6.2 INITIAL DIALOGUE

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

DRS LOADED
DIAG. RUN-TIME SERVICES

DR>

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

6.3.1 START COMMAND

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

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

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

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

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

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

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

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

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

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

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

6.3.1.5 EFFECT OF START COMMAND

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

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

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

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

EXAMPLE:

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

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

6.3.2 RESTART COMMAND

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

6.3.2.1 TESTS, PASS, AND FLAGS SWITCHES

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

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

<UNIT-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (0,1 ETC.) OR RANGES OF DECIMAL NUMBERS (0-5, 8-10 ETC.) THAT SPECIFY THE UNITS TO BE TESTED. THE NUMBERS ARE SEPARATED BY COLONS. THE NUMBERS MAY RANGE FROM 0 THRU N-1 (N IS THE NUMBER OF UNITS SPECIFIED IN THE PREVIOUS START COMMAND). THE NUMBER INDICATES THE POSITION OF THE P-TABLE AS THE DATA WAS ENTERED DURING THE HARDWARE DIALOGUE. 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(CCEED)/FLAGS:<FLAG-LIST>
*****
```

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

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

6.3.4.2 EFFECT OF PROCEED COMMAND

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

6.3.5 ADD COMMAND

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

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

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

6.3.5.2 EFFECT OF ADD COMMAND

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

6.3.6 DROP COMMAND

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

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

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

6.3.6.2 EFFECT OF DROP COMMAND

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

6.3.7 PRINT COMMAND

PRI(NT)

6.3.7.1 EFFECT OF PRINT COMMAND

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

6.3.8 DISPLAY COMMAND

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

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

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

6.3.8.2 EFFECT OF DISPLAY COMMAND

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

6.3.9 FLAGS COMMAND

FLA(GS)

6.3.9.1 EFFECT OF FLAGS COMMAND

THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.

6.3.10 ZFLAGS COMMAND

ZFL(AGS)

6.3.10.1 EFFECT OF ZFLAGS COMMAND

ALL FLAGS ARE CLEARED.

6.3.11 CONTROL CHARACTERS

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

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

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

6.3.12 HARDWARE PARAMETERS

THE FOLLOWING 3 QUESTIONS WILL BE ASKED ON A START COMMAND. THE VALUE LOCATED TO THE LEFT OF THE QUESTION MARK IS THE DEFAULT VALUE THAT WILL BE TAKEN ON A CARRIAGE RETURN RESPONSE.

1. CSR ADDRESS: (O) 160070?

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

2. VECTOR ADDRESS: (O) 300 ?

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

3. TEST CONFIGURATION -

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

* SELECT THE FOLLOWING ONLY IF THE MODEM SUPPORTS LOOPBACK *

6 = LOCAL LOOP
7 = REMOTE LOOP
(0) 5 ?

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

6.3.13 SOFTWARE PARAMETERS

THE ONLY SOFTWARE PARAMETER QUESTION ASKED BY THE DIAGNOSTIC CONCERNS A SOFTWARE TIMEOUT VARIABLE THAT IS USED TO PREVENT SOFTWARE 'HUNG' CONDITIONS. THIS VARIABLE IS A VALUE FROM 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 VARIABLE 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

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

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

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

7.0 DEVICE INFORMATION TABLES

SEE THE GLOBAL EQUATES SECTION FOR DEVICE CSR BIT DEFINITIONS

8.0 TEST DESCRIPTIONS

```

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

```

```

*****
*          TEST 2 - DMR-11
*  ROM CRC/CCITT - CHECK ROM POSITION AND CALCULATE CRC/CCITT.  THE
*  LAST 4 BYTES CONTAIN INFORMATION ABOUT THE ROM TO CHECK.  THE 1ST
*  OF THESE BYTES CONTAINS THE ASCII VERSION NUMBER.  THE 2ND BYTE
*  CONTAINS THE ROM NUMBER.  THE 3RD AND 4TH BYTES CONTAIN A NEGATIVE
*  CRC/CCITT WORD FOR THE ROM.
*
*  CHIP ADDRESS RANGE
*
*  LOCATION  CHIP NO.  BYTE  ADDRESS RANGE
*  -----
*  E03       0        LOW   0000 - 1777
*  E02       1        HIGH  0000 - 1777
*  E04       2        LOW   2000 - 3777
*  E01       3        HIGH  2000 - 3777
*  E05       4        LOW   4000 - 5777
*  E14       5        HIGH  4000 - 5777
*

```

```

***** IMPORTANT !!!!!!!!!!!!! *****
*  FOR THIS TEST TO RUN CORRECTLY, ENSURE THAT SWITCH 1 AT LOCATION
*  E85 ON THE M8207 IS ON.  IF THIS SWITCH IS OFF, BSEL1 WILL BE
*  LOCKED OUT AND THE MAINTENANCE FEATURES WILL NOT BE ENABLED.
*****

```

```

*
*  SUBTEST 1 - ON THE FIRST PASS PRINT THE VERSION # IN EACH ROM
*  SUBTEST 2 - GENERATE THE CRC-CCITT IN EACH ROM AND COMPARE IT
*               IT AGAINST THE CRC BLASTED IN THE ROM
*  SUBTEST 3 - COMPARE THE ROM # BLASTED IN THE ROM AGAINST THE
*               EXPECTED ROM #.
*****

```

```

*****
* TEST 3 - DMR-11
* MASTER CLEAR
* THIS TEST WILL ISSUE 2 MASTER CLEARS. EACH CALL TO THE MASTER
* CLEAR ROUTINE WILL ENSURE THAT THE RUN BIT WILL BE SET. ALSO
* THE MASTER CLEAR WILL CAUSE THE DIAGNOSTIC MICROTESTS TO BE
* RUN WHEN THE MICRODIAGNOSTIC BIT (BIT 13 IN SEL0) IS CORRECTLY
* SET OR CLEARED. BECAUSE THE RUNNING OF MICROTESTS DEPENDS ON THE
* EXCLUSIVE OR OF THE HARDWARE SWITCH 10 ON E134 OF THE M8203 AND
* THE MICRODIAGNOSTIC BIT, WE CAN'T KNOW WHETHER THE SETTING OR
* CLEARING OF BIT 13 WILL RESULT IN THE RUNNING OF MICROTESTS.
* THEREFORE THE MASTER CLEAR SUBROUTINE WILL TOGGLE (I.E. SET
* BIT 13 ONLY ON EVERY OTHER MASTER CLEAR) THE SOFTWARE BIT.
* THIS WILL ENSURE THAT REGARDLESS OF THE POSITION OF THE
* HARDWARE SWITCH, MICROTESTS WILL BE RUN EVERY OTHER MASTER CLEAR.
* WHEN RUNNING THIS TEST, WE EXPECT TO ADD THE RESULTS OF BSEL3
* AFTER EACH MASTER CLEAR.
* BSEL3 = 100 - MICROTESTS DISABLED
* BSEL3 = 200 - MICROTESTS RUN SUCCESSFULLY
* 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 IN 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 WITHOUT ASSIGNING A
* RECEIVE BUFFER. BY ASSIGNING A NO BUFFER THRESHOLD
* OF THREE, ENSURE THAT A NO BUFFER ERROR IS RECEIVED
* AFTER THE THIRD TRANSMISSION.
* SUBTEST 2 - TRANSMIT A BUFFER WITHOUT A RECEIVE BUFFER.
* ASSIGN THE NAKS THRESHOLD OF 3 AND A NO BUFFER
* THRESHOLD OF 7. CHECK THAT THE NAKS ERROR COUNT IS
* THREE AFTER SHUTDOWN.
*****

```

```

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

```

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

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

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

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

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

```

*****
* TEST 15 - DMR-11
* RESUME BASE IN - DMC MODE
* ** WILL NOT RUN IF MODEM LOOPBACK IS SELECTED **
* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
* FOLLOWING MANNER:

```

```

* BASE IN
* CONTROL IN
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 1 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 2 BA/CC IN TRANSMIT
* HALT - BASE IN RESUME
* 2 BA/CC IN TRANSMIT
* HALT - BASE IN RESUME
* 2 BA/CC IN TRANSMIT
* HALT - BASE IN RESUME
* 1 BA/CC IN TRANSMIT
* HALT - BASE IN RESUME

```

```

* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
* THE RECEIVE/TRANSMIT TABLE.

```

```

* THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS. THIS
* SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
* SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS. THE ROUTINE WILL
* ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
* HIERARCHY:

```

- ```

* A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
* B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
* THAN 2K BYTES, USE THAT MEMORY
* C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
* THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.

```

```

```

```

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

```

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

```

```

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

```

```

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

```

## 9.0 ERROR INFORMATION

### 9.1 ERROR REPORTING

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

THE FOLLOWING EXAMPLE PROVIDES A TYPICAL ERROR REPORT, WHICH DESCRIBES AN 'IRDY NOT SET' ERROR, AND PROVIDES THE PC OF THE ERROR CALL AND THE PC OF THE CALL TO THE SUBROUTINE REPORTING IT, THE FAILING REGISTER NAME, AND DEVICE REGISTER CONTENTS :

```

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

```

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

```
2194 .TITLE CZDMIAO DMR-11 FUNCTIONAL TESTS
2203 002000 .=2000
2204
2205
2206
2207
2208 .MCALL SVC
2209 002000 SVC ; INITIALIZE SUPERVISOR MACROS
2210
2211
2212 002000 BGNMOD
2213
2214
2215 000001 $LSTIN= 1 ; LIST INSTRUCTIONS
2216 000001 $LSTTAG= 1
2217 000001 SVCINS= 1 ; LIST INSTRUCTIONS, SHIFTED RIGHT
2218 000001 SVCTST= 1 ; LIST TEST TAGS, SHIFTED RIGHT
2219 000001 SVCSUB= 1 ; LIST SUBTEST TAGS, SHIFTED RIGHT
2220 000001 SVCGBL= 1 ; LIST GLOBAL TAGS, SHIFTED RIGHT
2221 000001 SVCTAG= 1 ; LIST OTHER TAGS, SHIFTED RIGHT
2222
2223 ; CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
2224 ; TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS. CHANGE THE
2225 ; SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS. YOU MAY
2226 ; CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
2227
2228 002000 POINTER BGNSW,BGNDU,BGNSFT
2229
2237
2238
2239
```



2241  
 2242  
 2243  
 2244  
 2245  
 2246  
 2247  
 2248  
 2249  
 2250  
 2251

.SBTTL PROGRAM HEADER

;++

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

--

HEADER CZDMI,A,0,600.,0

L\$NAME::

.ASCII /C/  
 .ASCII /Z/  
 .ASCII /D/  
 .ASCII /M/  
 .ASCII /I/  
 .BYTE 0  
 .BYTE 0  
 .BYTE 0

L\$REV::

.ASCII /A/

L\$DEPO::

.ASCII /0/

L\$UNIT::

.WORD 0

L\$TIML::

.WORD 600.

L\$HPCP::

.WORD L\$HARD

L\$SPCP::

.WORD L\$SOFT

L\$HPTP::

.WORD L\$HW

L\$SPTP::

.WORD L\$SW

L\$LADP::

.WORD L\$LAST

L\$STA::

.WORD 0

L\$CO::

.WORD 0

L\$DTYP::

.WORD 0

L\$APT::

.WORD 0

L\$DTP::

.WORD L\$DISPATCH

L\$PRIO::

.WORD 0

L\$ENVI::

.WORD 0

L\$EXP1::

.WORD 0

L\$MREV::

.BYTE C\$REVISION

002000  
 (4) 002000  
 (4) 002000 103  
 (4) 002001 132  
 (4) 002002 104  
 (4) 002003 115  
 (4) 002004 111  
 (6) 002005 000  
 (6) 002006 000  
 (5) 002007 000  
 (5) 002010  
 (4) 002010 101  
 (5) 002011  
 (4) 002011 060  
 (5) 002012  
 (4) 002012 000000  
 (5) 002014  
 (4) 002014 001130  
 (5) 002016  
 (4) 002016 036534  
 (5) 002020  
 (4) 002020 037470  
 (5) 002022  
 (4) 002022 002174  
 (5) 002024  
 (4) 002024 002224  
 (5) 002026  
 (4) 002026 037744  
 (5) 002030  
 (4) 002030 000000  
 (5) 002032  
 (4) 002032 000000  
 (5) 002034  
 (4) 002034 000000  
 (5) 002036  
 (4) 002036 000000  
 (5) 002040  
 (4) 002040 002124  
 (5) 002042  
 (4) 002042 000000  
 (5) 002044  
 (4) 002044 000000  
 (5) 002046  
 (4) 002046 000000  
 (5) 002050  
 (4) 002050 003

(3) 002051 003  
 (5) 002052  
 (4) 002052 000000  
 (5) 002054 000000  
 (5) 002056  
 (4) 002056 000000  
 (5) 002060  
 (4) 002060 010230  
 (5) 002062  
 (4) 002062 000000  
 (5) 002064  
 (4) 002064 000000  
 (5) 002066  
 (4) 002066 000000  
 (5) 002070  
 (4) 002070 000000  
 (5) 002072  
 (4) 002072 023522  
 (5) 002074  
 (4) 002074 000000  
 (5) 002076  
 (4) 002076 010236  
 (5) 002100  
 (4) 002100 104035  
 (5) 002102  
 (4) 002102 000000  
 (5) 002104  
 (4) 002104 020514  
 (5) 002106  
 (4) 002106 021770  
 (5) 002110  
 (4) 002110 021700  
 (5) 002112  
 (4) 002112 020506  
 (5) 002114  
 (4) 002114 000000  
 (5) 002116  
 (4) 002116 000000  
 (5) 002120  
 (4) 002120 000000

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

2252  
 2258  
 2259  
 2260  
 2261  
 2262  
 2263  
 2264  
 2265  
 2266  
 2267  
 2268

.EVEN

2270  
2271  
2272  
2273  
2274  
2275  
2276  
2277  
(4)  
(3)  
(6)  
(6)  
(6)  
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2278  
2285  
2286  
2287  
2288  
2289

.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

.WORD 19  
L\$DISPATCH::  
.WORD T1  
.WORD T2  
.WORD T3  
.WORD T4  
.WORD T5  
.WORD T6  
.WORD T7  
.WORD T8  
.WORD T9  
.WORD T10  
.WORD T11  
.WORD T12  
.WORD T13  
.WORD T14  
.WORD T15  
.WORD T16  
.WORD T17  
.WORD T18  
.WORD T19

002122  
002122 000023  
002124  
002124 023602  
002126 024120  
002130 025434  
002132 025566  
002134 026644  
002136 030056  
002140 030636  
002142 031260  
002144 031762  
002146 032474  
002150 032676  
002152 033056  
002154 033762  
002156 034456  
002160 036166  
002162 036272  
002164 036340  
002166 036410  
002170 036460

```
2291 .SBTTL DEFAULT HARDWARE P-TABLE
2292
2293 :////////////////////
2294 :// THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
2295 :// THE TEST-DEVICE PARAMETERS. **NOTE - MANY OF THE P-TABLE VALUES LISTED
2296 :// BELOW ARE NOT USED IN THIS DIAGNOSTIC BUT ARE INCLUDED TO AGREE WITH
2297 :// M8207 & M8203 DIAGNOSTIC P-TABLES.
2298 :////////////////////
2299
2300 002172 BGNHW DFPTBL
(3) 002172 000013 .WORD L10000-L$HW/2
(3) 002174
(3) 002174 DFPTBL::
2301
2302 002174 000000 .WORD 0 ;**NOT USED - MICROPROCESSOR TYPE
2303 002176 160070 .WORD 160070 ;DMR11 CSR UNIBUS ADDRESS DEFAULT
2304 002200 000300 .WORD 300 ;DMR11 INTERRUPT VECTOR DEFAULT
2305 002202 000000 .WORD 0 ;**NOT USED - PRIORITY LEVEL
2306 002204 000000 .WORD 0 ;**NOT USED - LINE UNIT
2307 002206 000000 .WORD 000 ;**NOT USED - SWITCH PACK #1 (REG 11)
2308 002210 000000 .WORD 000 ;**NOT USED - SWITCH PACK #2 (REG 15)
2309 002212 000000 .WORD 000 ;**NOT USED - SWITCH PACK #3 (REG 16)
2310 002214 000005 .WORD 5 ;CABLE TURNAROUND (DEFAULT = CABLE(5))
2311 002216 000000 .WORD 0 ;**NOT USED - BAUD RATE
2312 002220 000000 .WORD 0 ;**NOT USED - RUN SWITCH
2313
2314 002222 ENDSW
(3) 002222 L10000:
2315
2316
2317
2318 .SBTTL DEFAULT SOFTWARE P-TABLE
2319
2320 :////////////////////
2321 :// THE SOFTWARE P-TABLE CONTAINS THE VALUE OF THE PROGRAM
2322 :// PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
2323 :////////////////////
2324
2325 002222 BGNSW SFPTBL
(3) 002222 000001 .WORD L10001-L$SW/2
(3) 002224
(3) 002224 L$SW::
2326 SFPTBL::
2327 002224 000005 SPEED: .WORD 5 ;PROCESSOR SPEED VARIABLE USED
2328 .WORD 5 ;TO ALTER THE WAIT VARIABLES.
2329 002226 ENDSW
(3) 002226 L10001:
2330
2331
2332
2333
2334
```

```
2336 .SBTTL GLOBAL EQUATES SECTION
2337
2338 :////////////////////
2339 :/ THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
2340 :/ ARE USED IN MORE THAN ONE TEST.
2341 :////////////////////
2342
2343 002226 EQUALS
(1) :
(1) : BIT DIFINITIONS
(1) :
(1) 100000 BIT15== 100000
(1) 040000 BIT14== 40000
(1) 020000 BIT13== 20000
(1) 010000 BIT12== 10000
(1) 004000 BIT11== 4000
(1) 002000 BIT10== 2000
(1) 001000 BIT09== 1000
(1) 000400 BIT08== 400
(1) 000200 BIT07== 200
(1) 000100 BIT06== 100
(1) 000040 BIT05== 40
(1) 000020 BIT04== 20
(1) 000010 BIT03== 10
(1) 000004 BIT02== 4
(1) 000002 BIT01== 2
(1) 000001 BIT00== 1
(1) :
(1) 001000 BIT9== BIT09
(1) 000400 BIT8== BIT08
(1) 000200 BIT7== BIT07
(1) 000100 BIT6== BIT06
(1) 000040 BIT5== BIT05
(1) 000020 BIT4== BIT04
(1) 000010 BIT3== BIT03
(1) 000004 BIT2== BIT02
(1) 000002 BIT1== BIT01
(1) 000001 BIT0== BIT00
(1) :
(1) : EVENT FLAG DEFINITIONS
(1) : EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
(1) :
(1) 000040 EF.START== 32. : START COMMAND WAS ISSUED
(1) 000037 EF.RESTART== 31. : RESTART COMMAND WAS ISSUED
(1) 000036 EF.CONTINUE== 30. : CONTINUE COMMAND WAS ISSUED
(1) 000035 EF.NEW== 29. : A NEW PASS HAS BEEN STARTED
(1) 000034 EF.PWR== 28. : A POWER-FAIL/POWER-UP OCCURRED
(1) :
(1) :
(1) : PRIORITY LEVEL DEFINITIONS
(1) :
(1) 000340 PRI07== 340
(1) 000300 PRI06== 300
(1) 000240 PRI05== 240
(1) 000200 PRI04== 200
(1) 000140 PRI03== 140
```

```

(1) 000100 PRI02== 100
(1) 000040 PRI01== 40
(1) 000000 PRI00== 0
(1)
(1) ;OPERATOR FLAG BITS
(1)
(1) 000004 EVL== 4
(1) 000010 LOT== 10
(1) 000020 ADR== 20
(1) 000040 IDU== 40
(1) 000100 ISR== 100
(1) 000200 UAM== 200
(1) 000400 BOE== 400
(1) 001000 PNT== 1000
(1) 002000 PRI== 2000
(1) 004000 IXE== 4000
(1) 010000 IBE== 10000
(1) 020000 IER== 20000
(1) 040000 LOE== 40000
(1) 100000 HOE== 100000
2344 ;*****
2345
2346 ;*****
2347 ;SWITCH REGISTER OPTIONS
2348
2349 100000 SW15= 100000
2350 040000 SW14= 40000
2351 020000 SW13= 20000
2352 010000 SW12= 10000
2353 004000 SW11= 4000
2354 002000 SW10= 2000
2355 001000 SW09= 1000
2356 000400 SW08= 400
2357 000200 SW07= 200
2358 000100 SW06= 100
2359 000040 SW05= 40
2360 000020 SW04= 20
2361 000010 SW03= 10
2362 000004 SW02= 4
2363 000002 SW01= 2
2364 000001 SW00= 1
2365
2366 ;*****
2367 ;CSR AND STAU5 WORD DEFINITIONS
2368 ;SELO (CSR) - BSELO/BSEL1
2369 100000 RUN= BIT15 ;SET IF RUNNING
2370 040000 MCLR= BIT14 ;MASTER CLEAR OF PROCESSOR AND LINE UNIT
2371 020000 MDIAG= BIT13 ;CSR MAINTENANCE - ENABLE MICRODIAGNOSTICS
2372 010000 STLU= BIT12 ;CSR MAINTENANCE - STEP LINE UNIT
2373 004000 LPLU= BIT11 ;CSR MAINTENANCE - LINE UNIT LOOP
2374 002000 ROMO= BIT10 ;CSR MAINTENANCE
2375 001000 ROMI= BIT9 ;CSR MAINTENANCE
2376 000400 STUP= BIT8 ;CSR MAINTENANCE - USED WITH LOOP LU
2377 ;WHEN ASSERTED, XMITTER SHIFTS; CLEAR, REC. SHIFTS
2378 000200 RDI= BIT7 ;CSR - DMR11 READY RESPONSE
2379 000100 IESET= BIT6 ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS

```



```

2380 ;CPU WHEN RDI SET IN RESPONSE TO RQI BEING SET.
2381 000040 RQI= BIT5 ;CSR - REQUEST IN
2382 000020 IECLR= BIT4 ;CSR - INTERRUPT ENABLE INPUT - DMR11 INTERRUPTS
2383 ;CPU WHEN RDI CLEARS IN RESPONSE TO RQI BEING CLEAR.
2384 ;(DMR RUN MODE ONLY)
2385 000004 RCV= BIT2 ;CSR - IF 0, TRANSMIT & IF 1, RECEIVE
2386
2387 ;SEL2 - BSEL2/BSEL3
2388 000200 RDO= BIT7 ;SEL2 - DMR11 SETS TO INDICATE DATA READY FOR OUTPUT
2389 000100 IEO= BIT6 ;SEL2 - SET TO ENABLE DMR11 TO INTERRUPT WHEN RDO
2390
2391 ;SEL6 - BSEL6/BSEL7
2392 020000 BASEUP= BIT13 ;SEL6 - CONTROL OUT - RESPONSE TO DMR MODE BASE
2393 ;TABLE UPDATE COMMAND.
2394 010000 RES= BIT12 ;SEL6 - BASE IN -- WHEN SET CAUSES
2395 ;RESUMPTION OF OPERATION
2396 010000 CTS= BIT12 ;SEL6 - CONTROL OUT - CTS FAILED
2397 004000 SECN= BIT11 ;SEL6 - CONTROL IN -- START TIME (3 SEC IF SET
2398 ;1 SEC IF CLEAR)
2399 002000 HDX= BIT10 ;SEL6 - HALF-DUPLEX & CLEAR FOR FULL-DUPLEX
2400 002000 CD= BIT10 ;SEL6 - CONTROL OUT - CD GLITCHED
2401 001000 HALTC= BIT9 ;SEL6 - EXTENDED CONTROL OUT - HALT COMPLETED
2402 000400 MAINT= BIT8 ;SEL6 - DDCMP MAINTENANCE DURING CONTROL IN
2403 000522 DMR= BIT8!122 ;SEL6 - BASE IN -- SET FOR DMR11 MODE
2404 ;122 IS THE DMR PASSWORD FOR BSEL6 AND
2405 ;BIT8 SETS THE DMR MODE BIT IN BSEL7
2406 000400 NXM= BIT8 ;SEL6 - CONTROL OUT - NON EXISTENT MEMORY
2407 000200 STREC= BIT7 ;SEL6 - CONTROL OUT - START RECEIVED
2408 000100 DISCON= BIT6 ;SEL6 - CONTROL OUT - DISCONNECT
2409 000100 DTR= BIT6 ;SEL6 - MODEM WRITE - DATA TERMINAL READY
2410 000040 DMRRUN= BIT5 ;SEL6 - CONTROL OUT - DMR RUN MODE
2411 000020 TOLONG= BIT4 ;SEL6 - CONTROL OUT - MESSAGE TOO LONG
2412 000010 MAINT1= BIT3 ;SEL6 - MODEM WRITE - LOCAL MODEM LOOPBACK
2413 000010 MNTREC= BIT3 ;SEL6 - CONTROL OUT - MAINTENANCE MSG. RECEIVED
2414 000004 NOBFR= BIT2 ;SEL6 - CONTROL OUT - NO BUFFER
2415 000004 MAINT2= BIT2 ;SEL6 - MODEM WRITE - REMOTE MODEM LOOPBACK
2416 000002 TOUT= BIT1 ;SEL6 - CONTROL OUT - TIME OUT
2417 000001 NAKS= BIT0 ;SEL6 - CONTROL OUT - NAKS THRESHOLD EXCEEDED
2418
2419
2420 ;*****
2421 ;DDCMP COMMANDS - BITS 0 & 1 IN SEL0 AND SEL2
2422
2423 ;INPUT (SEL0)
2424 000000 BACCT= 0 ;BUF ADDRESS AND CHARACTER COUNT TRANSMIT
2425 000001 CNTRL= 1 ;CONTROL COMMAND (IN OR OUT)
2426 000002 HLT= 2 ;HALT COMMAND
2427 000003 BASEI= 3 ;BASE IN COMMAND
2428 000004 BACCR= 4 ;BUF ADDRESS AND CHARACTER COUNT RECEIVE
2429 000005 WMODEM= 5 ;WRITE MODEM STATUS REGISTER
2430 000006 EXERR= 6 ;ENABLE EXTENDED ERROR NOTIFICATION
2431 000007 DXERR= 7 ;DISABLE EXTENDED ERROR NOTIFICATION
2432 000010 DDMC= 10 ;DESELECT DMC LINE MODE
2433 000011 UPDATE= 11 ;REQUEST BASE TABLE U-DATE
2434 000012 TIMER= 12 ;SET REP/SELECT TIMER VALUE
2435 000013 THRESH= 13 ;SET THE FOLLOWING THRESHOLDS:

```





```

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

```

[illegible]

```

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

```

```
2642 002560 .EVEN
2643
2644
2645 ;;*****
2646 ;; RECEIVE BUFFER (SMALL)
2647
2648 002560 000000 RFLAG: .WORD 0 ;FLAG FOR STATUS OF RECEIVE BUFFER
2649 000044 RCOUNT= 36. ;CHARACTER COUNT OF RBUF
2650 002562 000046 RBUF: .BLKB 38. ;36. BYTE BUFFER + 2 BYTES USED
2651 ;TO MARK THE END OF THE RECEIVE BUFFER
2652 .EVEN
2653
2654 ;;*****
2655 ;; BASE TABLE
2656
2657 002630 000400 BASE: .BLKB 256. ;MICROPROCESSOR MEMORY ALLOCATION
2658
2659 ;;*****
2660 ;; TRANSMIT AND RECEIVE BUFFER POINTERS
2661
2662 003230 000200 XMTBUF: .BLKW 128. ;POINTERS TO TRANSMIT BUFFERS (UP TO 64)
2663 ;1 WORD FOR ADDRESS AND 1 WORD FOR CHAR. COUNT
2664 003630 000200 RCVBUF: .BLKW 128. ;POINTERS TO RECEIVE BUFFERS (UP TO 64).
2665
2666 ;;*****
2667 ;; BUFFER AREA (LARGE)
2668
2669 004230 004000 BIGBUF: .BLKB 4000 ;MAX BUFFER (2K BYTES)
2670
2671
2672
2673
```

```
2675 .SBTTL GLOBAL TEXT SECTION
2676
2677 ;XX
2678 ;% THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
2679 ;% MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
2680 ;% MORE THAN ONE TEST.
2681 ;XX
2682
2683
2684 ;*****
2685 ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
2686 ;*****
2687 DEVTYP <DMR11>
2688
2689 L$DVTYP::
2690 .ASCIZ /DMR11/
2691 .EVEN
2692
2693 ;*****
2694 ;* TITLE OF PROGRAM
2695 ;*****
2696 DESCRIPT <DMR-11 FUNCTIONAL TESTS>
2697
2698 L$DESC::
2699 .ASCIZ /DMR-11 FUNCTION
2700 .EVEN
2701
2702 ;
2703 ; FORMAT STATEMENTS USED IN PRINT CALLS
2704 ;
2705
2706
2707
2708
2709
2710
```

|            |        |        |        |
|------------|--------|--------|--------|
| 010230     |        |        |        |
| (4) 010230 |        |        |        |
| (3) 010230 | 046504 | 030522 | 000061 |
| (2)        |        |        |        |
| 010236     |        |        |        |
| (4) 010236 |        |        |        |
| (3) 010236 | 046504 | 026522 | 030461 |
| (3) 010244 | 043040 | 047125 | 052103 |
| (3) 010252 | 047511 | 040516 | 020114 |
| (3) 010260 | 042524 | 052123 | 000123 |
| (2)        |        |        |        |



```
2712 .SBTTL GLOBAL SUBROUTINES
2713
2714 ;////////////////////////////////////
2715 ;/ THE GLOBAL SUBROUTINES ARE CALLED BY MORE THAN ONE TEST
2716 ;/
2717 ;////////////////////////////////////
2718
2719 ;*****
2720
2721 MACROS - THERE ARE 2 BASIC TYPES OF MACROS USED
2722 1. NORMAL MACROS -
2723 2. DMR11 FUNCTIONAL MACROS - THESE MACROS MAY
2724 BE NOTHING MORE THAN A CALL TO A SUBROUTINE,
2725 BUT THEY ARE DISTINCT DMR FUNCTIONS WHICH CAN
2726 DISTINGUISHED BY THE IN-LINE MACRO NAME.
2727
2728 ;*****
2729
2730 ;*****
2731 ; CALL MACRO - CALL ROUTINE = JSR PC, ROUTINE
2732 ; (NOTE: RETURN IS EQUATED TO A RTS PC)
2733 ;*****
2734
2735 .MACRO CALL ROUTIN
2736 .IF B, ROUTIN
2737 .ERROR ROUTINE; ## MISSING ROUTINE-EXPANSION ABORT ##
2738 .MEXIT
2739 .ENDC
2740 JSR PC,ROUTIN
2741 .ENDM
2742
2743 ;*****
2744 ; WAIT $FLAG MACRO - THIS MACRO INTERPUTS THE $FLAG AS RDI, RQI OR RDO.
2745 ; IF RDI OR RDO, THE SUBROUTINE CALLED WILL WAIT UNTIL
2746 ; THE RESPECTIVE BIT IS SET. IF RQI, THE SUBROUTINE
2747 ; CALLED WILL CLEAR RQI AND WAIT UNTIL RDI IS CLEARED.
2748 ;*****
2749
2750 .MACRO WAIT $FLAG
2751 .NLIST
2752 .LIST ME
2753 .LIST
2754
2755 ;**** MACRO EXPANSION ****
2756 .IF B, $FLAG
2757 .ERROR FLAG ;## MISSING FLAG FOR WAIT - EXPANSION ABORT ##
2758 .MEXIT
2759 .ENDC
2760 .IF IDN $FLAG,RQI
2761 JSR PC, $CLRQI ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
2762 .ENDC
2763 .IF IDN $FLAG,RDI
2764 JSR PC, $WAIT ;CALL WAIT ROUTINE
2765 .WORD 0 ;FLAG THAT WE'RE WAITING FOR RDI
2766 .ENDC
2767 .IF IDN $FLAG,RDO
2768 JSR PC, $WAIT ;CALL WAIT ROUTINE
```

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





```
2840 ;*****
2841 ; DMRIN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2842 ; SDMRIN SUBROUTINE
2843 ;*****
2844 .MACRO DMRIN $A,$B,$C
2845 .NLIST
2846 .LIST ME
2847 .LIST
2848
2849 ;***** MACRO EXPANSION *****
2850 .IF B $A
2851 .ERROR DMRIN; ## MISSING ARGUMENTS-EXPANSION ABORT ##
2852 .MEXIT
2853 .ENDC
2854 JSR PC, $DMRIN ;CALL DMR MODE INPUT ROUTINE
2855 .WORD $A ;INPUT COMMAND
2856 .IF B $B
2857 .WORD 0 ;NO SEL4
2858 .IFF .WORD $B ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
2859 .ENDC
2860 .IF B $C
2861 .WORD 0 ;NO SEL6
2862 .IFF .WORD $C ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
2863 .ENDC
2864
2865 ;***** *****
2866 .NLIST ME
2867 .ENDM
2868
2869
2870
2871
2872 ;*****
2873 ; SHUTDN MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2874 ; $HALT SUBROUTINE
2875 ;*****
2876 .MACRO SHUTDN
2877 .NLIST
2878 .LIST ME
2879 .LIST
2880
2881 ;***** MACRO EXPANSION *****
2882 JSR PC, $HALT ;DMR HALT ROUTINE.
2883 ;***** *****
2884 .NLIST ME
2885 .ENDM
```

```
2887 ;*****
2888 ; BACCIR MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2889 ; $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
2890 ; IF ARGUMENTS NOT GIVEN)
2891 ;*****
2892 .MACRO BACCIR $A,$B
2893 .NLIST
2894 .LIST ME
2895 .LIST
2896
2897 ;***** MACRO EXPANSION *****
2898 .IF B $A
2899 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
2900 .WORD RQI!BACCR ;BA/CC IN RECEIVE COMMAND
2901 .WORD RBUF ;RECEIVE BUFFER
2902 .WORD RCOUNT ;RECEIVE CHARACTER COUNT
2903 .IFF
2904 JSR PC, $BACC ;CALL BA/CC IN ROUTINE
2905 .WORD RQI!BACCR ;BA/CC IN RECEIVE COMMAND
2906 .WORD $A ;BUFFER ADDRESS BITS 0-15
2907 .WORD $B ;BA BITS 16/17 AND CHAR. COUNT
2908 .ENDC
2909
2910 ;*****
2911 ;*****
2912 .NLIST ME
2913 .ENDM
2914
2915 ;*****
2916 ; BACCIT MACRO - THIS IS A DMR FUNCTIONAL MACRO WHICH CALLS THE
2917 ; $BACC SUBROUTINE (WITH DEFAULT ARGUMENTS
2918 ; IF ARGUMENTS NOT GIVEN)
2919 ;*****
2920 .MACRO BACCIT $A,$B
2921 .NLIST
2922 .LIST ME
2923 .LIST
2924
2925 ;***** MACRO EXPANSION *****
2926 .IF B $A
2927 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
2928 .WORD RQI!BACCT ;BA/CC IN TRANSMIT COMMAND
2929 .WORD TBUF ;TRANSMIT BUFFER ADDRESS
2930 .WORD TCOUNT ;TRANSMIT CHARACTER COUNT
2931 .IFF
2932 JSR PC, $BACC ;CALL BA/CC IN ROUTINE
2933 .WORD RQI!BACCT ;BA/CC IN TRANSMIT COMMAND
2934 .WORD $A ;BUFFER ADDRESS BITS 0-15
2935 .WORD $B ;BA BITS 16 & 17 AND CHAR. COUNT
2936 .ENDC
2937
2938 ;*****
2939 ;*****
2940 .NLIST ME
2941 .ENDM
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| 010266 |        |        |        |  |
| 010266 | 005037 | 002354 |        |  |
| 010272 | 005737 | 002370 |        |  |
| 010276 | 001005 |        |        |  |
| 010300 | 011637 | 002366 |        |  |
| 010304 | 162737 | 000004 | 002366 |  |
| 010312 |        |        |        |  |
| 010312 | 017637 | 000000 | 002334 |  |
| 010320 | 062716 | 000002 |        |  |
| 010324 | 010046 |        |        |  |
| 010326 | 010146 |        |        |  |
| 010330 | 013701 | 002310 |        |  |
| 010334 |        |        |        |  |
| 010334 | 005000 |        |        |  |
| 010336 |        |        |        |  |
| 010336 | 032777 | 000200 | 171670 |  |
| 010344 | 001034 |        |        |  |
| 010346 | 032777 | 000200 | 171656 |  |

```


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

$WAIT:
 CLF ERRFLG ;CLEAR ERROR FLAG
 TFR NESTPC ;IS THIS NESTED IN ANOTHER SUBROUTINE?
 BNE 10$;YES - USE THE SUBRPC ALREADY CALCULATED.
 MOV (SP),SUBRPC ;SAVE PC AFTER THE CALL TO $WAIT.
 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL

10$:
 MOV @ (SP),TEMP ;GET THE FLAG FOR RDI OR RDO
 ADD #2,(SP) ;INC THE PC LEFT ON THE STACK TO POINT
 ;PAST THE FLAG ARGUMENT
 MOV R0,-(SP) ;SAVE R0
 MOV R1,-(SP) ;SAVE R1
 MOV WAIT1,R1 ;DELAY COUNTER DETERMINED BY BAUD RATE
 ;(DETERMINED IN INIT ROUTINE).

30$:
 CLR R0 ;INNER LOOP COUNT OF DELAY COUNTER

40$:
 BIT #RDO,@SEL2 ;IS THE RDO BIT SET IN SEL2?
 BNE 60$;YES - EXIT BIT CHECK LOOP.
 BIT #RDI,@SEL0 ;IS THE RDI BIT SET IN SEL0?

```

|      |        |        |               |        |              |  |                                             |              |
|------|--------|--------|---------------|--------|--------------|--|---------------------------------------------|--------------|
| 2995 | 010354 | 001062 |               | BNE    | 70\$         |  | ;YES - EXIT                                 |              |
| 2996 | 010356 |        |               | BREAK  |              |  | ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT. |              |
| (3)  | 010356 | 104422 |               |        |              |  | TRAP                                        | C\$BRK       |
| 2997 | 010360 | 005300 |               | DEC    | R0           |  | ;LOOP UNTIL R0 RETURNS TO 0                 |              |
| 2998 | 010362 | 001365 |               | BNE    | 40\$         |  |                                             |              |
| 2999 | 010364 |        |               | DELAY  | 1            |  | ;DELAY 100 MICROSECONDS                     |              |
| (2)  | 010364 | 012727 | 000001        |        |              |  | MOV                                         | #1,(PC)+     |
| (2)  | 010370 | 000000 |               |        |              |  | .WORD                                       | 0            |
| (2)  | 010372 | 013727 | 002116        |        |              |  | MOV                                         | L\$DLY,(PC)+ |
| (2)  | 010376 | 000000 |               |        |              |  | .WORD                                       | 0            |
| (2)  | 010400 | 005367 | 177772        |        |              |  | DEC                                         | -6(PC)       |
| (2)  | 010404 | 001375 |               |        |              |  | BNE                                         | .-4          |
| (2)  | 010406 | 005367 | 177756        |        |              |  | DEC                                         | -22(PC)      |
| (2)  | 010412 | 001367 |               |        |              |  | BNE                                         | .-20         |
| 3000 |        |        |               |        |              |  |                                             |              |
| 3001 | 010414 | 005301 |               | DEC    | R1           |  | ;BETWEEN LOOPS.                             |              |
| 3002 | 010416 | 001346 |               | BNE    | 30\$         |  | ;REPEAT UNTIL MAXIMUM LOOP SATISFIED.       |              |
| 3003 | 010420 |        |               | ERRDF  | 1,EMG1,ERRG2 |  | ;TIME OUT ERROR                             |              |
| (4)  | 010420 | 104455 |               |        |              |  | TRAP                                        | C\$ERDF      |
| (5)  | 010422 | 000001 |               |        |              |  | .WORD                                       | 1            |
| (5)  | 010424 | 020014 |               |        |              |  | .WORD                                       | EMG1         |
| (5)  | 010426 | 015070 |               |        |              |  | .WORD                                       | ERRG2        |
| 3004 | 010430 | 005237 | 002354        | INC    | ERRFLG       |  | ;SET ERROR FLAG                             |              |
| 3005 | 010434 | 000445 |               | BR     | 100\$        |  | ;BRANCH TO COMMON EXIT.                     |              |
| 3006 | 010436 |        |               |        |              |  |                                             |              |
| 3007 | 010436 | 005737 | 002334        | TST    | TEMP         |  | ;WERE WE WAITING FOR THE RDO FLAG?          |              |
| 3008 | 010442 | 001042 |               | BNE    | 100\$        |  | ;YES - OK, EXIT.                            |              |
| 3009 | 010444 | 022737 | 000001 002360 | CMP    | #CNTRL,ERROR |  | ;IS THIS CONTROL OUT ERROR EXPECTED?        |              |
| 3010 | 010452 | 001436 |               | BEQ    | 100\$        |  | ;IF YES, DON'T REPORT THE FOLLOWING ERRORS. |              |
| 3011 | 010454 |        |               | PRINTB | #FMS1        |  | ;RECEIVED AN RDO, WHEN WAITING FOR RDI      |              |
| (7)  | 010454 | 012746 | 010600        |        |              |  | MOV                                         | #FMS1,-(SP)  |
| (6)  | 010460 | 012746 | 000001        |        |              |  | MOV                                         | #1,-(SP)     |
| (3)  | 010464 | 010600 |               |        |              |  | MOV                                         | SP,R0        |
| (4)  | 010466 | 104414 |               |        |              |  | TRAP                                        | C\$PNTB      |
| (4)  | 010470 | 062706 | 000004        |        |              |  | ADD                                         | #4,SP        |
| 3012 | 010474 | 032777 | 000001 171532 | BIT    | #CNTRL,@SEL2 |  | ;IS THIS A CONTROL OUT?                     |              |
| 3013 | 010502 | 001422 |               | BEQ    | 100\$        |  | ;NO NEED TO CHECK ERROR CODES.              |              |
| 3014 | 010504 |        |               | ERRDF  | 9,EMG9,ERRG2 |  | ;UNEXPECTED CONTROL OUT.                    |              |
| (4)  | 010504 | 104455 |               |        |              |  | TRAP                                        | C\$ERDF      |
| (5)  | 010506 | 000011 |               |        |              |  | .WORD                                       | 9            |
| (5)  | 010510 | 020136 |               |        |              |  | .WORD                                       | EMG9         |
| (5)  | 010512 | 015070 |               |        |              |  | .WORD                                       | ERRG2        |
| 3015 | 010514 | 005237 | 002354        | INC    | ERRFLG       |  | ;SET ERROR FLAG.                            |              |
| 3016 | 010520 | 000413 |               | BR     | 100\$        |  |                                             |              |
| 3017 | 010522 |        |               |        |              |  |                                             |              |
| 3018 | 010522 | 005737 | 002334        | TST    | TEMP         |  | ;WERE WE WAITING FOR THE RDI FLAG?          |              |
| 3019 | 010526 | 001410 |               | BEQ    | 100\$        |  | ;YES - OK, EXIT                             |              |
| 3020 | 010530 |        |               | PRINTB | #FMS2        |  | ;RECEIVED AN RDI, WHEN WAITING FOR RDO      |              |
| (7)  | 010530 | 012746 | 010641        |        |              |  | MOV                                         | #FMS2,-(SP)  |
| (6)  | 010534 | 012746 | 000001        |        |              |  | MOV                                         | #1,-(SP)     |
| (3)  | 010540 | 010600 |               |        |              |  | MOV                                         | SP,R0        |
| (4)  | 010542 | 104414 |               |        |              |  | TRAP                                        | C\$PNTB      |
| (4)  | 010544 | 062706 | 000004        |        |              |  | ADD                                         | #4,SP        |
| 3021 | 010550 |        |               |        |              |  |                                             |              |
| 3022 | 010550 | 005737 | 002370        | TST    | NESTPC       |  | ;WAS THIS NESTED IN ANOTHER SUBROUTINE?     |              |
| 3023 | 010554 | 00100? |               | BNE    | 105\$        |  | ;IF YES - LEAVE THE SUBROUTINE PC ALONE     |              |

```

3024 010556 005037 002366 CLR SUBRPC :CLEAR THE PC
3025 010562 105$: MOV (SP)+,R1 :RESTORE R1
3026 010562 012601 MOV (SP)+,R0 :RESTORE R0
3027 010564 012600 TST ERRFLG :WAS THERE AN ERROR (CARRY CLEARED ON TST)
3028 010566 005737 002354 BEQ 110$:IF NOT, RETURN WITH CARRY CLEAR
3029 010572 001401 SEC :SET CARRY.
3030 010574 000261 110$: RETURN
3031 010576 FMS1: .ASCIIZ /%N%ARDO SET WHEN EXPECTING RDI%N/
3032 010576 000207 010600 047045 040445 042122
3033 010606 020117 042523 020124
3034 010614 044127 047105 042440
3035 010622 050130 041505 044524
3036 010630 043516 051040 044504
3037 010636 047045 000
3038 010641 045 022516 051101 FMS2: .ASCIIZ /%N%ARDI SET WHEN EXPECTING RDO%N/
3039 010646 044504 051440 052105
3040 010654 053440 042510 020116
3041 010662 054105 042520 052103
3042 010670 047111 020107 042122
3043 010676 022517 000116
3044 .EVEN

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3069 010702 005037 002354
3070 010706 042777 000040 171316
3071 010714 005737 002370
3072 010720 001005
3073 010722 011637 002366
3074 010726 162737 000004 002366
3075 010734
3076 010734 010046
3077 010736 010146
3078 010740 013701 002312
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3080 010744
3081 010744 005000
3082 010746
3083 010746 032777 000200 171256
3084 010754 001427
3085 010756
(3) 010756 104422
3086 010760 005300
3087 010762 001371
3088 010764
(2) 010764 012727 000001
(2) 010770 000000
(2) 010772 013727 002116
(2) 010776 000000
(2) 011000 005367 177772
(2) 011004 001375

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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

$CLRQI:
CLR ERRFLG ;CLEAR ERROR FLAG
BIC #RQI,@SELO ;REQUEST INPUT CLEAR
TST NESTPC ;IS THIS NESTED IN ANOTHER SUBROUTINE?
BNE 10$;YES - USE SUBRPC CALCULATED
MOV (SP),SUBRPC ;SAVE THE PC AFTER THE CALL TO $WAIT.
SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL.
10$:
MOV R0,-(SP) ;SAVE R0
MOV R1,-(SP) ;SAVE R1
MOV WAIT2,R1 ;GET THE DELAY COUNTER (DETERMINED BY BAUD RATE IN INIT ROUTINE)
12$:
CLR R0 ;INNER LOOP COUNT
20$:
BIT #RDI,@SELO ;IS THE RDI BIT CLEAR IN SELO?
BEQ 30$;YES - EXIT
BREAK ;CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.
TRAP CSBRK
DEC R0 ;LOOP UNTIL R0 RETURNS TO 0
BNE 20$
DELAY 1 ;DELAY 100 MICROSECONDS
MOV #1,(PC)+
WORD 0
MOV L$DLY,(PC)+
WORD 0
DEC -6(PC)
BNE -4

```

|      |        |        |        |       |              |  |  |       |         |
|------|--------|--------|--------|-------|--------------|--|--|-------|---------|
| (2)  | 011006 | 005367 | 177756 |       |              |  |  |       |         |
| (2)  | 011012 | 001367 |        |       |              |  |  | DEC   | -22(PC) |
| 3089 | 011014 | 005301 |        |       |              |  |  | BNE   | .-20    |
| 3090 | 011016 | 001352 |        | DEC   | R1           |  |  |       |         |
| 3091 | 011020 |        |        | BNE   | 12\$         |  |  |       |         |
| (4)  | 011020 | 104455 |        | ERRDF | 1,EMG1,ERRG2 |  |  |       |         |
| (5)  | 011022 | 000001 |        |       |              |  |  |       |         |
| (5)  | 011024 | 020014 |        |       |              |  |  |       |         |
| (5)  | 011026 | 015070 |        |       |              |  |  |       |         |
| 3092 | 011030 | 005237 | 002354 |       |              |  |  | TRAP  | C\$ERDF |
| 3093 | 011034 |        |        |       |              |  |  | .WORD | 1       |
| 3094 | 011034 | 005737 | 002370 |       |              |  |  | .WORD | EMG1    |
| 3095 | 011040 | 001002 |        |       |              |  |  | .WORD | ERRG2   |
| 3096 | 011042 | 005037 | 002366 |       |              |  |  |       |         |
| 3097 | 011046 |        |        |       |              |  |  |       |         |
| 3098 | 011046 | 012601 |        |       |              |  |  |       |         |
| 3099 | 011050 | 012600 |        |       |              |  |  |       |         |
| 3100 | 011052 | 005737 | 002354 |       |              |  |  |       |         |
| 3101 | 011056 | 001401 |        |       |              |  |  |       |         |
| 3102 | 011060 | 000261 |        |       |              |  |  |       |         |
| 3103 | 011062 |        |        |       |              |  |  |       |         |
| 3104 | 011062 | 000207 |        |       |              |  |  |       |         |
| 3105 |        |        |        |       |              |  |  |       |         |
| 3106 |        |        |        |       |              |  |  |       |         |

  

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|-------|--------|----------|--|--|--|--|--|--|--|
| 50\$: | INC    | ERRFLG   |  |  |  |  |  |  |  |
|       | TST    | NESTPC   |  |  |  |  |  |  |  |
|       | BNE    | 40\$     |  |  |  |  |  |  |  |
|       | CLR    | SUBRPC   |  |  |  |  |  |  |  |
| 40\$: | MOV    | (SP)+,R1 |  |  |  |  |  |  |  |
|       | MOV    | (SP)+,R0 |  |  |  |  |  |  |  |
|       | TST    | ERRFLG   |  |  |  |  |  |  |  |
|       | BEQ    | 50\$     |  |  |  |  |  |  |  |
|       | SEC    |          |  |  |  |  |  |  |  |
| 50\$: | RETURN |          |  |  |  |  |  |  |  |



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011070 162737 000004 002366  
011076 010046  
011100 010146  
  
011102 105077 171136  
  
011106 000240  
011110 000240  
011112 000240  
011114 000240  
  
011116 032737 000001 002372  
011124 001004  
011126 012777 040000 171076  
011134 000403  
011136 012777 060000 171066  
011144

```


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. ADDITIONALLY 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

$MSCLR:
 MOV (SP),SUBRPC ;SAVE PC AFTER THE CALL TO $WAIT.
 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL
 MOV R0,-(SP) ;SAVE R0
 MOV R1,-(SP) ;SAVE R1
 CLRB @BSEL3 ;CLEAR BSEL3
 NOP
 NOP
 NOP
 NOP
 ;*****
 ;** PATCH AREA FOR 8206 IF NEEDED **
 ;CLR @ASEL6 -
 ;*****
 BIT #BIT0,CLRNO ;IS THIS AN ODD MASTER CLEAR.
 BNE 7$;IF YES - BR
 MOV #MCLR,@SELO ;ISSUE A MASTER CLEAR.
 BR 8$
7$:
 MOV #MCLR!MDIAG,@SELO ;ISSUE THE MASTER CLEAR AND TOGGLE
 ;MICRO TEST SWITCH.
8$:
```

```

3164 011144 000240 NOP
3165 011146 000240 NOP
3166 011150 000240 NOP
3167 011152 000240 NOP
3168
3169 011154 005237 002372 INC CLRNO
3170 011160 013701 002312 MOV WAIT2,R1
3171
3172 011164 10$:
3173 011164 005000 CLR R0
3174 011166 20$:
3175 011166 032777 100000 171036 BIT #RUN,@SELO
3176 011174 001025 BNE 40$
3177 011176 BREAK
3178 (3) 011176 104422 DEC R0
3179 011200 005300 BNE 20$
3180 011204 001371 DELAY 1
3181 (2) 011204 012727 000001
3182 (2) 011210 000000
3183 (2) 011212 013727 002116
3184 (2) 011216 000000
3185 (2) 011220 005367 177772
3186 (2) 011224 001375
3187 (2) 011226 005367 177756
3188 (2) 011232 001367
3189 011234 005301 DEC R1
3190 011236 001352 BNE 10$
3191 011240 ERRDF 1,EMG1,ERRG3
3192 (4) 011240 104455
3193 (5) 011242 000001
3194 (5) 011244 020014
3195 (5) 011246 015204
3196 011250 40$:
3197 011250 012601 MOV (SP)+,R1
3198 011252 012600 MOV (SP)+,R0
3199 011254 005037 002366 CLR SUBRPC
3200
3201 RETURN

```

\*\*\*\*\*  
 \*\* PATCH AREA FOR 8206 IF NEEDED \*\*  
 MOV #RUN,@SELO -  
 \*\*\*\*\*

; INCR WORD (CHANGE ODD TO EVEN ETC.)  
 ; GET THE # OF 100 MICRO SECOND DELAYS  
 ; TO WAIT BEFORE EXITING THE ROUTINE.

; INNER LOOP COUNT

; IS THE RUN BIT SET IN SELO?  
 ; YES - EXIT  
 ; CALL SUPERVISOR - ALLOW CONSOLE INTERRUPT.  
 TRAP C\$BRK

; LOOP UNTIL R0 RETURNS TO 0

; DELAY 100 MICROSECONDS

MOV #1,(PC)+  
 .WORD 0  
 MOV L\$DLY,(PC)+  
 .WORD 0  
 DEC -6(PC)  
 BNE -4  
 DEC -22(PC)  
 BNE -20

; REPEAT UNTIL MAX LOOP SATISFIED.

; REPORT RUN NOT SET

TRAP C\$ERDF  
 .WORD 1  
 .WORD EMG1  
 .WORD ERRG3

; RESTORE R1  
 ; RESTORE R0  
 ; TIDY UP SUBRPC

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 3229 011262 011637 002366  
 3230 011266 162737 000004 002366  
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 3232 011274 112777 000043 170730  
 3233 011302 012737 000001 002370  
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 (1) 011310 004737 010266  
 (1) 011314 000000  
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 3235 011316  
 (2) 011316 103003  
 3236 011320 062716 000006  
 3237 011324 000467  
 3238 011326  
 3239 011326 057677 000000 170676  
 3240 011334 062716 000002  
 3241 011340 017677 000000 170670  
 3242 011346 062716 000002  
 3243 011352 017677 000000 170660

```


SUBROUTINE $BASEI
 FUNCTION - TO PERFORM A BASE IN COMMAND

 CALLING FORMAT: JSR PC, $BASEI
 .WORD A (SELO MAINTENANCE BITS)
 .WORD B (SEL4 - ADDRESS)
 .WORD C (SEL6 - MODE AND/OR RESUME)
 (MACRO CALL -- BASEIN OR BASEIN A,B,C)

 NESTING LEVEL - MAY ONLY BE CALLED FROM IN-LINE CODE (TEST,
 SUBTEST OR TEST SEGMENT)

 ENTRY CONDITIONS - A = MAINTENANCE BITS (I.E. LINE UNIT LOOP BACK)
 B = BASE TABLE ADDRESS (SEL4)
 C = MODE + RESUME (SEL6)
 INFACE = 0 - NO INTERFACE WRITE REQUIRED
 1 - WRITE INTERFACE (AX3-15)

 EXIT CONDITIONS - 1. IF NO ERROR - DMR11 BASE TABLE ASSIGNED
 2. IF IN DMR MODE, AND INTERFACE WRITE REQUESTED
 WRITE REQUESTED AX3-15.
 3. TIMEOUT ERRORS ARE DETECTED IN WAIT SUBROUTINES.
 DMRFLG = -1 DMR MODE REQUESTED (USED IN CONTROL IN
 ROUTINE)
 0 DMC MODE OR RESUME REQUESTED.

 REGISTERS DESTROYED - RESTORED

$BASEI:
 MOV (SP),SUBRPC ;SAVE PC AFTER THE CALL TO $WAIT.
 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL

 MOV #RQI!BASEI,@BSELO ;ISSUE THE BASE IN COMMAND.
 MOV #1,NESTPC ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
 WAIT RDI ;WAIT FOR RDI
 JSR PC,$WAIT ;**** MACRO EXPANSION ****
 ;CALL WAIT ROUTINE
 .WORD 0 ;FLAG THAT WE'RE WAITING FOR RDI
 BERROR 10$;****
 ;IF NO ERROR, RDI SET - PROCEED
 ADD #6,(SP) ;CORRECT STACK FOR ERROR EXIT
 BR 30$;EXIT
10$:
 BIS @ (SP),@SELO ;SET ANY MAINTENANCE BITS
 ADD #2,(SP) ;INC. POINTER.
 MOV @ (SP),@SEL4 ;SET UP BASE ADDRESS
 ADD #2,(SP) ;INC. POINTER AGAIN
 MOV @ (SP),@SEL6 ;SET UP RESUME BIT AND THE HIGH 2 BITS

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| 011516 | 011637 | 002366 |        |
| 011522 | 162737 | 000004 | 002366 |
| 011530 | 112777 | 000041 | 170474 |
| 011536 | 012737 | 000001 | 002370 |
| 011544 |        |        |        |
| 011544 | 004737 | 010266 |        |
| 011550 | 000000 |        |        |
| 011552 |        |        |        |
| 011552 | 103003 |        |        |
| 011554 | 062716 | 000002 |        |
| 011560 | 000463 |        |        |
| 011562 |        |        |        |
| 011562 | 017677 | 000000 | 170450 |
| 011570 | 062716 | 000002 |        |
| 011574 | 032777 | 000400 | 170436 |
| 011602 | 001402 |        |        |
| 011604 | 005037 | 002260 |        |
| 011610 |        |        |        |
| 011610 |        |        |        |

```


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

$CNTIN:
 MOV (SP),SUBRPC ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
 SUB #4,SUBRPC ;BACKUP TO PC OF ACTUAL CALL
 MOVB #RQI+CNTRL,@BSEL0 ;SET UP CONTROL IN COMMAND
 MOV #1,NESTPC ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
 WAIT RDI ;WAIT FOR SETTING OF RDI
 ;**** MACRO EXPANSION ****
 JSR PC, $WAIT ;CALL WAIT ROUTINE
 .WORD 0
 ;FLAG THAT WE'RE WAITING FOR RDI
 ;****
 BNERROR 1$;IF NO ERROR - PROCEED
 BCC 1$
 ADD #2,(SP) ;CORRECT RETURN ADDRESS
 BR 20$;ERROR - EXIT

1$:
 MOV @ (SP),@SEL6 ;SET MODE DESIRED
 ADD #2,(SP) ;INC. RETURN PC LEFT ON STACK.
 BIT #MAINT,@SEL6 ;WAS MAINTENANCE MODE REQUESTED?
 BEQ 5$;IF NOT, LEAVE DMRFLG AS IS.
 CLR DMRFLG ;CLEAR FLAG - NO RUN MODE CONTROL OUT.

5$:
 WAIT RQI ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 ;**** MACRO EXPANSION ****

```

```

(1) 011610 004737 010702 JSR PC, $CLRQI ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
(1) ;*****
3328 011614 005737 002260 TST DMRFLG ;WAS DMR MODE REQUESTED ON BASE IN?
3329 011620 001443 BEQ 20$;BR IF NOT (DMC MODE)
3330 011622 005037 002260 CLR DMRFLG ;CLEAR DMR RUN MODE FLAG
3331 011626 WAIT RDO ;EXPECT RDO TO BE SET
(1) ;***** MACRO EXPANSION *****
(1) 011626 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 011632 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;*****
3332 011634 BNERROR 7$;IF NO ERROR - PROCEED
(2) 011634 103011 PRINTB #FMS3 ;PRINT RUN ACKNOWLEDGE NOT RECEIVED.
3333 011636 BCC 7$;
(7) 011636 012746 011742 MOV #FMS3,-(SP)
(6) 011642 012746 000001 MOV #1,-(SP)
(3) 011646 010600 MOV SP,R0
(4) 011650 104414 TRAP C$PNTB
(4) 011652 062706 000004 ADD #4,SP
3334 011656 000421 BR 15$
3335 011660 7$:
3336 011660 032777 000001 170346 BIT #CNTRL,@SEL2 ;DID WE RECEIVE A CONTROL OUT?
3337 011666 001005 BNE 10$;IF YES - PROCEED.
3338 011670 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT NOT RECEIVED.
(4) 011670 104455 TRAP C$ERDF
(5) 011672 000010 .WORD 8
(5) 011674 020072 .WORD EMG8
(5) 011676 015070 .WORD ERRG2
3339 011700 000410 BR 15$
3340 011702 10$:
3341 011702 032777 000040 170330 BIT #DMRRUN,@SEL6 ;WAS THE DMR RUN MODE BIT SET?
3342 011710 0C1004 BNE 15$;BR IF OK.
3343 011712 ERRDF 9,EMG9,ERRG2 ;WRONG CONTROL OUT RECEIVED.
(4) 011712 104455 TRAP C$ERDF
(5) 011714 000011 .WORD 9
(5) 011716 020136 .WORD EMG9
(5) 011720 015070 .WORD ERRG2
3344 011722 15$:
3345 011722 042777 000207 170304 BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS
3346 011730 20$:
3347 011730 005037 002370 CLR NESTPC ;CLEAR THE NEST FLAG
3348 011734 005037 002366 CLR SUBRPC ;CLEAR PC
3349 011740 000207 RETURN
3350 011742 040445 046504 020122 FMS3: .ASCII /%ADMR RUN ACKNOWLEDGMENT NOT RECEIVED%N/
3351 011750 052522 020116 041501
3352 011756 047113 053517 042514
3353 011764 043504 042515 052116
3354 011772 047040 052117 051040
3355 012000 041505 044505 042526
3356 012006 022504 116
3357 012011 045 024101 044103 .ASCIIZ /%(CHECK INTERFACE, BAUD AND TURNAROUND)%N/
3358 012015 041505 020113 047111
3359 012024 042524 043122 041501
3360 012032 026105 041040 052501
3361 012040 020104 047101 020104

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012046 052524 047122 051101  
 012054 052517 042116 022451  
 012062 000116

.EVEN

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 012072 011637 002366  
 012076 162737 000004 002366  
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 012104 117637 000000 002336  
 012112 117677 000000 170112  
 012120 062716 000002  
 012124 052777 000040 170100  
 012132 013746 002370  
 012136 012737 000001 002370

```


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

$DMRIN:
 TST NESTPC ;IS THIS SUBROUTINE NESTED?
 BNE 1$;IF YES - DON'T CHANGE SUBRPC.
 MOV (SP),SUBRPC ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
 SUB #4,SUBRPC ;BACKUP TO PC OF ACTUAL CALL

1$:
 MOVB @ (SP),SAVE ;SAVE DMR INPUT COMMAND
 MOVB @ (SP),@BSEL0 ;SET UP DMR INPUT COMMAND.
 ADD #2,(SP) ;INC RETURN PC LEFT ON STACK.
 BIS #RQ1,@SEL0 ;REQUEST INPUT.
 MOV NESTPC,-(SP) ;SAVE THE CURRENT NEST FLAG.
 MOV #1,NESTPC ;USE THE FLAG TO SHOW THE WAIT
 ;ROUTINE IS NESTED.

```

```

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

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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

```


$BACC:
MOV (SP),SUBRPC ;SAVE PC FROM WHERE THIS SUBR. WAS CALLED.
SUB #4,SUBRPC ;BACKUP TO PC OF ACTUAL CALL
MOVB @ (SP),@BSEL0 ;SET UP BA/CC COMMAND IN (TRANSMIT OR RECEIVE)
ADD #2,(SP) ;INC POINTER ON STACK
MOV #1,NESTPC ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
WAIT RDI ;WAIT FOR SETTING OF RDI
 ;**** MACRO EXPANSION ****
JSR PC,$WAIT ;CALL WAIT ROUTINE
 ;FLAG THAT WE'RE WAITING FOR RDI
 ;****
BNERROR 10$;IF NO ERROR - PROCEED
 BCC 10$
ADD #4,(SP) ;CORRECT STACK FOR ERROR EXIT.
BR 20$;EXIT
10$:
MOV @ (SP),@SEL4 ;SET BUFFER ADDRESS
ADD #2,(SP) ;INC POINTER ON STACK
MOV @ (SP),@SEL6 ;SET UP BUFFER COUNT AND BUFFER ADDRESS
 ;BITS 16 & 17
ADD #2,(SP) ;INC POINTER ON STACK
WAIT RQI ;CLEAR RQI AND WAIT FOR RDI TO CLEAR
 ;**** MACRO EXPANSION ****
JSR PC,$CLRQI ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
 ;****
20$:
CLR NESTPC ;CLEAR THE NEST FLAG
CLR SUBRPC ;CLEAR PC
RETURN

```

# SUBROUTINE \$ERROR

FUNCTION - TO CHECK THE FIRST 8. BASE TABLE ERROR COUNTS  
 FOR NON-ZERO VALUES.

CALLING FORMAT: JSR PC, \$ERROR

```

3503 : NESTING LEVEL - CAN BE NESTED WITHIN ANOTHER ROUTINE
3504 :
3505 : ENTRY CONDITIONS - SHOULD BE DONE AFTER PROPER SHUTDOWN
3506 : NESTPC = 1 - SUBROUTINE NESTED WITHIN ANOTHER SUB.
3507 : = 0 - SUBROUTINE NOT NESTED.
3508 :
3509 : EXIT CONDITIONS - IF ANY NON-ZERO VALUE FOUND IN THE BASE TABLE A
3510 : SOFT ERROR IS DECLARED.
3511 :
3512 :
3513 : REGISTERS DESTROYED - RESTORED
3514 :
3515 :*****
3516 :*****
3517 012406 $ERROR:
3518 012406 005737 002370 TST NESTPC ;IS THIS ROUTINE NESTED?
3519 012412 001005 BNE 10$;BR IF YES (PC ALREADY SAVED)
3520 012414 011637 002366 MOV (SP),SUBRPC ;SAVE PC AFTER THE CALL TO $WAIT.
3521 012420 162737 000004 002366 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL
3522 : ;THE INSTRUCTION AFTER THE CALL.
3523 012426 10$:
3524 012426 010046 MOV R0,-(SP) ;SAVE R0
3525 012430 010146 MOV R1,-(SP) ;SAVE R1
3526 012432 012700 002633 MOV #BASE+3,R0 ;POINTER TO ACTUAL BASE TABLE COUNTS.
3527 012436 012701 000006 MOV #6.,R1 ;CHECK THE 6 NAK BYTES IN THE TABLE
3528 012442 20$:
3529 012442 105720 TSTB (R0)+ ;IS THE NAK COUNT NON-ZERO?
3530 012444 001016 BNE 30$;IF YES - REPORT SOFT ERROR
3531 012446 005301 DEC R1 ;LOOP UNTIL DONE.
3532 012450 001374 BNE 20$
3533 012452 122010 CMPB (R0)+,(R0) ;ARE THE REPS THE SAME?
3534 012454 001012 BNE 30$;IF NOT - REPORT ERROR.
3535 012456 022737 000022 002114 CMP #18.,L$TEST ;IS THIS TEST 18 (LARGE BUFFER TEST)
3536 012464 001403 BEQ 25$;IF YES - ALLOW 1 REP
3537 012466 105710 TSTB (R0) ;IF NOT TEST 18 - REPORT IF NON ZERO.
3538 012470 001004 BNE 30$
3539 012472 000407 BR 40$;IF ZERO - OK.
3540 012474 25$:
3541 012474 122710 000001 CMPB #1,(R0) ;IS THE REP 0 OR 1?
3542 012500 002004 BGE 40$;IF YES - OK (WE ALLOW 1 REP BECAUSE
3543 : ;IN TEST 18 AT LOW BAUD RATES 1 REP IS
3544 : ;EXPECTED.)
3545 012502 30$:
3546 012502 ERRSOFT 5,EMS3,ERRG4 ;REPORT SOFT ERROR
3547 (4) 012502 104457 TRAP C$ERSOFT
3548 (5) 012504 000005 .WORD 5
3549 (5) 012506 012532 .WORD EMS3
3550 (5) 012510 015464 .WORD ERRG4
3551 012512 40$:
3552 012512 005737 002370 TST NESTPC ;IS THE ROUTINE NESTED?
3553 012516 001002 BNE 45$;BR IF YES
3554 012520 005037 002366 CLR SUBRPC ;CLEAR SAVED PC
3555 012524 45$:
3556 012524 012601 MOV (SP)+,R1 ;RESTORE R1
3557 012526 012600 MOV (SP)+,R0 ;RESTORE R0
3558 012530 000207 RETURN

```

3555  
 3556 012532 051105 047522 051522 EMS3: .ASCIZ /ERRORS IN BASE TABLE/  
 012540 044440 020116 040502  
 012546 042523 052040 041101  
 012554 042514 000  
 012560 .EVEN

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\*\*\*\*\*  
 \*\*\*\*\*

# SUBROUTINE \$HALT

FUNCTION - TO SHUTDOWN THE DMR11

ENTRY CONDITIONS - NONE

EXIT CONDITIONS - DMR SHUTDOWN

REGISTERS - NO EFFECT

\*\*\*\*\*  
 \*\*\*\*\*

\$HALT:

|      |        |        |        |        |        |                |                                              |
|------|--------|--------|--------|--------|--------|----------------|----------------------------------------------|
| 3578 | 012560 |        |        |        | MOV    | (SP),SUBRPC    | ;SAVE THE PC WHEN THE SUBROUTINE WAS CALLED. |
| 3579 | 012560 | 011637 | 002366 |        | SUB    | #4,SUBRPC      | ;BACK UP TO THE ADDRESS OF THE ACTUAL CALL.  |
| 3580 | 012564 | 162737 | 000004 | 002366 | MOVB   | #RQI!HLT,@SEL0 | ;ISSUE A HALT                                |
| 3581 | 012572 | 112777 | 000042 | 167432 | CLRB   | @SEL2          | ;CLEAR ANY OUTPUT PENDING                    |
| 3582 | 012600 | 105077 | 167430 |        | MOV    | #1,NESTPC      | ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.    |
| 3583 | 012604 | 012737 | 000001 | 002370 | WAIT   | RDI            | ;WAIT FOR RDI                                |
| 3584 | 012612 |        |        |        |        |                | ***** MACRO EXPANSION *****                  |
| (1)  |        |        |        |        | JSR    | PC,\$WAIT      | ;CALL WAIT ROUTINE                           |
| (1)  | 012612 | 004737 | 010266 |        | .WORD  | 0              | ;FLAG THAT WE'RE WAITING FOR RDI             |
| (1)  | 012616 | 000000 |        |        |        |                | *****                                        |
| 3585 | 012620 |        |        |        | BERROR | 20\$           | ;IF ERROR, EXIT                              |
| (2)  | 012620 | 103430 |        |        |        |                | BCS 20\$                                     |
| 3586 | 012622 |        |        |        | WAIT   | RQI            | ;CLEAR RQI AND WAIT FOR RDI TO CLEAR         |
| (1)  |        |        |        |        |        |                | ***** MACRO EXPANSION *****                  |
| (1)  | 012622 | 004737 | 010702 |        | JSR    | PC,\$CLRQI     | ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.    |
| (1)  |        |        |        |        |        |                | *****                                        |
| 3587 | 012626 |        |        |        | BERROR | 20\$           | ;IF ERROR, EXIT                              |
| (2)  | 012626 | 103425 |        |        |        |                | BCS 20\$                                     |
| 3588 | 012630 |        |        |        | WAIT   | RDO            | ;WAIT FOR RDO                                |
| (1)  |        |        |        |        |        |                | ***** MACRO EXPANSION *****                  |
| (1)  | 012630 | 004737 | 010266 |        | JSR    | PC,\$WAIT      | ;CALL WAIT ROUTINE                           |
| (1)  | 012634 | 000001 |        |        | .WORD  | 1              | ;FLAG THAT WE'RE WAITING FOR RDO             |
| (1)  |        |        |        |        |        |                | *****                                        |
| 3589 | 012636 |        |        |        | BERROR | 20\$           | ;IF ERROR, EXIT                              |
| (2)  | 012636 | 103421 |        |        |        |                | BCS 20\$                                     |
| 3590 | 012640 | 032777 | 000001 | 167366 | BIT    | #CNTRL,@SEL2   | ;IS THIS A CONTROL OUT?                      |
| 3591 | 012646 | 001005 |        |        | BNE    | 10\$           | ;IF YES - PROCEED                            |
| 3592 | 012650 |        |        |        | ERRDF  | 4,EMS4,ERRG2   | ;ERROR                                       |
| (4)  | 012650 | 104455 |        |        |        |                | TRAP C\$ERDF                                 |

|      |        |        |               |
|------|--------|--------|---------------|
| 3605 | 012758 | 051117 | 000           |
| 3606 |        | 012742 |               |
| 3607 |        |        |               |
| 3608 |        |        |               |
| 3609 |        |        |               |
| 3610 |        |        |               |
| 3611 |        |        |               |
| 3612 |        |        |               |
| 3613 |        |        |               |
| 3614 |        |        |               |
| 3615 |        |        |               |
| 3616 |        |        |               |
| 3617 |        |        |               |
| 3618 |        |        |               |
| 3619 |        |        |               |
| 3620 |        |        |               |
| 3621 |        |        |               |
| 3622 |        |        |               |
| 3623 |        |        |               |
| 3624 |        |        |               |
| 3625 | 012742 |        |               |
| 3626 | 012742 | 005077 | 167264        |
| 3627 | 012746 | 113777 | 002405 167260 |
| 3628 | 012754 | 052777 | 001000 167250 |
| 3629 | 012762 | 012777 | 121053 167250 |
| 3630 |        |        |               |
| 3631 |        |        |               |
| 3632 |        |        |               |
| 3633 | 012770 | 052777 | 000400 167234 |
| 3634 | 012776 | 042777 | 001400 167226 |
| 3635 | 013004 | 042737 | 000377 013060 |
| 3636 | 013012 | 153737 | 002404 013060 |
| 3637 | 013020 | 052777 | 001000 167204 |
| 3638 | 013026 | 013777 | 013060 167204 |
| 3639 |        |        |               |

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

```
$ROMO: CLR @SEL0 ;INIT
MOV#B ROMADR+1,@SEL2 ;SET HIGH BYTE OF ROM ADDRESS
BIS #ROMI,@SEL0 ;ENABLE SEL6 TO BE USED AS MAINTENANCE REG.
MOV #121053,@SEL6 ;SET UP MICROINSTRUCTION TO
;MOVE IBUS* 2 TO OBUS* 13
;(OBUS* 13 IS A SHADOW REGISTER FOR
;BITS 8-11 OF THE PC)
BIS #STUP,@SEL0 ;CLOCK THE INSTRUCTION
BIC #ROMI!STUP,@SEL0 ;CLEAR
BIC #377,1$;CLEAR ADDRESS FIELD OF BRANCH INST.
BISB ROMADR,1$;ADD ADDRESS OF BRANCH.
BIS #ROMI,@SEL0 ;ENABLE SEL6
MOV 1$,@SEL6 ;SET UP MICROINSTRUCTION TO
;BRANCH IMMEDIATELY TO PC. BRANCH IS
```

```

3640 013034 052777 000400 167170 BIS #STUP,@SELO ;NECESSARY TO TRANSFER PC SHADOW REG TO PC
3641 ;CLOCK THE INSTRUCTION
3642 ;ROM PC = ROM ADDRESS
3643 013042 042777 001400 167162 BIC #ROMI.STUP,@SELO ;CLEAR
3644 013050 052777 002000 167154 BIS #ROMO,@SELO ;CLOCK IN A MAINTENANCE ROM OUT
3645 ;ROM CONTENTS ARE NOW IN SEL6.
3646 013056 000207 RETURN
3647
3648 013060 100000 1$: .WORD 100000 ;MICRO INSTRUCTION OPCODE FOR IMMEDIATE
3649 ;BRANCH (ROM ADDRESS IS ADDED INTO BITS 0-7)
3650
3651 *****
3652 *****
3653
3654 SUBROUTINE $LOOP
3655
3656 FUNCTION - TO ISSUE AN EXTENDED CONTROL IN TO SET
3657 UP THE MODEM LOOPBACK DESIRED BY THE USER.
3658
3659 ENTRY CONDITIONS - WMAINT = 0 - DON'T WRITE MAINT. BITS
3660 WMAINT = 1 - SET BITS
3661 (WMAINT SET IN INIT CODE)
3662 DMCMD = 0 - DMR MODE
3663 DMTURN = TURN AROUND CONNECTOR
3664
3665 EXIT CONDITIONS -
3666
3667 REGISTERS - NOT DESTROYED
3668
3669 *****
3670 *****
3671
3672 $LOOP:
3673 013062 005737 002276 TST DMCMD ;IS THE DMR IN DMC MODE?
3674 013066 001041 BNE 30$;IF SO, EXIT (CAN'T DO DMR MODE INPUT)
3675 013070 005737 002306 TST WMAINT ;DO WE NEED TO WRITE THE MAINTENANCE BITS?
3676 013074 001436 BEQ 30$;IF NOT - EXIT.
3677 013076 011637 002366 MOV (SP),SUBRPC ;SAVE THE PC AFTER THE CALL TO $LOOP
3678 013102 162737 000004 002366 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL.
3679 013110 022737 000006 002234 CMP #6,DMTURN ;IS LOCAL MODEM LOOPBACK DESIRED?
3680 013116 001007 BNE 10$;IF NOT - PROCEED.
3681 013120 012737 000004 013166 MOV #MAINT2,100$;ENSURE REMOTE LOOPBACK IS CLEAR.
3682 013126 012737 000010 013170 MOV #MAINT1,101$;SET MAINT BIT FOR LOCAL LOOPBACK
3683 013134 000406 BR 20$
3684 013136 10$:
3685 ;IN ALL OTHER LOOPBACK CONFIGURATIONS
3686 ;SET MAINTENANCE 2 (CONFIG. TYPE 1,3,7)
3687 013136 012737 000010 013166 MOV #MAINT1,100$;ENSURE REMOTE LOOPBACK IS CLEAR.
3688 013144 012737 000004 013170 MOV #MAINT2,101$;SET MAINT BIT FOR REMOTE LOOPBACK
3689 013152 20$:
3690 013152 012737 000001 002370 MOV #1,NESTPC ;FLAG THAT THE NEXT SUBROUTINE IS NESTED.
3691 013160 CALL $DMRIN ;DMR MODE INPUT COMMAND
3692 013164 000005 .WORD WMODEM ;WRITE MODEM COMMAND
3693 013166 000000 .WORD 0 ;BITS TO CLEAR IN MODEM REGISTER
3694 013170 000000 .WORD 0 ;BITS TO SET IN MODEM REGISTER
3695

```

3696 013172  
3697 013172 005037 002370  
3698 013176 005037 002366  
3699 013202 000207

30\$:

CLR NESTPC ;CLEAR THE NEST FLAG  
CLR SUBRPC ;CLEAR PC.  
RETURN

3700  
3701  
3702  
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3737

\*\*\*\*\*  
\*\*\*\*\*

SUBROUTINE \$BUFFS

FUNCTION - TO DETERMINE BUFFERS FOR TEST 15 - 19. THIS  
SUBROUTINE WILL USE ONE OF THE FOLLOWING  
THREE BUFFER AREAS:

1. IF MEMORY MANAGED, 32K - 48K
2. FREE MEMORY, IF MORE THAN 4K BYTES.
3. IF 2 OR 3 NOT POSSIBLE, DEFAULT 4K  
DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.

CALL - JSR PC,\$BUFFS  
NESTING LEVEL - CALLED ONLY BY TESTS 16-20  
ENTRY CONDITIONS - BUFNUM = # OF RCV & XMIT BUFFERS  
EXIT CONDITIONS - MMANAG = 1 MEMORY MANAGEMENT USED  
MMANAG = 0 MEMORY MANAGEMENT NOT USED  
RCVBUF = ADDRESS OF RECEIVE BUFFER (VIRTUAL)  
RCVBUF+2 = CHARACTER COUNT  
RCVBUF+4 = ADDRESS OF NEXT RECEIVE BUFFER  
(UP TO 64 ADDRESSES AND COUNTS)  
XMTBUF = ADDRESS OF TRANSMIT BUFFER (VIRTUAL)  
(UP TO 64 ADDRESSES AND COUNTS)

REGISTERS - NOT DESTROYED

\*\*\*\*\*  
\*\*\*\*\*

\$BUFFS:

3738 013204  
3739 013204 011637 002366  
3740 013210 162737 000004 002366  
3741 013216 005037 002340  
3742 013222  
(7) 013222 012746 000340  
(6) 013226 012746 023512  
(5) 013232 012746 000004  
(4) 013236 012746 000003  
(3) 013242 104437  
(2) 013244 062706 000010  
3743 013250 005737 177572  
3744 013254 005737 002340  
3745

MOV (SP),SUBRPC ;SAVE PC AFTER THE CALL TO \$BUFFS  
SUB #4,SUBRPC ;BACKUP TO THE PC OF THE CALL.  
CLR FLAG  
SETVEC #4,#NOXMEM,#PRI07 ;SET UP TRAP 4 (WILL SET FLAG FOR NXM)  
MOV #PRI07,-(SP)  
MOV #NOXMEM,-(SP)  
MOV #4,-(SP)  
MOV #3,-(SP)  
TRAP C\$SVEC  
ADD #10,SP  
TST @#177572 ;ADDRESS MEMORY MANAGEMENT REG  
TST FLAG ;IS THE FLAG STILL CLEARED?  
;NOTE: THE FLAG WILL BE SET BY THE TRAP



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

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



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

3908 014124 005037 002340  
 3909 014130 005037 002366  
 3910 014134 000207

CLR FLAG ;RESTORE FLAG USED IN TRAP VECTOR.  
 CLR SUBRPC ;CLEAR PC.  
 RETURN

3911  
 3912  
 3913  
 3914  
 3915  
 3916  
 3917  
 3918  
 3919  
 3920  
 3921  
 3922  
 3923  
 3924  
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 3926  
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 3928  
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 3932  
 3933  
 3934  
 3935

\*\*\*\*\*  
 \*\*\*\*\*

# 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

\*\*\*\*\*  
 \*\*\*\*\*

## \$INOUT:

3936 014136  
 3937 014136 011637 002366  
 3938 014142 162737 000004 002366  
 3939 014150 012737 000001 002370  
 3940 014156 013737 002322 002324  
 3941 014164 013737 002322 002326  
 3942 014172 013737 002322 002330  
 3943 014200 013737 002322 002332  
 3944 014206 005037 002346  
 3945 014212 005037 002350  
 3946 014216 005037 002272  
 3947  
 3948 014222 012702 003630  
 3949 014226 012703 003230  
 3950 014232 012704 003630  
 3951 014236 012705 003230  
 3952 014242  
 (3) 014242 012700 000200  
 (3) 014246 104441  
 3953  
 3954 014250 013737 002314 002316  
 3955 014256 112777 000143 165746  
 3956 014264  
 3957 014264 012701 001000  
 3958 014270  
 3959 014270  
 (3) 014270 104422  
 3960

MOV (SP),SUBRPC ;SAVE THE PC AFTER THE CALL TO \$LOOP  
 SUB #4,SUBRPC ;BACKUP TO THE PC OF THE ACTUAL CALL.  
 MOV #1,NESTPC ;FLAG THAT ANY SUBROUTINE USED WILL BE NESTED.  
 MOV BUFNUM,INRCV ;# OF BA/CC IN RECEIVES  
 MOV BUFNUM,INXMIT ;# OF BA/CC IN TRANSMITS  
 MOV BUFNUM,OUTRCV ;# OF BA/CC OUT RECEIVES  
 MOV BUFNUM,OUTXMT ;# OF BA/CC OUT TRANSMITS  
 CLR INFLAG ;CLEAR INPUT BA/CC FLAG  
 CLR OUTFLG ;CLEAR OUTPUT BA/CC FLAG  
 CLR START ;CLEAR FLAG TO SHOW START UP NOT DONE (SET  
 ;AFTER CONTROL IN)  
 MOV #RCVBUF,R2 ;ADDR OF RCV. BUFFER TABLE (FOR INPUT,  
 MOV #XMTBUF,R3 ;ADDR OF XMIT BUFFER TABLE (FOR INPUT)  
 MOV #RCVBUF,R4 ;ADDR OF RCV. BUFFER TABLE (OUTPUT CHECKING)  
 MOV #XMTBUF,R5 ;ADDR OF XMIT BUFFER TABLE (OUTPUT CHECKING)  
 SETPRI #PRI04 ;SET THE PRIORITY TO LEVEL 4 TO ALLOW THE  
 ;DMR TO INTERRUPT AT LEVEL 5  
 MOV WAIT3,WAIT4 ;TIMEOUT COUNTER DETERMINED BY BAUD RATE.  
 MOV #IESET!RQI!BASEI,2BSELO ;FIRST COMMAND - BASE IN.  
 8\$: MOV #1000,R1 ;INNER LOOP COUNTER  
 10\$: BREAK ;OPERATOR INTERRUPT ENABLE. CALL TO  
 ;THE SUPERVISOR TO ALLOW CONSOLE INTERRUPT

```

3961
3962
3963 014272 005737 002346 TST INFLAG
3964 014276 001403 BEQ 12$
3965 014300 005737 002350 TST OUTFLG
3966 014304 001026 BNE 20$
3967 014306
3968 014306 12$: DELAY 1
(2) 014306 012727 000001
(2) 014312 000000
(2) 014314 013727 002116
(2) 014320 000000
(2) 014322 005367 177772
(2) 014326 001375
(2) 014330 005367 177756
(2) 014334 001367
3969 014336 005301 DEC R1
3970 014340 001353 BNE 10$
3971 014342 005337 002316 DEC WAIT4
3972 014346 001346 BNE 8$
3973 014350 ERRDF 2,EMG2,ERRG1
(4) 014350 104455
(5) 014352 000002
(5) 014354 020025
(5) 014356 014562
3974
3975
3976 014360 000453
3977 014362 20$: BR 60$
3978
3979 014362 012700 003630 MOV #RCVBUF,R0
3980 014366 012701 003230 MOV #XMTBUF,R1
3981 014372 013702 002322 MOV BUFNUM,R2
3982 014376 005737 002302 TST MMANAG
3983 014402 001403 BEQ 40$
3984 014404 012737 000001 177572 MOV #1,#177572
3985 014412
3986 014412 012003 40$: MOV (R0)+,R3
3987 014414 012104 MOV (R1)+,R4
3988 014416 011005 MOV @R0,R5
3989 014420 022021 CMP (R0)+,(R1)+
3990 014422 001412 BEQ 45$
3991 014424 005737 002302 TST MMANAG
3992 014430 001402 BEQ 41$
3993 014432 005037 177572 CLR @#177572
3994 014436 41$: ERRDF 12,EMG12,ERRG10
3995 014436
(4) 014436 104455
(5) 014440 000014
(5) 014442 020241
(5) 014444 016160
3996 014446 000420
3997 014450 45$: BR 60$
3998 014450 122324
3999 014452 001005 CMPB (R3)+,(R4)+
4000 014454 005305 BNE 50$
 DEC R5

```

;(NOTE: INFLAG AND OUTFLG SET IN THE INTERRUPT  
 ;SERVICE ROUTINES)  
 ;ARE THE INPUTS DONE? (INISR DONE?)  
 ;IF NOT KEEP CHECKING.  
 ;ARE THE OUTPUTS DONE? (OUTISR DONE?)  
 ;IF YES EXIT WAIT LOOP.

;WAIT 100 MICROSECONDS.

```

MOV #1,(PC)+
.WORD 0
MOV L$DLY,(PC)+
.WORD 0
DEC -6(PC)
BNE -4
DEC -22(PC)
BNE -20

```

;CONTINUE IN LOOP UNTIL R1 - 0.

;DECREMENT OUTER LOOP COUNTER  
 ;IF NOT DONE - GO THROUGH INNER LOOP AGAIN.  
 ;TIMEOUT MESSAGE.

```

TRAP C$ERDF
.WORD 2
.WORD EMG2
.WORD ERRG1

```

;ALSO PRINT # OF BUFFERS NOT COMPLETE.

;EXIT

;RECEIVE BUFFER POINTER TABLE ADDRESS.  
 ;TRANSMIT BUFFERS  
 ;# OF RCV. AND XMIT BUFFERS.  
 ;ARE THE BUFFERS MEMORY MANAGED?  
 ;IF YES - PROCEED.  
 ;TURN ON MEMORY MANAGEMENT

;ADDRESS OF A RECEIVE BUFFER.  
 ;ADDRESS OF A TRANSMIT BUFFER.  
 ;CHARACTER COUNT.  
 ;ARE THE CHARACTER COUNTS THE SAME?  
 ;IF YES - PROCEED.  
 ;IS MEMORY MANAGEMENT TURNED ON?  
 ;IF NOT - SKIP TURN OFF.  
 ;TURN OFF MEMORY MANAGEMENT.

```

TRAP C$ERDF
.WORD 12
.WORD EMG12
.WORD ERRG10

```

;EXIT

;ARE THE CHARACTERS THE SAME?  
 ;IF NOT - ERROR EXIT  
 ;CHECK ALL THE CHARACTERS

```

4001 014456 001374 BNE 45$
4002 014460 005302 DEC R2 ;CHECK ALL THE BUFFERS.
4003 014462 001353 BNE 40$
4004 014464 000411 BR 60$
4005 014466
4006 014466 005737 002302 50$: TST MMANAG ;IS MEMORY MANAGEMENT TURNED ON?
4007 014472 001402 BEQ 51$;IF NOT - SKIP TURN OFF.
4008 014474 005037 177572 CLR @#177572 ;TURN OFF MEMORY MANAGEMENT.
4009 014500
4010 014500 51$: ERRDF 15,EMG15,ERRG12
 (4) 014500 104455
 (5) 014502 000017 TRAP C$ERDF
 (5) 014504 020341 .WORD 15
 (5) 014506 016244 .WORD EMG15
4011 014510 60$: .WORD ERRG12
4012 014510 005737 002302 TST MMANAG ;IS MEMORY MANAGEMENT TURNED ON?
4013 014514 001402 BEQ 61$;IF NOT - SKIP TURN OFF.
4014 014516 005037 177572 CLR @#177572 ;TURN OFF MEMORY MANAGEMENT.
4015 014522
4016 014522 042777 000120 165502 61$: BIC #IESET!IECLR,@SELO ;DISABLE BOTH INPUT INTERRUPTS
4017 014530 042777 000100 165476 BIC #IEO,@SEL2 ;DISABLE OUTPUT INTERRUPT
4018
4019 014536 SHUTDN ;SHUT DOWN THE DMR
 (1)
 (1) 014536 004737 012560 JSR PC, $HALT ;**** MACRO EXPANSION ****
 (1)
 ;DMR HALT ROUTINE.
4020 014542 SETPRI #PRI07 ;****
 (3) 014542 012700 000340 ;RETURN PROCESSOR PRIORITY TO 7
 (3) 014546 104441 MOV #PRI07,R0
4021 014550 005037 002370 CLR NESTPC ;CLEAR NESTED FLAG.
4022 014554 005037 002366 CLR SUBRPC ;CLEAR PC.
4023 014560 000207 RETURN
4024
4025
4026
4027
4028
4029
4030
4031
4032
4033
4034
4035 .SBTTL GLOBAL ERROR REPORT REPORT SECTION
4036 ;////////////////////////////////////
4037 ;// THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
4038 ;// THAT ARE USED IN MORE THAN ONE TEST.
4039 ;////////////////////////////////////
4040 .EVEN
4041
4042 014562 BGNMSG ERRG1
 (3) 014562
4043 014562 PRINTB #FMG3,SUBRPC ;PC THAT SUBROUTINE WAS CALLED.
 (8) 014562 013746 002366 ERRG1::
 (7) 014566 012746 016362 MOV SUBRPC,-(SP)
 (6) 014572 012746 000002 MOV #FMG3,-(SP)
 MOV #2,-(SP)

```

|      |        |        |        |        |        |                                                  |              |
|------|--------|--------|--------|--------|--------|--------------------------------------------------|--------------|
| (3)  | 014576 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 014600 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 014602 | 062706 | 000006 |        |        | ADD                                              | #6,SP        |
| 4044 | 014606 |        |        |        | PRINTB | #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS. |              |
| (9)  | 014606 | 017746 | 165422 |        |        | MOV                                              | @SEL2,-(SP)  |
| (8)  | 014612 | 017746 | 165414 |        |        | MOV                                              | @SEL0,-(SP)  |
| (7)  | 014616 | 012746 | 016276 |        |        | MOV                                              | #FMG1,-(SP)  |
| (6)  | 014622 | 012746 | 000003 |        |        | MOV                                              | #3,-(SP)     |
| (3)  | 014626 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 014630 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 014632 | 062706 | 000010 |        |        | ADD                                              | #10,SP       |
| 4045 | 014636 |        |        |        | PRINTB | #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS. |              |
| (9)  | 014636 | 017746 | 165376 |        |        | MOV                                              | @SEL6,-(SP)  |
| (8)  | 014642 | 017746 | 165370 |        |        | MOV                                              | @SEL4,-(SP)  |
| (7)  | 014646 | 012746 | 016330 |        |        | MOV                                              | #FMG2,-(SP)  |
| (6)  | 014652 | 012746 | 000003 |        |        | MOV                                              | #3,-(SP)     |
| (3)  | 014656 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 014660 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 014662 | 062706 | 000010 |        |        | ADD                                              | #10,SP       |
| 4046 | 014666 |        |        |        | PRINTB | #FMG21,BUFNUM ;# OF BUFFERS                      |              |
| (8)  | 014666 | 013746 | 002322 |        |        | MOV                                              | BUFNUM,-(SP) |
| (7)  | 014672 | 012746 | 017545 |        |        | MOV                                              | #FMG21,-(SP) |
| (6)  | 014676 | 012746 | 000002 |        |        | MOV                                              | #2,-(SP)     |
| (3)  | 014702 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 014704 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 014706 | 062706 | 000006 |        |        | ADD                                              | #6,SP        |
| 4047 | 014712 |        |        |        | PRINTB | #FMG22,BUFSIZ ;BUFFER SIZE                       |              |
| (8)  | 014712 | 013746 | 002320 |        |        | MOV                                              | BUFSIZ,-(SP) |
| (7)  | 014716 | 012746 | 017625 |        |        | MOV                                              | #FMG22,-(SP) |
| (6)  | 014722 | 012746 | 000002 |        |        | MOV                                              | #2,-(SP)     |
| (3)  | 014726 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 014730 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 014732 | 062706 | 000006 |        |        | ADD                                              | #6,SP        |
| 4048 | 014736 | 005437 | 002324 |        | NEG    | INRCV ;NEGATE BUFFER VALUES                      |              |
| 4049 | 014742 | 005437 | 002326 |        | NEG    | INXMIT                                           |              |
| 4050 | 014746 | 005437 | 002330 |        | NEG    | OUTRCV                                           |              |
| 4051 | 014752 | 005437 | 002332 |        | NEG    | OUTXMT                                           |              |
| 4052 | 014756 | 063737 | 002322 | 002324 | ADD    | BUFNUM,INRCV ;CALCULATE BUFFERS ASSIGNED.        |              |
| 4053 | 014764 | 063737 | 002322 | 002326 | ADD    | BUFNUM,INXMIT                                    |              |
| 4054 | 014772 | 063737 | 002322 | 002330 | ADD    | BUFNUM,OUTRCV ;CALCULATE BUFFERS RECEIVED.       |              |
| 4055 | 015000 | 063737 | 002322 | 002332 | ADD    | BUFNUM,OUTXMT                                    |              |
| 4056 | 015006 |        |        |        | PRINTB | #FMG23,INRCV,INXMIT                              |              |
| (9)  | 015006 | 013746 | 002326 |        |        | MOV                                              | INXMIT,-(SP) |
| (8)  | 015012 | 013746 | 002324 |        |        | MOV                                              | INRCV,-(SP)  |
| (7)  | 015016 | 012746 | 017652 |        |        | MOV                                              | #FMG23,-(SP) |
| (6)  | 015022 | 012746 | 000003 |        |        | MOV                                              | #3,-(SP)     |
| (3)  | 015026 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 015030 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |
| (4)  | 015032 | 062706 | 000010 |        |        | ADD                                              | #10,SP       |
| 4057 | 015036 |        |        |        | PRINTB | #FMG24,OUTRCV,OUTXMT                             |              |
| (9)  | 015036 | 013746 | 002332 |        |        | MOV                                              | OUTXMT,-(SP) |
| (8)  | 015042 | 013746 | 002330 |        |        | MOV                                              | OUTRCV,-(SP) |
| (7)  | 015046 | 012746 | 017733 |        |        | MOV                                              | #FMG24,-(SP) |
| (6)  | 015052 | 012746 | 000003 |        |        | MOV                                              | #3,-(SP)     |
| (3)  | 015056 | 010600 |        |        |        | MOV                                              | SP,R0        |
| (4)  | 015060 | 104414 |        |        |        | TRAP                                             | C\$PNTB      |

```

(4) 015062 062706 000010
4058 015066
(3) 015066
(3) 015066 104423
4059
4060
4061 015070
(3) 015070
4062 015070 005737 002366
4063 015074 001412
4064 015076
(8) 015076 013746 002366
(7) 015102 012746 016362
(6) 015106 012746 000002
(3) 015112 010600
(4) 015114 104414
(4) 015116 062706 000006
4065 015122
4066 015122
(9) 015122 017746 165106
(8) 015126 017746 165100
(7) 015132 012746 016276
(6) 015136 012746 000003
(3) 015142 010600
(4) 015144 104414
(4) 015146 062706 000010
4067 015152
(9) 015152 017746 165062
(8) 015156 017746 165054
(7) 015162 012746 016330
(6) 015166 012746 000003
(3) 015172 010600
(4) 015174 104414
(4) 015176 062706 000010
4068 015202
(3) 015202
(3) 015202 104423
4069
4070 015204
(3) 015204
4071 015204 005737 002366
4072 015210 001412
4073 015212
(8) 015212 013746 002366
(7) 015216 012746 016362
(6) 015222 012746 000002
(3) 015226 010600
(4) 015230 104414
(4) 015232 062706 000006
4074 015236
4075 015236
(9) 015236 017746 164772
(8) 015242 017746 164764
(7) 015246 012746 016276
(6) 015252 012746 000003
(3) 015256 010600

ENDMSG

BGNMSG ERRG2
 TST SUBRPC ;IS THE ERROR IN A SUBROUTINE?
 BEQ 10$;IF NOT, DON'T PRINT SUBR. PC
 PRINTB #FMG3,SUBRPC ;PC THAT SUBROUTINE WAS CALLED.
 MOV SUBRPC,-(SP)
 MOV #FMG3,-(SP)
 MOV #2,-(SP)
 MOV SP,R0
 TRAP C$PNTB
 ADD #6,SP

10$: PRINTB #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
 MOV @SEL2,-(SP)
 MOV @SEL0,-(SP)
 MOV #FMG1,-(SP)
 MOV #3,-(SP)
 MOV SP,R0
 TRAP C$PNTB
 ADD #10,SP

PRINTB #FMG2,@SEL4,@SEL6 ;PRINT SEL4 AND SEL2 CONTENTS.
 MOV @SEL6,-(SP)
 MOV @SEL4,-(SP)
 MOV #FMG2,-(SP)
 MOV #3,-(SP)
 MOV SP,R0
 TRAP C$PNTB
 ADD #10,SP

ENDMSG

L10003: TRAP C$MSG

BGNMSG ERRG3
 TST SUBRPC ;IS THE ERROR IN A SUBROUTINE?
 BEQ 10$;IF NOT, DON'T PRINT SUBR. PC
 PRINTB #FMG3,SUBRPC ;PC THAT SUBROUTINE WAS CALLED.
 MOV SUBRPC,-(SP)
 MOV #FMG3,-(SP)
 MOV #2,-(SP)
 MOV SP,R0
 TRAP C$PNTB
 ADD #6,SP

10$: PRINTB #FMG1,@SEL0,@SEL2 ;PRINT SEL0 AND SEL2 CONTENTS.
 MOV @SEL2,-(SP)
 MOV @SEL0,-(SP)
 MOV #FMG1,-(SP)
 MOV #3,-(SP)
 MOV SP,R0

```



| Address | Offset | Hex    | Dec    | Label  | Instruction     | Comment                          | Operation | Register       |
|---------|--------|--------|--------|--------|-----------------|----------------------------------|-----------|----------------|
| 4076    | 015266 | 032777 | 100000 | 164736 | BIT #RUN,@SEL0  | :IS THE RUN BIT SET              | TRAP      | C\$PNTB #10,SP |
| 4077    | 015274 | 001043 |        |        | BNE 20\$        | :IF RUN SET, CHECK.              |           |                |
| 4078    | 015276 | 122777 | 000001 | 164740 | CMPB #1,@SEL3   | :DID CPU MICRO. FAIL?            |           |                |
| 4079    | 015304 | 001011 |        |        | BNE 12\$        | :IF NOT SEE IF LU FAILED.        |           |                |
| 4080    | 015306 |        |        |        | PRINTB #FMG4    | :CPU MICRO. FAILED.              |           |                |
| (7)     | 015306 | 012746 | 016434 |        |                 |                                  | MOV       | #FMG4,-(SP)    |
| (6)     | 015312 | 012746 | 000001 |        |                 |                                  | MOV       | #1,-(SP)       |
| (3)     | 015316 | 010600 |        |        |                 |                                  | MOV       | SP,R0          |
| (4)     | 015320 | 104414 |        |        |                 |                                  | TRAP      | C\$PNTB        |
| (4)     | 015322 | 062706 | 000004 |        |                 |                                  | ADD       | #4,SP          |
| 4081    | 015326 | 000455 |        |        | BR 30\$         |                                  |           |                |
| 4082    | 015330 |        |        | 12\$:  |                 |                                  |           |                |
| 4083    | 015330 | 122777 | 000002 | 164706 | CMPB #2,@SEL3   | :DID LINE UNIT MICRO. FAIL?      |           |                |
| 4084    | 015336 | 001011 |        |        | BNE 15\$        |                                  |           |                |
| 4085    | 015340 |        |        |        | PRINTB #FMG5    | :LINE UNIT FAILED.               |           |                |
| (7)     | 015340 | 012746 | 016465 |        |                 |                                  | MOV       | #FMG5,-(SP)    |
| (6)     | 015344 | 012746 | 000001 |        |                 |                                  | MOV       | #1,-(SP)       |
| (3)     | 015350 | 010600 |        |        |                 |                                  | MOV       | SP,R0          |
| (4)     | 015352 | 104414 |        |        |                 |                                  | TRAP      | C\$PNTB        |
| (4)     | 015354 | 062706 | 000004 |        |                 |                                  | ADD       | #4,SP          |
| 4086    | 015360 | 000440 |        |        | BR 30\$         |                                  |           |                |
| 4087    | 015362 |        |        | 15\$:  |                 |                                  |           |                |
| 4088    | 015362 |        |        |        | PRINTB #FMG5    | :NO RUN - MASTER CLEAR FAILED.   |           |                |
| (7)     | 015362 | 012746 | 016465 |        |                 |                                  | MOV       | #FMG5,-(SP)    |
| (6)     | 015366 | 012746 | 000001 |        |                 |                                  | MOV       | #1,-(SP)       |
| (3)     | 015372 | 010600 |        |        |                 |                                  | MOV       | SP,R0          |
| (4)     | 015374 | 104414 |        |        |                 |                                  | TRAP      | C\$PNTB        |
| (4)     | 015376 | 062706 | 000004 |        |                 |                                  | ADD       | #4,SP          |
| 4089    | 015402 | 000427 |        |        | BR 30\$         |                                  |           |                |
| 4090    | 015404 |        |        | 20\$:  |                 |                                  |           |                |
| 4091    | 015404 | 105777 | 164634 |        | ISTB @SEL3      | :IS BSEL3 STILL 0?               |           |                |
| 4092    | 015410 | 001010 |        |        | BNE 25\$        | :IF NOT - SEE IF MICRODIAG. RUN. |           |                |
| 4093    | 015412 |        |        |        | PRINTB #FMG19   | :DEVICE IS NOT DMR (DMC?)        |           |                |
| (7)     | 015412 | 012746 | 017473 |        |                 |                                  | MOV       | #FMG19,-(SP)   |
| (6)     | 015416 | 012746 | 000001 |        |                 |                                  | MOV       | #1,-(SP)       |
| (3)     | 015422 | 010600 |        |        |                 |                                  | MOV       | SP,R0          |
| (4)     | 015424 | 104414 |        |        |                 |                                  | TRAP      | C\$PNTB        |
| (4)     | 015426 | 062706 | 000004 |        |                 |                                  | ADD       | #4,SP          |
| 4094    | 015432 |        |        | 25\$:  |                 |                                  |           |                |
| 4095    | 015432 | 122777 | 000100 | 164604 | CMPB #100,@SEL3 | :WERE MICRODIAGNOSTICS DISABLE?  |           |                |
| 4096    | 015440 | 001010 |        |        | BNE 30\$        |                                  |           |                |
| 4097    | 015442 |        |        |        | PRINTB #FMG20   | :MICRODIAGNOSTICS DISABLED       |           |                |
| (7)     | 015442 | 012746 | 017516 |        |                 |                                  | MOV       | #FMG20,-(SP)   |
| (6)     | 015446 | 012746 | 000001 |        |                 |                                  | MOV       | #1,-(SP)       |
| (3)     | 015452 | 010600 |        |        |                 |                                  | MOV       | SP,R0          |
| (4)     | 015454 | 104414 |        |        |                 |                                  | TRAP      | C\$PNTB        |
| (4)     | 015456 | 062706 | 000004 |        |                 |                                  | ADD       | #4,SP          |
| 4098    | 015462 |        |        | 30\$:  |                 |                                  |           |                |
| 4099    | 015462 |        |        | ENDMSG |                 |                                  |           |                |
| (3)     | 015462 |        |        |        |                 |                                  |           |                |
| (3)     | 015462 | 104423 |        |        |                 |                                  | TRAP      | C\$MSG         |
| 4100    |        |        |        |        |                 |                                  |           |                |
| 4101    |        |        |        |        |                 |                                  |           |                |
| 4102    | 015464 |        |        | BGNMSG | ERRG4           |                                  |           |                |

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(3) 015464
4103 015464 005737 002366
4104 015470 001412
4105 015472
(8) 015472 013746 002366
(7) 015476 012746 016362
(6) 015502 012746 000002
(3) 015506 010600
(4) 015510 104414
(4) 015512 062706 000006
4106 015516
4107 015516 105737 002633
4108 015522 001003
4109 015524 105737 002636
4110 015530 001416
4111 015532
4112 015532
(9) 015532 005046
(9) 015534 153716 002636
(8) 015540 005046
(8) 015542 153716 002633
(7) 015546 012746 016557
(6) 015552 012746 000003
(3) 015556 010600
(4) 015560 104414
(4) 015562 062706 000010
4113 015566
4114 015566 105737 002635
4115 015572 001003
4116 015574 105737 002640
4117 015600 001416
4118 015602
4119 015602
(9) 015602 005046
(9) 015604 153716 002640
(8) 015610 005046
(8) 015612 153716 002635
(7) 015616 012746 016630
(6) 015622 012746 000003
(3) 015626 010600
(4) 015630 104414
(4) 015632 062706 000010
4120 015636
4121 015636 105737 002634
4122 015642 001003
4123 015644 105737 002637
4124 015650 001416
4125 015652
4126 015652
(9) 015652 005046
(9) 015654 153716 002637
(8) 015660 005046
(8) 015662 153716 002634
(7) 015666 012746 016701
(6) 015672 012746 000003
(3) 015676 010600

ERRG4::
;IS THE ERROR IN A SUBROUTINE?
;IF NOT, DON'T PRINT SUBR. PC
;PC THAT SUBROUTINE WAS CALLED.

TST SUBRPC
BEQ 10$
PRINTB #FMG3,SUBRPC

MOV SUBRPC,-(SP)
MOV #FMG3,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #6,SP

10$:
TSTB BASE+3
BNE 11$
TSTB BASE+6
BEQ 12$
;ONLY PRINT NON-ZERO VALUES

11$:
PRINTB #FMG7,<B,BASE+3>,<B,BASE+6>

CLR -(SP)
BISB BASE+6,(SP)
CLR -(SP)
BISB BASE+3,(SP)
MOV #FMG7,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

12$:
TSTB BASE+5
BNE 13$
TSTB BASE+8
BEQ 14$

13$:
PRINTB #FMG8,<B,BASE+5>,<B,BASE+8>

CLR -(SP)
BISB BASE+8,(SP)
CLR -(SP)
BISB BASE+5,(SP)
MOV #FMG8,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

14$:
TSTB BASE+4
BNE 15$
TSTB BASE+7
BEQ 16$

15$:
PRINTB #FMG9,<B,BASE+4>,<B,BASE+7>

CLR -(SP)
BISB BASE+7,(SP)
CLR -(SP)
BISB BASE+4,(SP)
MOV #FMG9,-(SP)
MOV #3,-(SP)
MOV SP,R0

```



(4) 015700 104414  
 (4) 015702 062706 000010  
 4127 015706  
 4128 015706 105737 002642  
 4129 015712 001003  
 4130 015714 105737 002641  
 4131 015720 001416  
 4132 015722  
 4133 015722  
 (9) 015722 005046  
 (9) 015724 153716 002641  
 (8) 015730 005046  
 (8) 015732 153716 002642  
 (7) 015736 012746 016752  
 (6) 015742 012746 000003  
 (3) 015746 010600  
 (4) 015750 104414  
 (4) 015752 062706 000010  
 4134 015756  
 4135 015756  
 (3) 015756  
 (3) 015756 104423  
 4136  
 4137  
 4138  
 4139 015760  
 (3) 015760  
 4140 015760  
 (7) 015760 012746 017042  
 (6) 015764 012746 000001  
 (3) 015770 010600  
 (4) 015772 104414  
 (4) 015774 062706 000004  
 4141 016000  
 (9) 016000 017746 164234  
 (8) 016004 017746 164226  
 (7) 016010 012746 017073  
 (6) 016014 012746 000003  
 (3) 016020 010600  
 (4) 016022 104414  
 (4) 016024 062706 000010  
 4142 016030  
 (8) 016030 016446 177776  
 (7) 016034 012746 017223  
 (6) 016040 012746 000002  
 (3) 016044 010600  
 (4) 016046 104414  
 (4) 016050 062706 000006  
 4143 016054  
 (3) 016054  
 (3) 016054 104423  
 4144  
 4145 016056  
 (3) 016056  
 4146 016056  
 (7) 016056 012746 017010

16\$:

TSTB BASE+10.  
 BNE 17\$  
~~TSTB~~ BASE+9.  
 BEQ 20\$

17\$:

PRINTB #FMG10,<B,BASE+10.>,<B,BASE+9.>

20\$:  
 ENDMSG

BGNMSG ERRG7

PRINTB #FMG12 ;BA/CC OUT RECV

PRINTB #FMG13,@SEL4,@SEL6 ;ACTUAL BA/CC

PRINTB #FMG15,-2(R4) ;EXPECTED BA/CC

ENDMSG

BGNMSG ERRG8

PRINTB #FMG11 ;BA/CC OUT XMIT

TRAP  
 ADD C\$PNTB  
 #10,SP

CLR -(SP)  
 BISB BASE+9.,(SP)  
 CLR -(SP)  
 BISB BASE+10.,(SP)  
 MOV #FMG10,-(SP)  
 MOV #3,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTB  
 ADD #10,SP

L10005:  
 TRAP C\$MSG

ERRG7::  
 MOV #FMG12,-(SP)  
 MOV #1,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTB  
 ADD #4,SP  
 MOV @SEL6,-(SP)  
 MOV @SEL4,-(SP)  
 MOV #FMG13,-(SP)  
 MOV #3,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTB  
 ADD #10,SP  
 MOV -2(R4),-(SP)  
 MOV #FMG15,-(SP)  
 MOV #2,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTB  
 ADD #6,SP

L10006:  
 TRAP C\$MSG

ERRG8::  
 MOV #FMG11,-(SP)

```
ERRG12::
;BACKUP TO RECEIVE ADDRESS
```

```

MOV #1,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #4,SP

MOV @SEL6,-(SP)
MOV @SEL4,-(SP)
MOV #FMG13,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

MOV -2(R5),-(SP)
MOV -4(R5),-(SP)
MOV #FMG14,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

:
TRAP C$MSG

::

MOV -2(R1),-(SP)
MOV -2(R0),-(SP)
MOV #FMG16,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

:
TRAP C$MSG

::

MOV -4(R1),-(SP)
MOV -4(R0),-(SP)
MOV #FMG17,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

:
TRAP C$MSG

```

|      |        |        |        |        |        |              |                                              |                             |                  |
|------|--------|--------|--------|--------|--------|--------------|----------------------------------------------|-----------------------------|------------------|
| 4162 | 016246 | 005304 |        |        |        |              |                                              |                             |                  |
| 4163 | 016250 |        |        |        | DEC    | R4           |                                              | :BACKUP TO TRANSMIT ADDRESS |                  |
| (9)  | 016250 | 010446 |        |        | PRINTB | #FMG18,R3,R4 |                                              | :PRINT OUT ADDRESS          |                  |
| (8)  | 016252 | 010346 |        |        |        |              |                                              |                             | MOV R4,-(SP)     |
| (7)  | 016254 | 012746 | 017404 |        |        |              |                                              |                             | MOV R3,-(SP)     |
| (6)  | 016260 | 012746 | 000003 |        |        |              |                                              |                             | MOV #FMG18,-(SP) |
| (3)  | 016264 | 010600 |        |        |        |              |                                              |                             | MOV #3,-(SP)     |
| (4)  | 016266 | 104414 |        |        |        |              |                                              |                             | MOV SP,R0        |
| (4)  | 016270 | 062706 | 000010 |        |        |              |                                              |                             | TRAP C\$PNTB     |
| 4164 | 016274 |        |        |        |        |              |                                              |                             | ADD #10,SP       |
| (3)  | 016274 |        |        |        | ENDMSG |              |                                              |                             |                  |
| (3)  | 016274 | 104423 |        |        |        |              |                                              | L10012:                     |                  |
| 4165 |        |        |        |        |        |              |                                              | TRAP                        | C\$MSG           |
| 4166 |        |        |        |        |        |              |                                              |                             |                  |
| 4167 |        |        |        |        |        |              |                                              |                             |                  |
| 4168 |        |        |        |        |        |              |                                              |                             |                  |
| 4169 |        |        |        |        |        |              |                                              |                             |                  |
| 4170 |        |        |        |        |        |              |                                              |                             |                  |
| 4171 | 016276 | 040445 | 042523 | 030114 | FMG1:  | .ASCIZ       | / %ASELO: %06%A SEL2: %06%N/                 |                             |                  |
|      | 016304 | 020072 | 047445 | 022466 |        |              |                                              |                             |                  |
|      | 016312 | 020101 | 042523 | 031114 |        |              |                                              |                             |                  |
|      | 016320 | 020072 | 047445 | 022466 |        |              |                                              |                             |                  |
|      | 016326 | 000116 |        |        |        |              |                                              |                             |                  |
| 4172 | 016330 | 040445 | 042523 | 032114 | FMG2:  | .ASCIZ       | / %ASE' 4: %06%A SEL6: %06%N/                |                             |                  |
|      | 016336 | 020072 | 047445 | 022466 |        |              |                                              |                             |                  |
|      | 016344 | 020101 | 042523 | 033114 |        |              |                                              |                             |                  |
|      | 016352 | 020072 | 047445 | 022466 |        |              |                                              |                             |                  |
|      | 016360 | 000116 |        |        |        |              |                                              |                             |                  |
| 4173 | 016362 | 040445 | 051105 | 047522 | FMG3:  | .ASCIZ       | / %AERROR IN SUBROUTINE CALLED AT PC: %06%N/ |                             |                  |
|      | 016370 | 020122 | 047111 | 051440 |        |              |                                              |                             |                  |
|      | 016376 | 041125 | 047522 | 052125 |        |              |                                              |                             |                  |
|      | 016404 | 047111 | 020105 | 040503 |        |              |                                              |                             |                  |
|      | 016412 | 046114 | 042105 | 040440 |        |              |                                              |                             |                  |
|      | 016420 | 020124 | 041520 | 020072 |        |              |                                              |                             |                  |
|      | 016426 | 047445 | 022466 | 000116 |        |              |                                              |                             |                  |
| 4174 | 016434 | 040445 | 050103 | 020125 | FMG4:  | .ASCIZ       | / %ACPU MICROTEST FAILED%N/                  |                             |                  |
|      | 016442 | 044515 | 051103 | 052117 |        |              |                                              |                             |                  |
|      | 016450 | 051505 | 020124 | 040506 |        |              |                                              |                             |                  |
|      | 016456 | 046111 | 042105 | 047045 |        |              |                                              |                             |                  |
|      | 016464 | 000    |        |        |        |              |                                              |                             |                  |
| 4175 | 016465 | 045    | 046101 | 027125 | FMG5:  | .ASCIZ       | / %ALU. MICROTEST FAILED%N/                  |                             |                  |
|      | 016472 | 046440 | 041511 | 047522 |        |              |                                              |                             |                  |
|      | 016500 | 042524 | 052123 | 043040 |        |              |                                              |                             |                  |
|      | 016506 | 044501 | 042514 | 022504 |        |              |                                              |                             |                  |
|      | 016514 | 000116 |        |        |        |              |                                              |                             |                  |
| 4176 | 016516 | 040445 | 047516 | 051040 | FMG6:  | .ASCIZ       | / %AND RUN - MASTER CLEAR FAILED%N/          |                             |                  |
|      | 016524 | 047125 | 026440 | 046440 |        |              |                                              |                             |                  |
|      | 016532 | 051501 | 042524 | 020122 |        |              |                                              |                             |                  |
|      | 016540 | 046103 | 040505 | 020122 |        |              |                                              |                             |                  |
|      | 016546 | 040506 | 046111 | 042105 |        |              |                                              |                             |                  |
|      | 016554 | 047045 | 000    |        |        |              |                                              |                             |                  |
| 4177 | 016557 | 045    | 047101 | 045501 | FMG7:  | .ASCIZ       | / %ANAKS-NO BUFFER RCV: %D3%A SENT: %D3%N/   |                             |                  |
|      | 016564 | 026523 | 047516 | 041040 |        |              |                                              |                             |                  |
|      | 016572 | 043125 | 042506 | 020122 |        |              |                                              |                             |                  |
|      | 016600 | 051040 | 053103 | 020072 |        |              |                                              |                             |                  |
|      | 016606 | 042045 | 022463 | 020101 |        |              |                                              |                             |                  |

|      |        |        |        |        |                                                                |
|------|--------|--------|--------|--------|----------------------------------------------------------------|
|      | 016614 | 042523 | 052116 | 020072 |                                                                |
|      | 016622 | 042045 | 022463 | 000116 |                                                                |
| 4178 | 016630 | 040445 | 040516 | 051513 | FMG8: .ASCIZ /%ANAKS-BAD DATA RCV: %D3%A SENT: %D3%N/          |
|      | 016636 | 041055 | 042101 | 042040 |                                                                |
|      | 016644 | 052101 | 020101 | 020040 |                                                                |
|      | 016652 | 041522 | 035126 | 022440 |                                                                |
|      | 016660 | 031504 | 040445 | 051440 |                                                                |
|      | 016666 | 047105 | 035124 | 022440 |                                                                |
|      | 016674 | 031504 | 047045 | 000    |                                                                |
| 4179 | 016701 | 045    | 047101 | 045501 | FMG9: .ASCIZ /%ANAKS-BAD HEADER RCV: %D3%A SENT: %D3%N/        |
|      | 016706 | 026523 | 040502 | 020104 |                                                                |
|      | 016714 | 042510 | 042101 | 051105 |                                                                |
|      | 016722 | 051040 | 053103 | 020072 |                                                                |
|      | 016730 | 042045 | 022463 | 020101 |                                                                |
|      | 016736 | 042523 | 052116 | 020072 |                                                                |
|      | 016744 | 042045 | 022463 | 000116 |                                                                |
| 4180 | 016752 | 040445 | 042522 | 051520 | FMG10: .ASCIZ /%AREPS-RCV: %D3%A SENT: %D3%N/                  |
|      | 016760 | 051055 | 053103 | 020072 |                                                                |
|      | 016766 | 042045 | 022463 | 020101 |                                                                |
|      | 016774 | 042523 | 052116 | 020072 |                                                                |
|      | 017002 | 042045 | 022463 | 000116 |                                                                |
| 4181 | 017010 | 040445 | 046530 | 052111 | FMG11: .ASCIZ /%AXMIT BACC OUT COMMAND%N/                      |
|      | 017016 | 041040 | 041501 | 020103 |                                                                |
|      | 017024 | 052517 | 020124 | 047503 |                                                                |
|      | 017032 | 046515 | 047101 | 022504 |                                                                |
|      | 017040 | 000116 |        |        |                                                                |
| 4182 | 017042 | 040445 | 041522 | 020126 | FMG12: .ASCIZ /%ARCV BACC OUT COMMAND%N/                       |
|      | 017050 | 040502 | 041503 | 047440 |                                                                |
|      | 017056 | 052125 | 041440 | 046517 |                                                                |
|      | 017064 | 040515 | 042116 | 047045 |                                                                |
|      | 017072 | 000    |        |        |                                                                |
| 4183 | 017073 | 045    | 040501 | 052103 | FMG13: .ASCIZ /%AACTUAL ADDR. %06%A ACTUAL COUNT %D5%N/        |
|      | 017100 | 040525 | 020114 | 020040 |                                                                |
|      | 017106 | 042101 | 051104 | 020056 |                                                                |
|      | 017114 | 047445 | 022466 | 020101 |                                                                |
|      | 017122 | 041501 | 052524 | 046101 |                                                                |
|      | 017130 | 041440 | 052517 | 052116 |                                                                |
|      | 017136 | 020040 | 022440 | 032504 |                                                                |
|      | 017144 | 047045 | 000    |        |                                                                |
| 4184 | 017147 | 045    | 042501 | 050130 | FMG14: .ASCIZ /%AEXPECTED ADDR. %06%A EXPECTED COUNT %D5%N/    |
|      | 017154 | 041505 | 042524 | 020104 |                                                                |
|      | 017162 | 042101 | 051104 | 020056 |                                                                |
|      | 017170 | 047445 | 022466 | 020101 |                                                                |
|      | 017176 | 054105 | 042520 | 052103 |                                                                |
|      | 017204 | 042105 | 041440 | 052517 |                                                                |
|      | 017212 | 052116 | 022440 | 032504 |                                                                |
|      | 017220 | 047045 | 000    |        |                                                                |
| 4185 | 017223 | 045    | 042501 | 050130 | FMG15: .ASCIZ /%AEXPECTED ADDR. %06%N/                         |
|      | 017230 | 041505 | 042524 | 020104 |                                                                |
|      | 017236 | 042101 | 051104 | 020056 |                                                                |
|      | 017244 | 047445 | 022466 | 000116 |                                                                |
| 4186 | 017252 | 040445 | 041522 | 020126 | FMG16: .ASCIZ /%ARCV CHAR. COUNT %D5%A XMIT CHAR. COUNT %D5%N/ |
|      | 017260 | 044103 | 051101 | 020056 |                                                                |
|      | 017266 | 047503 | 047125 | 020124 |                                                                |
|      | 017274 | 042045 | 022465 | 020101 |                                                                |
|      | 017302 | 046530 | 052111 | 041440 |                                                                |

|      |        |        |        |        |                                                                        |
|------|--------|--------|--------|--------|------------------------------------------------------------------------|
|      | 017310 | 040510 | 027122 | 041440 |                                                                        |
|      | 017316 | 052517 | 052116 | 022440 |                                                                        |
|      | 017324 | 032504 | 047045 | 000    |                                                                        |
| 4187 | 017331 | 045    | 051101 | 053103 | FMG17: .ASCIZ /%ARCV BUFFER AT %06%A XMIT BUFFER AT %06%N/             |
|      | 017336 | 041040 | 043125 | 042506 |                                                                        |
|      | 017344 | 020122 | 052101 | 022440 |                                                                        |
|      | 017352 | 033117 | 040445 | 054040 |                                                                        |
|      | 017360 | 044515 | 020124 | 052502 |                                                                        |
|      | 017366 | 043106 | 051105 | 040440 |                                                                        |
|      | 017374 | 020124 | 047445 | 022466 |                                                                        |
|      | 017402 | 000116 |        |        |                                                                        |
| 4188 | 017404 | 040445 | 040504 | 040524 | FMG18: .ASCIZ /%ADATA DIFFERS AT RCV ADDR. %06%A AND XMIT ADDR. %06%N/ |
|      | 017412 | 042040 | 043111 | 042506 |                                                                        |
|      | 017420 | 051522 | 040440 | 020124 |                                                                        |
|      | 017426 | 041522 | 020126 | 042101 |                                                                        |
|      | 017434 | 051104 | 020056 | 047445 |                                                                        |
|      | 017442 | 022466 | 020101 | 047101 |                                                                        |
|      | 017450 | 020104 | 046530 | 052111 |                                                                        |
|      | 017456 | 040440 | 042104 | 027122 |                                                                        |
|      | 017464 | 022440 | 033117 | 047045 |                                                                        |
|      | 017472 | 000    |        |        |                                                                        |
| 4189 | 017473 | 045    | 042101 | 053105 | FMG19: .ASCIZ /%ADEVICE NOT DMR%N/                                     |
|      | 017500 | 041511 | 020105 | 047516 |                                                                        |
|      | 017506 | 020124 | 046504 | 022522 |                                                                        |
|      | 017514 | 000116 |        |        |                                                                        |
| 4190 | 017516 | 040445 | 044515 | 051103 | FMG20: .ASCIZ /%AMICROTEST DISABLED%N/                                 |
|      | 017524 | 052117 | 051505 | 020124 |                                                                        |
|      | 017532 | 044504 | 040523 | 046102 |                                                                        |
|      | 017540 | 042105 | 047045 | 000    |                                                                        |
| 4191 | 017545 | 045    | 051501 | 040524 | FMG21: .ASCIZ /%ASTATUS OF BUFFERS %N%ANUMBER OF BUFFERS:%D3%N/        |
|      | 017552 | 052524 | 020123 | 043117 |                                                                        |
|      | 017560 | 041040 | 043125 | 042506 |                                                                        |
|      | 017566 | 051522 | 022440 | 022516 |                                                                        |
|      | 017574 | 047101 | 046525 | 042502 |                                                                        |
|      | 017602 | 020122 | 043117 | 041040 |                                                                        |
|      | 017610 | 043125 | 042506 | 051522 |                                                                        |
|      | 017616 | 022472 | 031504 | 047045 |                                                                        |
|      | 017624 | 000    |        |        |                                                                        |
| 4192 | 017625 | 045    | 041101 | 043125 | FMG22: .ASCIZ /%ABUFFER SIZE: %D5%N/                                   |
|      | 017632 | 042506 | 020122 | 044523 |                                                                        |
|      | 017640 | 042532 | 020072 | 042045 |                                                                        |
|      | 017646 | 022465 | 000116 |        |                                                                        |
| 4193 | 017652 | 040445 | 047111 | 020040 | FMG23: .ASCIZ /%AIN - RCV ASSIGNED:%D3%A XMIT ASSIGNED:%D3%N/          |
|      | 017660 | 020055 | 041522 | 020126 |                                                                        |
|      | 017666 | 051501 | 044523 | 047107 |                                                                        |
|      | 017674 | 042105 | 022472 | 031504 |                                                                        |
|      | 017702 | 040445 | 020040 | 054040 |                                                                        |
|      | 017710 | 044515 | 020124 | 051501 |                                                                        |
|      | 017716 | 044523 | 047107 | 042105 |                                                                        |
|      | 017724 | 022472 | 031504 | 047045 |                                                                        |
|      | 017732 | 000    |        |        |                                                                        |
| 4194 | 017733 | 045    | 047501 | 052125 | FMG24: .ASCIZ /%AOUT - RCV RETURNED:%D3%A XMIT RETURNED:%D3%N/         |
|      | 017740 | 026440 | 051040 | 053103 |                                                                        |
|      | 017746 | 051040 | 052105 | 051125 |                                                                        |
|      | 017754 | 042516 | 035104 | 042045 |                                                                        |
|      | 017762 | 022463 | 020101 | 020040 |                                                                        |

|      |        |        |        |        |        |                                                    |
|------|--------|--------|--------|--------|--------|----------------------------------------------------|
|      | 017770 | 046530 | 052111 | 051040 |        |                                                    |
|      | 017776 | 052105 | 051125 | 042516 |        |                                                    |
|      | 020004 | 035104 | 042045 | 022463 |        |                                                    |
|      | 020012 | 000116 |        |        |        |                                                    |
| 4195 |        |        |        |        |        |                                                    |
| 4196 |        |        |        |        |        |                                                    |
| 4197 | 020014 | 044524 | 042515 | 047440 | EMG1:  | .ASCIZ /TIME OUT/                                  |
|      | 020022 | 052125 | 000    |        |        |                                                    |
| 4198 | 020025 | 124    | 046511 | 020105 | EMG2:  | .ASCIZ /TIME OUT - DURING INTERRUPT EXERCISE/      |
|      | 020032 | 052517 | 020124 | 020055 |        |                                                    |
|      | 020040 | 052504 | 044522 | 043516 |        |                                                    |
|      | 020046 | 044440 | 052116 | 051105 |        |                                                    |
|      | 020054 | 052522 | 052120 | 042440 |        |                                                    |
|      | 020062 | 042530 | 041522 | 051511 |        |                                                    |
|      | 020070 | 000105 |        |        |        |                                                    |
| 4199 | 020072 | 054105 | 042520 | 052103 | EMG8:  | .ASCIZ /EXPECTED CONTROL OUT - NOT RECEIVED/       |
|      | 020100 | 042105 | 041440 | 047117 |        |                                                    |
|      | 020106 | 051124 | 046117 | 047440 |        |                                                    |
|      | 020114 | 052125 | 026440 | 047040 |        |                                                    |
|      | 020122 | 052117 | 051040 | 041505 |        |                                                    |
|      | 020130 | 044505 | 042526 | 000104 |        |                                                    |
| 4200 | 020136 | 047125 | 054105 | 042520 | EMG9:  | .ASCIZ /UNEXPECTED CONTROL OUT/                    |
|      | 020144 | 052103 | 042105 | 041440 |        |                                                    |
|      | 020152 | 047117 | 051124 | 046117 |        |                                                    |
|      | 020160 | 047440 | 052125 | 000    |        |                                                    |
| 4201 | 020165 | 105    | 051122 | 051117 | EMG10: | .ASCIZ /ERROR - MULTIPLE XMIT/                     |
|      | 020172 | 026440 | 046440 | 046125 |        |                                                    |
|      | 020200 | 044524 | 046120 | 020105 |        |                                                    |
|      | 020206 | 046530 | 052111 | 000123 |        |                                                    |
| 4202 | 020214 | 052502 | 043106 | 051105 | EMG11: | .ASCIZ /BUFFER ADDRESS ERROR/                      |
|      | 020222 | 040440 | 042104 | 042522 |        |                                                    |
|      | 020230 | 051523 | 042440 | 051122 |        |                                                    |
|      | 020236 | 051117 | 000    |        |        |                                                    |
| 4203 |        |        |        |        |        |                                                    |
| 4204 | 020241 | 103    | 040510 | 040522 | EMG12: | .ASCIZ /CHARACTER COUNT ERROR/                     |
|      | 020246 | 052103 | 051105 | 041440 |        |                                                    |
|      | 020254 | 052517 | 052116 | 042440 |        |                                                    |
|      | 020262 | 051122 | 051117 | 000    |        |                                                    |
| 4205 | 020267 | 105    | 051122 | 051117 | EMG13: | .ASCIZ /ERROR - MULTIPLE RCVS/                     |
|      | 020274 | 026440 | 046440 | 046125 |        |                                                    |
|      | 020302 | 044524 | 046120 | 020105 |        |                                                    |
|      | 020310 | 041522 | 051526 | 000    |        |                                                    |
| 4206 | 020315 | 122    | 041505 | 044505 | EMG14: | .ASCIZ /RECEIVED EXTRA DATA/                       |
|      | 020322 | 042526 | 020104 | 054105 |        |                                                    |
|      | 020330 | 051124 | 020101 | 040504 |        |                                                    |
|      | 020336 | 040524 | 000    |        |        |                                                    |
| 4207 | 020341 | 104    | 052101 | 020101 | EMG15: | .ASCIZ /DATA ERROR/                                |
|      | 020346 | 051105 | 047522 | 000122 |        |                                                    |
| 4208 | 020354 | 047125 | 054105 | 042520 | EMG16: | .ASCIZ /UNEXPECTED HALT RECEIVED/                  |
|      | 020362 | 052103 | 042105 | 044040 |        |                                                    |
|      | 020370 | 046101 | 020124 | 042522 |        |                                                    |
|      | 020376 | 042503 | 053111 | 042105 |        |                                                    |
|      | 020404 | 000    |        |        |        |                                                    |
| 4209 | 020405 | 103    | 047117 | 051124 | EMG17: | .ASCIZ /CONTROL IN PROBLEM - IN INTERRUPT ROUTINE/ |
|      | 020412 | 046117 | 044440 | 020116 |        |                                                    |
|      | 020420 | 051120 | 041117 | 042514 |        |                                                    |



```

020426 020115 020055 047111
020434 044440 052116 051105
020442 052522 052120 051040
020450 052517 044524 042516
020456 000
4210 020457 123 052520 044522 EMG18: .ASCIZ /SPURIOUS RDO INTERRUPT/
020464 052517 020123 042122
020472 020117 047111 042524
020500 051122 050125 000124

.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.
:////////////////////

4223 020506 BGNPROT
(3) 020506 L$PROT::
4224
4225 020506 177777 .WORD -1 ;DON'T CHECK CSR ADDRESS
4226 020510 177777 .WORD -1 ;DON'T CHECK MASSBUS UNIT NUMBER
4227 020512 177777 .WORD -1 ;DON'T CHECK DRIVE NUMBER
4228
4229 020514 ENDPROT
4230
4231
4232
4233
4234
4235
4236
4237
4238
4239 .SBTTL INITIALIZE SECTION
4240 :////////////////////
4241 :/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
4242 :/ AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
4243 :////////////////////
4244
4245 BGNINIT
4246 020514 L$INIT::
(3) 020514
4247
4248 020514 SETPRI #PRI07 ;SET DIAGNOSTIC PRIORITY = 7
(3) 020514 012700 000340 MOV #PRI07,R0
(3) 020520 104441 TRAP C$SPRI
4249 020522 010637 002364 MOV SP,PSTACK ;STORE BASE LEVEL PROGRAM STACK POINTER
4250 020526 005037 002366 CLR SUBRPC ;CLEAR STORAGE WORD FOR SUBROUTINE PC CALL
4251 020532 005037 002360 CLR ERROR ;CLEAR ERROR FLAGS
4252 020536 005037 002274 CLR RESUME ;CLEAR FLAG USED TO ALLOW BASE IN - RESUME.
4253 020542 005037 002276 CLR DMCMD ;CLEAR FLAG USED TO INDICATE DMC MODE

```

|      |        |        |        |        |            |                |  |                                             |
|------|--------|--------|--------|--------|------------|----------------|--|---------------------------------------------|
| 4254 | 020546 | 005037 | 002372 |        | CLR        | CLRNO          |  | ;CLEAR WORD USED TO RUN MICRO TESTS ON      |
| 4255 |        |        |        |        |            |                |  | ;EVERY OTHER MASTER CLEAR.                  |
| 4256 | 020552 | 005737 | 002264 |        | TST        | FRSTIM         |  | ;IS THIS THE TIME THROUGH AFTER LOAD?       |
| 4257 | 020556 | 001005 |        |        | BNE        | 1\$            |  | ;IF NOT - ERROR TRAP VECTOR ALREADY SAVED   |
| 4258 | 020560 | 012737 | 000001 | 002264 | MOV        | #1,FRSTIM      |  | ;FLAG THAT WE'VE BEEN THRU THE 1ST TIME     |
| 4259 | 020566 | 005037 | 002266 |        | CLR        | FRSPAS         |  | ;CLEAR COUNTER FOR # OF PASSES AFTER LOAD   |
| 4260 |        |        |        |        |            |                |  |                                             |
| 4261 | 020572 |        |        |        |            |                |  |                                             |
| 4262 | 020572 |        |        |        |            |                |  |                                             |
| (3)  | 020572 | 012700 | 000004 |        | CLRVEC     | #4             |  | ;ENSURE VECTOR 4 IS IN NORMAL STATE.        |
| (3)  | 020576 | 104436 |        |        |            |                |  | MOV #4,RO                                   |
| 4263 |        |        |        |        |            |                |  | TRAP C\$CVEC                                |
| 4264 | 020600 |        |        |        | READEF     | #EF.START      |  | ;IS THIS JUST STARTED?                      |
| (3)  | 020600 | 012700 | 000040 |        |            |                |  | MOV #EF.START,RO                            |
| (3)  | 020604 | 104447 |        |        |            |                |  | TRAP C\$REFG                                |
| 4265 | 020606 |        |        |        | BCOMplete  | STARST         |  | ;IF YES - BRANCH.                           |
| (2)  | 020606 | 103416 |        |        |            |                |  | BCS STARST                                  |
| 4266 | 020610 |        |        |        | READEF     | #EF.RESTART    |  | ;IS THIS A RESTART ?                        |
| (3)  | 020610 | 012700 | 000037 |        |            |                |  | MOV #EF.RESTART,RO                          |
| (3)  | 020614 | 104447 |        |        |            |                |  | TRAP C\$REFG                                |
| 4267 | 020616 |        |        |        | BCOMplete  | STARST         |  | ;IF YES - BRANCH.                           |
| (2)  | 020616 | 103412 |        |        |            |                |  | BCS STARST                                  |
| 4268 | 020620 |        |        |        | READEF     | #EF.NEW        |  | ;IS THIS A NEW PASS?                        |
| (3)  | 020620 | 012700 | 000035 |        |            |                |  | MOV #EF.NEW,RO                              |
| (3)  | 020624 | 104447 |        |        |            |                |  | TRAP C\$REFG                                |
| 4269 | 020626 |        |        |        | BCOMplete  | NEWST          |  | ;IF YES - BRANCH                            |
| (2)  | 020626 | 103410 |        |        |            |                |  | BCS NEWST                                   |
| 4270 | 020630 |        |        |        | READEF     | #EF.CONTINUE   |  | ;IS THIS A CONTINUATION?                    |
| (3)  | 020630 | 012700 | 000036 |        |            |                |  | MOV #EF.CONTINUE,RO                         |
| (3)  | 020634 | 104447 |        |        |            |                |  | TRAP C\$REFG                                |
| 4271 | 020636 |        |        |        | BNCOMplete | GETPRM         |  | ;IF NOT - GET PARAMETERS                    |
| (2)  | 020636 | 103013 |        |        |            |                |  | BCC GETPRM                                  |
| 4272 | 020640 | 000137 | 021510 |        | JMP        | END            |  | ;OTHERWISE - DON'T INITIALIZE.              |
| 4273 |        |        |        |        |            |                |  |                                             |
| 4274 | 020644 |        |        |        |            |                |  |                                             |
| 4275 | 020644 | 005037 | 002270 |        | CLR        | STARES         |  | ;CLEAR THE FLAG TO SHOW START/RESTART.      |
| 4276 |        |        |        |        |            |                |  |                                             |
| 4277 | 020650 |        |        |        |            |                |  |                                             |
| 4278 | 020650 | 012737 | 177777 | 002362 | MOV        | #-1,LOGDEV     |  | ;INITIALIZE LOGICAL UNIT NUMBER.            |
| 4279 | 020656 | 005237 | 002266 |        | INC        | FRSPAS         |  | ;INCREMENT # OF PASSES AFTER LOAD.          |
| 4280 | 020662 | 005237 | 002270 |        | INC        | STARES         |  | ;INCREMENT # OF PASSES SINCE START/RESTART. |
| 4281 | 020666 |        |        |        |            |                |  |                                             |
| 4282 | 020666 | 005237 | 002362 |        | INC        | LOGDEV         |  | ;NEXT LOGICAL UNIT TO BE TESTED             |
| 4283 | 020672 | 023737 | 002362 | 002012 | CMP        | LOGDEV,L\$UNIT |  | ;IS THE MAXIMUM UNIT # EXCEEDED?            |
| 4284 | 020700 | 002363 |        |        | BGE        | NEWST          |  | ;IF YES - DO A NEW START                    |
| -285 | 020702 |        |        |        | GPHARD     | LOGDEV,R1      |  | ;GET THE P-TABLE POINTER INTO R1            |
| (3)  | 020702 | 013700 | 002362 |        |            |                |  | MOV LOGDEV,RO                               |
| (3)  | 020706 | 104442 |        |        |            |                |  | TRAP C\$GPHRD                               |
| (3)  | 020710 | 010001 |        |        |            |                |  | MOV RO,R1                                   |
| 4286 | 020712 |        |        |        | BNCOMplete | GETPRM         |  | ;IF NOT AVAILABLE, GET THE NEXT ONE         |
| (2)  | 020712 | 103365 |        |        |            |                |  | BCC GETPRM                                  |
| 4287 | 020714 | 012137 | 002252 |        | MOV        | (R1)+,WTYPE    |  | ;MICROPROCESSOR TYPE                        |
| 4288 | 020720 | 011100 |        |        | MOV        | (R1),RO        |  | ;SAVE THE ADDRESS                           |
| 4289 | 020722 | 032700 | 000007 |        | BIT        | #7,RO          |  | ;DOES THIS DEVICE ADDRESS END IN NON-ZERO?  |
| 4290 | 020726 | 001414 |        |        | BEQ        | 10\$           |  | ;IF NOT - OK (76XXX0)                       |
| 4291 | 020730 | 042711 | 000007 |        | BIC        | #7,(R1)        |  | ;MAKE IT 76XXX0                             |



```

4292 020734 010046 PRINTB #FINIT1,(R1),R0 ;INFORM THE USER
(9) 020734 011146
(8) 020736 011146
(7) 020740 012746 021512
(6) 020744 012746 000003
(3) 020750 010600
(4) 020752 104414
(4) 020754 062706 000010
4293 020760 10$:
4294 020760 011137 002232 MOV (R1),CSR ;CSR ADDRESS
4295 020764 011137 002242 MOV (R1),BSEL1
4296 020770 005237 002242 INC BSEL1 ;HIGH BYTE ADDRESS OF CSR
4297 020774 011137 002234 MOV (R1),SEL2
4298 021000 062737 000002 002234 ADD #2,SEL2 ;CONTROL OUT REGISTER ADDRESS
4299 021006 011137 002244 MOV (R1),BSEL3
4300 021012 062737 000003 002244 ADD #3,BSEL3 ;HIGH BYTE OF SEL2
4301 021020 011137 002236 MOV (R1),SEL4
4302 021024 062737 000004 002236 ADD #4,SEL4 ;PORT REG (SEL 4) ADDRESS
4303 021032 011137 002246 MOV (R1),BSEL5
4304 021036 062737 000005 002246 ADD #5,BSEL5 ;HIGH BYTE OF SEL4
4305 021044 011137 002240 MOV (R1),SEL6
4306 021050 062737 000006 002240 ADD #6,SEL6 ;PORT REG (SEL 6) ADDRESS
4307 021056 012137 002250 MOV (R1)+,BSEL7
4308 021062 062737 000007 002250 ADD #7,BSEL7 ;HIGH BYTE OF SEL6
4309 021070 011100 MOV (R1),R0 ;GET VECTOR
4310 021072 032700 000007 BIT #7,R0 ;DOES THIS VECTOR END IN NON-ZERO?
4311 021076 001414 BEQ 11$;IF NOT - OK (XX0)
4312 021100 042711 000007 BIC #7,(R1) ;MAKE IT XX0
4313 021104 PRINTB #FINIT2,(R1),R0 ;INFORM THE USER
(9) 021104 010046
(8) 021106 011146
(7) 021110 012746 021605
(6) 021114 012746 000003
(3) 021120 010600
(4) 021122 104414
(4) 021124 062706 000010
4314 021130 11$:
4315 021130 011137 002226 MOV (R1),DMRVEC ;RCV. VECTOR
4316 021134 011137 002230 MOV (R1),DMTVEC ;TRANSMIT VECTOR
4317 021140 011100 MOV (R1),R0 ;RCV. VECTOR
4318 021142 105060 000003 CLR 3(R0) ;CLEAR HI BYTE OF PSW FOR RCV. VECTOR.
4319 021146 105060 000007 CLR 7(R0) ;CLEAR HI BYTE OF PSW FOR XMIT. VECTOR.
4320 ;THIS WILL ENSURE THAT WE DON'T PICK
4321 ;UP ANY UNEXPECTED BITS IN PROCESSORS
4322 ;WHICH USE BITS 11-15 OF THE PSW. IE
4323 ;IF BIT 11 IS SET IN AN 11/70 ANOTHER
4324 ;REGISTER SET MAY BE USED.
4325 021152 062737 000004 002230 ADD #4,DMTVEC ;ADJUST XMIT VECTOR
4326
4327 ;SET UP ISRS FOR DMR. INTERRUPTS ENABLED IN
4328 ;TESTS 15-19.
4329
4330 SETVEC DMRVEC,#INISR,#PRI05 ;INPUT ISR
(7) 021160 012746 000240
(6) 021164 012746 021772
(5) 021170 013746 002226

```

```

MOV R0,-(SP)
MOV (R1),-(SP)
MOV #FINIT1,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

```

```

MOV R0,-(SP)
MOV (R1),-(SP)
MOV #FINIT2,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #10,SP

```

```

MOV #PRI05,-(SP)
MOV #INISR,-(SP)
MOV DMRVEC,-(SP)

```

|      |        |        |        |        |        |                       |           |                                              |
|------|--------|--------|--------|--------|--------|-----------------------|-----------|----------------------------------------------|
| (4)  | 021174 | 012746 | 000003 |        |        |                       | MOV       | #3,-(SP)                                     |
| (3)  | 021200 | 104437 |        |        |        |                       | TRAP      | C\$SVEC                                      |
| (2)  | 021202 | 062706 | 000010 |        |        |                       | ADD       | #10,SP                                       |
| 4331 | 021206 |        |        |        | SETVEC | DMTVEC,#OUTISR,#PRI05 |           | ;OUTPUT ISR                                  |
| (7)  | 021206 | 012746 | 000240 |        |        |                       | MOV       | #PRI05,-(SP)                                 |
| (6)  | 021212 | 012746 | 023054 |        |        |                       | MOV       | #OUTISR,-(SP)                                |
| (5)  | 021216 | 013746 | 002230 |        |        |                       | MOV       | DMTVEC,-(SP)                                 |
| (4)  | 021222 | 012746 | 000003 |        |        |                       | MOV       | #3,-(SP)                                     |
| (3)  | 021226 | 104437 |        |        |        |                       | TRAP      | C\$SVEC                                      |
| (2)  | 021230 | 062706 | 000010 |        |        |                       | ADD       | #10,SP                                       |
| 4332 |        |        |        |        |        |                       |           |                                              |
| 4333 | 021234 | 062701 | 000014 |        | ADD    | #14,R1                |           | ;INCR. P-TABLE POINTER.                      |
| 4334 | 021240 | 012137 | 002254 |        | MOV    | (R1)+,DMTURN          |           | ;TURNAROUND                                  |
| 4335 |        |        |        |        |        |                       |           |                                              |
| 4336 |        |        |        |        |        |                       |           |                                              |
| 4337 | 021244 | 013700 | 002224 |        | MOV    | SPEED,R0              |           | ;GET THE SOFTWARE P-TABLE VALUE GIVEN        |
| 4338 |        |        |        |        |        |                       |           | ;BY THE USER                                 |
| 4339 |        |        |        |        |        |                       |           |                                              |
| 4340 |        |        |        |        |        |                       |           |                                              |
| 4341 | 021250 |        |        | 13\$:  |        |                       |           |                                              |
| 4342 | 021250 | 012701 | 000002 |        | MOV    | #2,R1                 |           | ;GET FIRST TIMER VALUE                       |
| 4343 | 021254 | 012702 | 000012 |        | MOV    | #10.,R2               |           | ;GET SECOND TIMER VALUE                      |
| 4344 | 021260 |        |        | 14\$:  |        |                       |           |                                              |
| 4345 | 021260 | 006301 |        |        | ASL    | R1                    |           | ; TIMER VALUES X 2                           |
| 4346 | 021262 | 006302 |        |        | ASL    | R2                    |           |                                              |
| 4347 | 021264 | 005300 |        |        | DEC    | R0                    |           | ; DEC SPEED VARIABLE                         |
| 4348 | 021266 | 001374 |        |        | BNE    | 14\$                  |           | ; CONTINUE UNTIL DONE INCREASING WAIT VALUES |
| 4349 |        |        |        |        |        |                       |           |                                              |
| 4350 | 021270 | 010137 | 002310 |        | MOV    | R1,WAIT1              |           | ;SAVE TIMER VALUE FOR \$WAIT                 |
| 4351 | 021274 | 006201 |        |        | ASR    | R1                    |           | ;HALF THAT VALUE                             |
| 4352 | 021276 | 006201 |        |        | ASR    | R1                    |           | ;HALF IT AGAIN.                              |
| 4353 | 021300 | 010137 | 002312 |        | MOV    | R1,WAIT2              |           | ;SAVE TIMER VALUE FOR \$MSCLR AND \$CLRQI    |
| 4354 |        |        |        |        |        |                       |           | ;SUBROUTINES.                                |
| 4355 | 021304 | 010237 | 002314 |        | MOV    | R2,WAIT3              |           | ;TIMER VALUE FOR \$INOUT SUBROUTINE.         |
| 4356 |        |        |        |        |        |                       |           |                                              |
| 4357 |        |        |        |        |        |                       |           | ;CHECK TURNAROUND.                           |
| 4358 | 021310 | 012737 | 000333 | 002304 | MOV    | #333,AX3              |           | ;MASK FOR AX3-15 - BIT CLEARED WILL          |
| 4359 |        |        |        |        |        |                       |           | ;BE THE INTERFACE SELECTED.                  |
| 4360 | 021316 | 022737 | 000001 | 002254 | CMP    | #1,DMTURN             |           | ;IS V.35 REQUESTED?                          |
| 4361 | 021324 | 001004 |        |        | BNE    | 20\$                  |           | ;IF NOT - CONTINUE                           |
| 4362 | 021326 | 042737 | 000020 | 002304 | BIC    | #BIT4,AX3             |           | ;SELECT V.35                                 |
| 4363 | 021334 | 000427 |        |        | BR     | 30\$                  |           |                                              |
| 4364 | 021336 |        |        |        |        |                       |           |                                              |
| 4365 | 021336 | 022737 | 000002 | 002254 | 20\$:  | CMP                   | #2,DMTURN | ;IS INTEGRAL REQUESTED?                      |
| 4366 | 021344 | 001004 |        |        | BNE    | 22\$                  |           | ;IF NOT - CONTINUE.                          |
| 4367 | 021346 | 042737 | 000010 | 002304 | BIC    | #BIT3,AX3             |           | ;SELECT INTEGRAL MODEM.                      |
| 4368 | 021354 | 000417 |        |        | BR     | 30\$                  |           |                                              |
| 4369 | 021356 |        |        |        |        |                       |           |                                              |
| 4370 | 021356 | 022737 | 000003 | 002254 | 22\$:  | CMP                   | #3,DMTURN | ;IS EIA REQUESTED?                           |
| 4371 | 021364 | 001004 |        |        | BNE    | 25\$                  |           | ;IF NOT - CONTINUE.                          |
| 4372 | 021366 | 042737 | 000100 | 002304 | BIC    | #BIT6,AX3             |           | ;SELECT EIA(XYZ).                            |
| 4373 | 021374 | 000407 |        |        | BR     | 30\$                  |           |                                              |
| 4374 | 021376 |        |        |        |        |                       |           |                                              |
| 4375 | 021376 | 022737 | 000004 | 002254 | 25\$:  | CMP                   | #4,DMTURN | ;IS RS422 REQUESTED?                         |
| 4376 | 021404 | 001007 |        |        | BNE    | 35\$                  |           | ;IF NOT, DON'T ALLOW INTERFACE CHANGE.       |
| 4377 | 021406 | 042737 | 000200 | 002304 | BIC    | #BIT7,AX3             |           | ;SELECT RS422.                               |

```

4378 021414 30$:
4379 021414 012737 000001 002262 MOV #1,INFACE ;SET FLAG THAT ALLOWS INTERFACE CHANGE.
4380 021422 000404 BR 40$
4381 021424 35$:
4382 021424 005037 002262 CLR INFACE ;CLEAR FLAG - NO INTERFACE CHANGE.
4383 021430 005037 002304 CLR AX3 ;CLEAR AX3 BITS
4384 021434 40$:
4385 021434 022737 000001 002254 CMP #1,DMTURN ;IS THIS V.35?
4386 021442 001414 BEQ 45$;IF YES - SET WRITE MAINT. BIT
4387 021444 022737 000003 002254 CMP #3,DMTURN ;IS THIS EIA?
4388 021452 001410 BEQ 45$;IF YES - SET WRITE MAINT. BIT
4389 021454 022737 000006 002254 CMP #6,DMTURN ;IS THIS LOCAL LOOP?
4390 021462 001404 BEQ 45$;IF YES - SET WRITE MAINT. BIT.
4391 021464 022737 000007 002254 CMP #7,DMTURN ;IS THIS REMOTE LOOP?
4392 021472 001004 BNE 50$;IF NOT - CLEAR MAINT. BIT FLAG
4393 021474 45$:
4394 021474 012737 000001 002306 MOV #1,WMAINT ;SET FLAG TO WRITE MODEM MAINTENANCE BITS.
4395 021502 000402 BR END
4396 021504 50$:
4397 021504 005037 002306 CLR WMAINT ;CLEAR FLAG - DON'T WRITE MAINT. 1 OR 2.
4398 021510 END:
4399 021510 ENDINIT
(3) 021510
(3) 021510 104411 L10014:
4400 021512 040445 025052 053440 FINIT1: .ASCIZ /%A** WARNING - WILL ASSUME DMR ADDRESS %06% (NOT %06%)%N/ TRAP C$INIT
021520 051101 044516 043516
021526 026440 053440 046111
021534 020114 051501 052523
021542 042515 042040 051115
021550 040440 042104 042522
021556 051523 022440 033117
021564 040445 024040 047516
021572 020124 047445 022466
021600 024501 047045 000
4401 021605 045 025101 020052 FINIT2: .ASCIZ /%A** WARNING - WILL ASSUME DMR VECTOR %03% (NOT %03%)%N/
021612 040527 047122 047111
021620 020107 020055 044527
021626 046114 040440 051523
021634 046525 020105 046504
021642 020122 042526 052103
021650 051117 020040 047445
021656 022463 020101 047050
021664 052117 022440 031517
021672 040445 022451 000116

4402 .EVEN
4403
4404
4405
4406
4407
4408
4409
4410
4411
4412 .SBITL AUTO DROP UNIT SECTION
4413

```

```

4414 ;////////////////////////////////////
4415 ;// THE AUTO DROP CODING DETERMINES WHETHER OR NOT THE DEVICE WHOSE P-TABLE
4416 ;// WAS JUST OBTAINED IS READY FOR TESTING, AND IT IS DROPPED IF NOT READY.
4417 ;////////////////////////////////////
4418
4419 021700 BGNAUTO
4420 (3) 021700
4421 021700
4422 (7) 021700 012746 000340
4423 (6) 021704 012746 023512
4424 (5) 021710 012746 000004
4425 (4) 021714 012746 000003
4426 (3) 021720 104437
4427 (2) 021722 062706 000010
4428 021726 005037 002340
4429 021732 005777 160274
4430
4431
4432 021736 CLRVEC #4 ;RETURN VECTOR 04 TO NORMAL STATE
4433 (3) 021736 012700 000004
4434 (3) 021742 104436
4435 021744 005737 002340
4436 021750 001406
4437 021752
4438 (3) 021752 013700 002362
4439 (3) 021756 104451
4440 021760
4441 (3) 021760 104444
4442 021762 005037 002340
4443 021766
4444 (3) 021766
4445 (3) 021766 104461
4446
4447
4448
4449
4450
4451 .SBTTL CLEANUP CODING SECTION
4452
4453 ;////////////////////////////////////
4454 ;// THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED AT THE
4455 ;// END OF THE TEST SEQUENCE ON A PARTICULAR UNIT. THIS SECTION IS REQUIRED

```

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

BGNAUTO

L\$AUTO::

SETVEC #4,#NOXMEM,#PRI07 ;SET UP NON -EXISTENT MEMORY TRAP VECTOR.

MOV #PRI07,-(SP)  
 MOV #NOXMEM,-(SP)  
 MOV #4,-(SP)  
 MOV #3,-(SP)  
 TRAP C\$SVEC  
 ADD #10,SP

CLR FLAG ;CLEAR FLAG THAT WILL BE SET IF NXM OCCURS.  
 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 'DROPO4').  
 ; OTHERWISE THE MEMORY REFERENCE IS UNEVENTFUL AND THE DEVICE IS READY.  
 ;\*\*\*\*\*

CLRVEC #4 ;RETURN VECTOR 04 TO NORMAL STATE

MOV #4,R0  
 TRAP C\$CVEC

TST FLAG ;DID NXM OCCUR?  
 BEQ 1\$ ;IF NOT EXIT  
 DODU LOGDEV ;DROP THE DEVICE

MOV LOGDEV,R0  
 TRAP C\$DODU

DOCLN ;DO CLEAN UP - FORCE BACK TO INIT CODE.

TRAP C\$DCLN

CLR FLAG ;RESTORE FLAG.

1\$:  
 ENDAUTO

L10015:  
 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

```

4456 ;/ EVEN IF IT IS A NULL CLEANUP
4457 ;////////////////////////////////////
4458
4459 021770 BGNCLN
4460 (3) 021770
4461 ;NULL CLEANUP
4462 L$CLEAN::
4463
4464 (3) 021770
4465 (3) 021770 104412
4466 L10016:
4467 TRAP
4468 C$CLEAN
4469
4470 .SBTTL GLOBAL INTERRUPT HANDLING ROUTINES
4471
4472 ;////////////////////////////////////
4473 ;/ THE INTERRUPT HANDLING SECTION CONTAINS CODING REQUIRED TO USE
4474 ;/ THE 'SETVEC' MACRO. NOTE EVERY INTERRUPT ROUTINE SHOULD SAVE
4475 ;/ AND RESTORE R0.
4476 ;////////////////////////////////////
4477 021772 BGNSRV INISR ;INPUT INTERRUPT SERVICE ROUTINE
4478 (3) 021772
4479 021772 010046 MOV R0,-(SP) ;SAVE R0
4480 021774 010146 MOV R1,-(SP) ;SAVE R1
4481 021776 017701 160230 MOV @SELO,R1 ;SAVE THE CONTROL IN COMMAND.
4482 022002 042701 177760 BIC #177760,R1 ;CLEAR ALL BUT THE COMMAND BITS (0-3)
4483 022006 032777 000200 160216 BIT #RDI,@SELO ;IS RDI SET
4484 022014 001002 BNE 1$;IF YES - PROCESS INPUT COMMAND.
4485 022016 000137 022526 JMP NEXT ;ISSUE NEXT INPUT COMMAND.
4486 ;*****
4487 ;
4488 ; PROCESS INPUT COMMAND
4489 ;
4490 ;*****
4491 1$:
4492 022022 022701 000004 CMP #BACCR,R1 ;IS THIS A RCV. BA/CC?
4493 022026 001533 BEQ 29$;BR IF YES.
4494 022030 022701 000000 CMP #BACCT,R1 ;IS THIS A XMIT. BA/CC?
4495 022034 001537 BEQ 30$;BR IF YES.
4496 022036 022701 000003 CMP #BASE1,R1 ;IS THIS A BASE IN?
4497 022042 001461 BEQ 20$;BR IF YES.
4498 022044 022701 000001 CMP #CNTRL,R1 ;IS THIS A CONTROL IN?
4499 022050 001444 BEQ 15$;BR IF YES.
4500 022052 022701 000005 CMP #WMODEM,R1 ;IS THIS A WRITE MODEM?
4501 022056 001417 BEQ 10$;BR IF YES.
4502 022060 022701 000015 CMP #INTER,R1 ;IS THIS AN INTERFACE WRITE.
4503 022064 001410 BEQ 5$;BR IF YES.
4504 022066 022701 000002 CMP #HLT,R1 ;IS THIS A HALT?
4505 022072 001572 BEQ 70$;EXIT - IF YES (NOTHING TO SET UP)
4506 (4) 022074 104455 ERRDF 17,EMG17,ERRG2 ;PROBLEM IF IT'S NOT ONE OF THE ABOVE.
4507 (5) 022076 000021 TRAP
4508 .WORD
4509 C$ERDF
4510 17

```

| Line | Address | Offset | Label  | Instruction  | Comment           | Word | EMG17 |
|------|---------|--------|--------|--------------|-------------------|------|-------|
| 4506 | 022100  | 020405 |        |              |                   |      |       |
| 4507 | 022102  | 015070 |        |              |                   |      |       |
| 4508 | 022104  | 000565 |        |              |                   |      |       |
| 4509 |         |        | 5\$:   |              |                   |      |       |
| 4510 |         |        |        | WRITE AX3-15 |                   |      |       |
| 4511 |         |        |        |              |                   |      |       |
| 4512 | 022106  | 113777 | 002304 | 160134       | MOV B AX3,@SEL7   |      |       |
| 4513 |         |        |        |              |                   |      |       |
| 4514 |         |        |        |              |                   |      |       |
| 4515 | 022114  | 000561 |        |              |                   |      |       |
| 4516 |         |        |        |              |                   |      |       |
| 4517 |         |        |        |              |                   |      |       |
| 4518 | 022116  |        | 10\$:  |              |                   |      |       |
| 4519 |         |        |        |              |                   |      |       |
| 4520 |         |        |        | MODEM WRITE  |                   |      |       |
| 4521 |         |        |        |              |                   |      |       |
| 4522 | 022116  | 022737 | 000006 | 002254       | CM B #6,DMTURN    |      |       |
| 4523 | 022124  | 001007 |        |              |                   |      |       |
| 4524 | 022126  | 042777 | 000004 | 160104       | BNE 11\$          |      |       |
| 4525 | 022134  | 052777 | 000010 | 160076       | BIC #MAINT2,@SEL6 |      |       |
| 4526 | 022142  | 000546 |        |              |                   |      |       |
| 4527 | 022144  |        |        |              |                   |      |       |
| 4528 | 022144  | 042777 | 000010 | 160066       | BIS #MAINT1,@SEL6 |      |       |
| 4529 | 022152  | 052777 | 000004 | 160060       | BIS #MAINT2,@SEL6 |      |       |
| 4530 | 022160  | 000537 |        |              |                   |      |       |
| 4531 | 022162  |        |        |              |                   |      |       |
| 4532 |         |        | 15\$:  |              |                   |      |       |
| 4533 |         |        |        |              |                   |      |       |
| 4534 |         |        |        | CONTROL IN   |                   |      |       |
| 4535 | 022162  | 005737 | 002300 |              |                   |      |       |
| 4536 | 022166  | 001404 |        |              |                   |      |       |
| 4537 | 022170  | 012777 | 000400 | 160042       | TST MNTMDE        |      |       |
| 4538 | 022176  | 000530 |        |              |                   |      |       |
| 4539 | 022200  |        |        |              |                   |      |       |
| 4540 | 022200  | 005077 | 160034 |              |                   |      |       |
| 4541 | 022204  | 000525 |        |              |                   |      |       |
| 4542 | 022206  |        |        |              |                   |      |       |
| 4543 |         |        | 20\$:  |              |                   |      |       |
| 4544 |         |        |        |              |                   |      |       |
| 4545 |         |        |        | BASE IN      |                   |      |       |
| 4546 | 022206  | 012777 | 002630 | 160022       | MOV #BASE,@SEL4   |      |       |
| 4547 |         |        |        |              |                   |      |       |
| 4548 | 022214  | 005737 | 002276 |              |                   |      |       |
| 4549 | 022220  | 001004 |        |              |                   |      |       |
| 4550 | 022222  | 012777 | 000522 | 160010       | TST DMCMD         |      |       |
| 4551 | 022230  | 000402 |        |              |                   |      |       |
| 4552 | 022232  |        |        |              |                   |      |       |
| 4553 | 022232  | 005077 | 160002 |              |                   |      |       |
| 4554 | 022236  |        |        |              |                   |      |       |
| 4555 | 022236  | 005737 | 002272 |              |                   |      |       |
| 4556 | 022242  | 001004 |        |              |                   |      |       |
| 4557 | 022244  | 052777 | 000100 | 157762       | BNE 24\$          |      |       |
| 4558 | 022252  | 000406 |        |              |                   |      |       |
| 4559 | 022254  |        |        |              |                   |      |       |



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

```

4616 022454 44$: MOV (SP)+,R2 ;RESTORE R2 (NEXT RCV BUFFER ADDRESS)
4617 022454 012602 BR 70$;CLEAR RQI AND EXIT
4618 022456 000400
4619
4620
4621 022460 70$: MOV R1, LAST ;SAVE THE INPUT COMMAND (USED
4622 022460 010137 002356 TST DMCMDR ;TO DETERMINE NEXT INPUT COMMAND)
4623
4624 022464 005737 002276 BNE 80$;ARE WE IN DMC MODE?
4625 022470 001011
4626
4627
4628 022472 012601 MOV (SP)+,R1 ;NOTE: INTERRUPT CAPABILITY FOR RQI
4629 022474 012600 MOV (SP)+,R0 ;CLEAR IS ONLY AVAILABLE IN DMR MODE.
4630 022476 052777 000020 157526 BIS #IECLR,@SELO ;RESTORE R1
4631 022504 042777 000040 157520 BIC #RQI,@SELO ;RESTORE R0
4632
4633 022512 000002 RTI ;SET INTERRUPT ENABLE FOR RDI CLEAR.
4634
4635 022514 80$: BIC #IECLR,@SELO ;CLEAR RQI - INT. GENERATED WHEN RDI
4636 022514 042777 000020 157510 CALL $CLRQI ;CLEARS IN RESPONSE.
4637 022522
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4644 022526 ;*****
4645 022526 022737 000002 002356 ;RD I CLEAR - DETERMINE NEXT INPUT COMMAND.
4646 022534 001015
4647 022536 005737 002274
4648 022542 001541
4649 022544 005737 002346
4650 022550 001403
4651 022552 005737 002350
4652 022556 001133
4653 022560 NEXT: CMP #HLT, LAST ;WAS THE LAST COMMAND A HALT?
4654 022560 112777 000143 157444 BNE 110$;IF NOT - PROCEED.
4655 022570 TST RESUME ;ARE WE TESTING RESUME?
4656 022570 005737 002276 BEQ 170$;IF NOT, DON'T ISSUE ANOTHER COMMAND.
4657 022574 001032
4658
4659 022576 022737 000003 002356 TST INFLAG ;INPUT BUFFER DONE?
4660 022604 001405
4661 022606 022737 000015 002356 BEQ 106$;IF NOT, BASE IN.
4662 022614 001413
4663 022616 000421
4664 022620 106$: MOV #IESET!RQI!BASEI,@SELO ;ISSUE A BASE IN.
4665 022620 005737 002262 BR 170$;EXIT
4666 022624 001407
4667 022626 005737 002272
4668 022632 001004
4669
4670 022634 112777 000155 157370 TST DMCMDR ;ARE WE IN DMC MODE?
4671 022642 000501 BNE 130$;IF YES - DON'T BOTHER CHECKING MODEM
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4672 022644 117$:
4673 022644 005737 002306 TST WMAINT ;WRITE MAINT 1 OR 2?
4674 022650 001404 BEQ 130$;IF NOT - SKIP WRITE MODEM COMMAND.
4675 022652 112777 000145 157352 MOVB #IESET!RQI!WMODEM,@BSELO ;ISSUE A MODEM WRITE COMMAND
4676 022660 000472 BR 170$
4677 022662 130$:
4678 022662 005737 002272 TST START ;WAS A CONTROL IN ISSUED?
4679 022666 001006 BNE 150$;IF YES - SKIP
4680 022670 005237 002272 INC START ;SET FLAG.
4681 022674 112777 000141 157330 MOVB #IESET!RQI!CNTRL,@BSELO ;ISSUE A CONTROL IN
4682 022702 000461 BR 170$
4683 022704 150$:
4684 022704 005737 002324 TST INRCV ;ARE ALL THE BA/CC IN RCVS DONE?
4685 022710 001424 BEQ 160$;IF YES - BR TO SEE IF XMITS DONE.
4686 022712 005737 002274 TST RESUME ;IS A TEST OF RESUME REQUESTED?
4687 022716 001415 BEQ 153$;BR IF NOT.
4688 022720 032737 000001 002324 BIT #BIT0,INRCV ;IS THIS AN ODD COUNT?
4689 022726 001411 BEQ 153$;BR IF NOT.
4690 022730 005737 002352 TST RESFLG ;WAS THE LAST COMMAND A BASE IN RESUME?
4691 022734 001004 BNE 152$;IF YES, ISSUE BA/CC
4692 ;HALT - TO TEST RESUME. NOTE: THIS WILL
4693 ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4694 ;FOLLOWING EVERY OTHER BA/CC
4695 ;COMMAND (NEVER FOLLOWING A RESUME)
4696 022736 112777 000142 157266 MOVB #IESET!RQI!HLT,@BSELO ;HALT IT
4697 022744 000440 BR 170$
4698 022746 152$:
4699 022746 005037 002352 CLR RESFLG ;CLEAR FLAG.
4700 022752 153$:
4701 022752 112777 000144 157252 MOVB #IESET!RQI!BACCR,@BSELO ;ISSUE A BA/CC IN RCV. COMMAND.
4702 022760 000432 BR 170$
4703 022762 160$:
4704 022762 005737 002326 TST INXMIT ;ARE ALL THE BA/CC IN XMITS DONE?
4705 022766 001424 BEQ 165$;IF YES, SET THE FLAG
4706 022770 005737 002274 TST RESUME ;IS A TEST OF RESUME REQUESTED?
4707 022774 001415 BEQ 163$;BR IF NOT.
4708 022776 032737 000001 002326 BIT #BIT0,INXMIT ;IS THIS AN ODD COUNT?
4709 023004 001411 BEQ 163$;BR IF NOT.
4710 023006 005737 002352 TST RESFLG ;WAS THE LAST COMMAND A BASE IN RESUME?
4711 023012 001004 BNE 162$;IF YES, ISSUE BA/CC
4712 ;HALT - TO TEST RESUME. NOTE: THIS WILL
4713 ;OCCUR ONLY WHEN RESUME IS REQUESTED,
4714 ;FOLLOWING EVERY OTHER BA/CC
4715 ;COMMAND (NEVER FOLLOWING A RESUME)
4716 023014 112777 000142 157210 MOVB #IESET!RQI!HLT,@BSELO ;HALT IT
4717 023022 000411 BR 170$
4718 023024 162$:
4719 023024 005037 002352 CLR RESFLG ;CLEAR BASE IN RESUME FLAG.
4720 023030 163$:
4721 023030 112777 000140 157174 MOVB #IESET!RQI!BACCT,@BSELO ;ISSUE A BA/CC IN XMIT COMMAND.
4722 023036 000403 BR 170$
4723 023040 165$:
4724 023040 012737 177777 002346 MOV #-1,INFLAG ;FLAG THAT ALL BA/CC INS DONE.
4725 170$:
4726 023046 MOV (SP)+,R1 ;RESTORE R1
4727 023046 012601

```

| Address | Offset | Label  | Instruction          | Comments                             | Trap               | CSERDF                                     |
|---------|--------|--------|----------------------|--------------------------------------|--------------------|--------------------------------------------|
| 4728    | 023050 | 012600 | MOV (SP)+,R0         | ;RESTORE R0                          |                    |                                            |
| 4729    |        |        |                      |                                      |                    |                                            |
| 4730    | 023052 |        | ENDSRV               |                                      |                    |                                            |
| (3)     | 023052 |        |                      |                                      |                    |                                            |
| (2)     | 023052 | 000002 |                      |                                      |                    |                                            |
| 4731    |        |        |                      |                                      |                    |                                            |
| 4732    |        |        |                      |                                      |                    |                                            |
| 4733    |        |        |                      |                                      |                    |                                            |
| 4734    |        |        |                      |                                      |                    |                                            |
| 4735    | 023054 |        | BGNSRV OUTISR        | ;OUTPUT INTERRUPT SERVICE ROUTINE    |                    |                                            |
| (3)     | 023054 |        |                      | OUTISR::                             |                    |                                            |
| 4736    | 023054 | 010046 | MOV R0,-(SP)         | ;SAVE R0                             |                    |                                            |
| 4737    | 023056 | 032777 | BIT #RDO,@SEL2       | ;IS THE RDO OUT BIT SET?             |                    |                                            |
| 4738    | 023064 | 001006 | BNE 5\$              | ;IF YES - OK TO PROCEED.             |                    |                                            |
| 4739    |        |        |                      | ;OTHERWISE REPORT SPURIOUS INTERRUPT |                    |                                            |
| 4740    | 023066 |        | ERRDF 18,EMG18,ERRG2 |                                      | TRAP               | CSERDF                                     |
| (4)     | 023066 | 104455 |                      |                                      | .WORD              | 18                                         |
| (5)     | 023070 | 000022 |                      |                                      | .WORD              | EMG18                                      |
| (5)     | 023072 | 020457 |                      |                                      | .WORD              | ERRG2                                      |
| (5)     | 023074 | 015070 |                      |                                      |                    |                                            |
| 4741    | 023076 | 000137 | 023450               | JMP 60\$                             |                    |                                            |
| 4742    | 023102 |        | 5\$:                 |                                      |                    |                                            |
| 4743    | 023102 | 032777 | 000001               | 157124                               | BIT #CNTRL,@SEL2   | ;IS THIS A CONTROL OUT                     |
| 4744    | 023110 | 001436 |                      |                                      | BEQ 20\$           | ;IF NOT - PROCESS BA/CC OUT                |
| 4745    | 023112 | 032777 | 001000               | 157120                               | BIT #HALTC,@SEL6   | ;IS THIS CONTROL OUT A HALT?               |
| 4746    | 023120 | 001013 |                      |                                      | BNE 10\$           | ;IF IT IS - SEE IF WE SHOULD RESUME.       |
| 4747    | 023122 | 032777 | 000040               | 157110                               | BIT #DMRRUN,@SEL6  | ;IS THIS DMR RUN MODE ACKNOWLEDGE?         |
| 4748    | 023130 | 001407 |                      |                                      | BEQ 10\$           | ;IF NOT - REPORT ERROR                     |
| 4749    | 023132 | 000137 | 023500               |                                      | JMP 65\$           | ;EXIT                                      |
| 4750    | 023136 |        | 7\$:                 |                                      |                    |                                            |
| 4751    | 023136 |        |                      |                                      | ERRDF 9,EMG9,ERRG2 | ;UNEXPECTED CONTROL OUT.                   |
| (4)     | 023136 | 104455 |                      |                                      |                    |                                            |
| (5)     | 023140 | 000011 |                      |                                      | TRAP               | CSERDF                                     |
| (5)     | 023142 | 020136 |                      |                                      | .WORD              | 9                                          |
| (5)     | 023144 | 015070 |                      |                                      | .WORD              | EMG9                                       |
| 4752    | 023146 | 000554 |                      |                                      | .WORD              | ERRG2                                      |
| 4753    | 023150 |        |                      |                                      |                    |                                            |
| 4754    | 023150 | 005737 | 002346               |                                      | BR 65\$            | ;EXIT ROUTINE                              |
| 4755    | 023154 | 001403 |                      |                                      |                    |                                            |
| 4756    | 023156 | 005737 | 002350               |                                      | TST INFLAG         | ;ARE THE INPUTS DONE?                      |
| 4757    | 023162 | 001132 |                      |                                      | BEQ 15\$           | ;BR IF NOT                                 |
| 4758    | 023164 |        |                      |                                      | TST OUTFLG         | ;ARE THE OUTPUTS DONE?                     |
| 4759    | 023164 | 005737 | 002274               |                                      | BNE 60\$           | ;IF YES - ALL DONE, EXIT                   |
| 4760    | 023170 | 001143 |                      |                                      |                    |                                            |
| 4761    | 023172 |        |                      |                                      |                    |                                            |
| 4762    | 023172 |        |                      |                                      |                    |                                            |
| (4)     | 023172 | 104455 |                      |                                      |                    |                                            |
| (5)     | 023174 | 000020 |                      |                                      |                    |                                            |
| (5)     | 023176 | 020354 |                      |                                      |                    |                                            |
| (5)     | 023200 | 000000 |                      |                                      |                    |                                            |
| 4763    | 023202 | 000137 | 023450               |                                      |                    |                                            |
| 4764    | 023206 |        |                      |                                      |                    |                                            |
| 4765    | 023206 | 005737 | 002302               |                                      | JMP 60\$           |                                            |
| 4766    | 023212 | 001452 |                      |                                      |                    |                                            |
| 4767    | 023214 | 032777 | 040000               | 157016                               | TST MMANAG         | ;ARE THE BUFFERS MEMORY MANAGED?           |
| 4768    |        |        |                      |                                      | 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       |

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4770 023222 001005
4771 023224
(4) 023224 104455
(5) 023226 000013
(5) 023230 020214
(5) 023232 015070
4772 023234 000505
4773 023236
4774 023236 042777 140000 156774
4775 023244 017702 156766
4776 023250 042702 017777
4777 023254 042777 160000 156754
4778
4779 023262 005702
4780 023264 001004
4781 023266 052777 060000 156742
4782 023274 000421
4783 023276
4784 023276 022702 020000
4785 023302 001004
4786 023304 052777 100000 156724
4787 023312 000412
4788 023314
4789 023314 022702 040000
4790 023320 001004
4791 023322 052777 120000 156706
4792 023330 000403
4793 023332
4794 023332 052777 140000 156676
4795 023340
4796 023340 032777 000004 156666
4797 023346 001023
4798 023350 005337 002332
4799 023354 022577 156656
4800 023360 001406
4801 023362 005725
4802 023364
(4) 023364 104455
(5) 023366 000013
(5) 023370 020214
(5) 023372 016056
4803 023374 000425
4804 023376
4805 023376 022577 156636
4806 023402 001422
4807 023404
(4) 023404 104455
(5) 023406 000014
(5) 023410 020241
(5) 023412 016056
4808 023414 000415
4809 023416
4810 023416 005337 002330
4811 023422 022477 156610
4812 023426 001406

;ADDRESS RANGE: 200000 - 277776)
;PROCEED - IF BIT SET.
BNE 21$
ERRDF 11,EMG11,ERRG2
TRAP C$ERDF
.WORD 11
.WORD EMG11
.WORD ERRG2

21$: BR 60$
BIC #BIT15!BIT14,@SEL6 ;CLEAR THE EXTENDED ADDRESS BITS.
MOV @SEL4,R2 ;SAVE BITS 0-15 OF THE PHYSICAL ADDRESS.
BIC #17777,R2 ;SAVE ONLY PAGE ADDRESS BITS.
BIC #160000,@SEL4 ;CLEAR PAGE ADDRESS BITS IN SEL4
;DETERMINE PAGE # FOR VIRTUAL ADDRESS.
TST R2 ;IS THIS PAGE 3?
BNE 22$;IF NOT CHECK FOR OTHER PAGES
BIS #60000,@SEL4 ;SET BITS FOR PAGE 3.
BR 40$

22$: CMP #20000,R2 ;IS THIS PAGE 4?
BNE 23$;IF NOT - KEEP CHECKING
BIS #100000,@SEL4 ;SET BITS FOR PAGE 4.
BR 40$

23$: CMP #40000,R2 ;IS THIS PAGE 5?
BNE 24$;IF NOT - MUST BE PAGE 6
BIS #120000,@SEL4 ;SET BITS FOR PAGE 5.
BR 40$

24$: BIS #140000,@SEL4 ;SET BITS FOR PAGE 6.
40$: BIT #RCV,@SEL2 ;IS THIS A RECV. BUFFER?
BNE 50$;IF YES - PROCESS THE BUFFER.
DEC OUTXMT ;DECREMENT BA/CC OUT XMIT.
CMP (R5)+,@SEL4 ;IS THE XMIT BUFFER ADDRESS CORRECT?
BEQ 41$;IF YES - PROCEED.
TST (R5)+ ;INCR. POINTER FOR ERROR MESSAGE.
ERRDF 11,EMG11,ERRG8 ;IF NOT - ERROR
TRAP C$ERDF
.WORD 11
.WORD EMG11
.WORD ERRG8

41$: BR 60$;EXIT ROUTINE
CMP (R5)+,@SEL6 ;IS THE CHAR. COUNT CORRECT?
BEQ 60$;IF OK - EXIT ROUTINE.
ERRDF 12,EMG12,ERRG8 ;IF NOT - ERROR
TRAP C$ERDF
.WORD 12
.WORD EMG12
.WORD ERRG8

50$: BR 60$;EXIT
DEC OUTRCV ;DECREMENT BA/CC OUT RCV
CMP (R4)+,@SEL4 ;IS THE RCV BUFFER ADDRESS CORRECT?
BEQ 51$;IF OK - PROCEED

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4813 023430 ERRDF 11,EMG11,ERRG7
(4) 023430 104455
(5) 023432 000013 TRAP C$ERDF
(5) 023434 020214 .WORD 11
(5) 023436 015760 .WORD EMG11
4814 023440 005724 TST (R4)+ ;UPDATE POINTER
4815 023442 000402 BR 60$;EXIT ROUTINE
4816 023444 51$: MOV @SEL6,(R4)+ ;CHANGE THE CHARACTER COUNT TO WHAT
4817 023444 017724 156570 ;WAS RECEIVED.
4818
4819 023450 60$: TST OUTXMT ;HAVE ALL THE XMTS BEEN DONE?
4820 023450 005737 002332 BNE 65$;IF NOT, CONTINUE
4821 023454 001011 TST OUTRCV ;HAVE ALL THE RECEIVES BEEN DONE?
4822 023456 005737 002330 BNE 65$;IF NOT, CONTINUE
4823 023462 001006
4824 023464 61$: BIC #IEO,@SEL2 ;CLEAR THE OUTPUT INTERRUPT
4825 023464 042777 000100 156542 MOV #-1,OUTFLG ;FLAG AS DONE.
4826 023472 012737 177777 002350
4827 023500 65$: BIC #RDO!CMD,@SEL2 ;CLEAR THE RDO BIT.
4828 023500 042777 000207 156526 MOV (SP)+,R0 ;RESTORE R0
4829 023506 012600 ENDSRV
4830 023510
(3) 023510 L10020:
(2) 023510 000002 RTI
4831
4832 ;*****
4833 ;*****
4834
4835 023512 BGNSRV NOXMEM
(3) 023512 NOXMEM::
4836
4837 023512 012737 000001 002340 MOV #1,FLAG ;SET FLAG IF MEMORY ADDRESSED IS NON-EXISTENT.
4838
4839 023520 ENDSRV
(3) 023520 L10021:
(2) 023520 000002 RTI
4840
4841
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4845
4846 .SBTTL DROP UNIT SECTION
4847
4848 ;////////////////////////////////////
4849 ;// THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
4850 ;// TO NO LONGER BE TESTED.
4851 ;////////////////////////////////////
4852
4853 023522 BGNDJ
(3) 023522 LSDU::
4854
4855 023522 BRESET ;ISSUE UNIBUS RESET TO CLEAN UP
(3) 023522 104433 TRAP C$RESET
4856 023524 PRINTF #FMDROP,LOGDEV
(8) 023524 013746 002362 MOV LOGDEV,-(SP)

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(7) 023530 012746 023552  
 (6) 023534 012746 000002  
 (3) 023540 010600  
 (4) 023542 104417  
 (4) 023544 062706 000006

MOV #FMDROP, -(SP)  
 MOV #2, -(SP)  
 MOV SP, R0  
 TRAP C\$PNTF  
 ADD #6, SP

4857  
 4858 023550  
 (3) 023550  
 (3) 023550 104453

ENDDU

L10022:

TRAP C\$DU

4859  
 4860  
 4861 023552 047045 040445 047125 FMDROP: .ASCIZ /%N%AUNIT %D2%A DROPPED/  
 023560 052111 022440 031104  
 023566 040445 042040 047522  
 023574 050120 042105 00C

.EVEN

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4885 023602

(3) 023602

4886

4887 023602

(7) 023602 012746 000340

(6) 023606 012746 023724

(5) 023612 012746 000004

(4) 023616 012746 000003

(3) 023622 104437

(2) 023624 062706 000010

4888 023630 005037 002340

4889 023634 005001

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.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.  
 \*\*\*\*\*  
 BGNTST

T1::

SETVEC #4, #LOCATE, #PRI07 ; SET UP NON -EXISTENT MEMORY TRAP VECTOR.

MOV #PRI07, -(SP)  
 MOV #LOCATE, -(SP)  
 MOV #4, -(SP)  
 MOV #3, -(SP)  
 TRAP C\$SVEC  
 ADD #10, SP

CLR FLAG  
 CLR R1

; FLAG USED IN THE TRAP ROUTINE.  
 ; 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

```

4896 ;:*****
4897 ;:*****
4898 023636 005777 156370 TST @SEL0 ;TEST THE CSR AT 76XXX0
4899 023642 012701 000002 MOV #2,R1 ;SAVE THE OFFSET OF THE NEXT CSR
4900 023646 005777 156362 TST @SEL2 ;TEST THE CSR AT 76XXX2
4901 023652 012701 000004 MOV #4,R1 ;SAVE THE OFFSET OF THE NEXT CSR
4902 023656 005777 156354 TST @SEL4 ;TEST THE CSR AT 76XXX4
4903 023662 012701 000006 MOV #6,R1 ;SAVE THE OFFSET OF THE NEXT CSR
4904 023666 005777 156346 TST @SEL6 ;TEST THE CSR AT 76XXX6
4905 023672 005737 002340 TST FLAG ;WAS THERE A TRAP?
4906 023676 001406 BEQ 10$;IF NOT - EXIT.
4907 023700 DODU LOGDEV ;DROP THE DEVICE
 (3) 023700 013700 002362 MOV LOGDEV,R0
 (3) 023704 104451 TRAP C$DODU
4908 023706 DOCLN ;DO CLEAN UP - FORCE BACK TO INIT CODE.
 (3) 023706 104444 TRAP C$DCLN
4909 023710 005037 002340 CLR FLAG ;RESTORE THE FLAG.
4910 023714 10$: CLRVEC #4 ;RETURN VECTOR 04 TO NORMAL STATE
4911 023714 (3) 023714 012700 000004 MOV #4,R0
 (3) 023720 104436 TRAP C$CVEC
4912
4913 023722 ENDTST
 (3) 023722
 (3) 023722 104401 L10023: TRAP C$ETST
4914
4915
4916 023724 BGNSRV LOCATE ;INTERRUPT SERVICE ROUTINE
 (3) 023724 LOCATE::
4917 023724 010046 MOV R0,-(SP) ;SAVE R0
4918 023726 005737 002340 TST FLAG ;HAVE WE HAD AT LEAST 1 PREVIOUS TRAP?
4919 023732 001006 BNE 10$;IF YES, DON'T BOTHER DECLARING ANOTHER
4920
4921 023734 ERRDF 6,EMTO ;DEVICE FATAL ERROR
 (4) 023734 104455 ;NON-EXISTENT DEVICE ERROR
 (5) 023736 000006 TRAP C$ERDF
 (5) 023740 024002 .WORD 6
 (5) 023742 000000 .WORD EMTO
4922 023744 005237 002340 10$: INC FLAG ;SET THE FLAG
4923 023750 PRINTX #FMT0,R1,CSR(R1) ;PRINT THE CSR THAT DOESN'T RESPOND.
4924 023750 (9) 023750 016146 002232 MOV CSR(R1),-(SP)
 (8) 023754 010146 MOV R1,-(SP)
 (7) 023756 012746 024040 MOV #FMT0,-(SP)
 (6) 023762 012746 000003 MOV #3,-(SP)
 (3) 023766 010600 MOV SP,R0
 (4) 023770 104415 TRAP C$PNTX
 (4) 023772 062706 000010 ADD #10,SP
4925 023776 012600 MOV (SP)+,R0 ;RESTORE R0
4926 024000 ENDSRV
 (3) 024000
 (2) 024000 000002 L10024: RTI
4927
4928 024002 051503 020122 042101 EMT0: .ASCIZ /CSR ADDRESSING ERROR - TRAP 4/
 024010 051104 051505 044523
 024016 043516 042440 051122

```



4929 024024 051117 026440 052040  
024032 040522 020120 000064  
024040 051445 022463 041501  
024046 051123 024040 042523  
024054 022514 030504 040445  
024062 020051 052101 022440  
024070 033117 040445 042040  
024076 042517 020123 047516  
024104 020124 042522 050123  
024112 047117 022504 000116

FMT0: .ASCIIZ /%S3%ACSR (SEL%D1%A) AT %06%A DOES NOT RESPOND%N/

.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 #.

BGNTST

BGNSUB

T2::

T2.1:

TRAP C\$BSUB

4966 024120  
(3) 024120  
4967 024120  
(3) 024120  
(3) 024120 104402  
4968 024122 022737 000001 002270  
4969 024130 001061  
4970  
4971 024132 005004  
4972 024134 012705 000001

CMP #1,STARES  
BNE 5\$  
CLR R4  
MOV #1,R5

:IS THIS THE FIRST PASS?  
:IF NOT - SKIP THIS SUBROUTINE.  
:GET VERSION # FROM EACH ROM AND PRINT IT OUT  
:# OF THE 1ST ROM  
:# OF NEXT ROM

```

4973 024140 012737 001774 002404 MOV #1774,ROMADR ;ADDRESS OF BYTE CONTAINING # IN ROMS 0 & 1
4974 024146 PRINTB #FMT1,LOGDEV ;MICROCODE VERSION
(8) 024146 013746 002362
(7) 024152 012746 025074
(6) 024156 012746 000002
(3) 024162 010600
(4) 024164 104414
(4) 024166 062706 000006
4975 024172 1$:
4976 024172 CALL $ROMO ;GET ROM CONTENTS.
4977 024176 117737 156036 025430 MOV @BSEL6,REV1 ;SAVE THE ASCII REVISION # OF THE ROM
4978 024204 117737 156040 025432 MOV @BSEL7,REV2 ;SAVE THE REV. # OF THE NEXT ROM
4979
4980 024212 PRINTB #FMT2,R4,#REV1,R5,#REV2
(11) 024212 012746 025432
(10) 024216 010546
(9) 024220 012746 025430
(8) 024224 010446
(7) 024226 012746 025143
(6) 024232 012746 000005
(3) 024236 010600
(4) 024240 104414
(4) 024242 062706 000014
4981
4982 024246 022705 000005 CMP #5,R5 ;ARE WE DONE?
4983 024252 001410 BEQ 5$;IF YES - EXIT
4984 024254 062704 000002 ADD #2,R4 ;INCR. ROM NUMBERS
4985 024260 062705 000002 ADD #2,R5
4986 024264 062737 002000 002404 ADD #2000,ROMADR ;ADDRESS OF BYTES CONTAINING NEXT ROM REV #S.
4987 024272 000737 BR 1$
4988
4989 024274 5$:
4990 024274 ENDSUB
(3) 024274
(3) 024274 104403
4991
4992
4993 024276 BGNSUB
(3) 024276
(3) 024276 104402
4994 024300 005037 002340 CLR FLAG
4995
4996 024304 005004 CLR R4
4997
4998
4999 024306 005037 002404 CLR ROMADR
5000
5001 024312 10$:
5002 024312 012737 177777 002374 MOV #-1,LOCRC
5003
5004 024320 012737 177777 002376 MOV #-1,HICRC
5005 024326 012701 001000 MOV #1000,R1
5006
5007
5008
5009

```

L10026: TRAP C\$ESUB

T2.2: TRAP C\$BSUB

;USE THE FLAG TO MARK WHEN AN ERRDF  
 ;HAS BEEN DETECTED IN THIS TEST.  
 ;START CRC CHECK WITH ROM 0  
 ;R4 IS THE ROM #. THE LOCATION FOR THE  
 ;ROM IS CONTAINED IN THE TABLE 'ROMLOC'.  
 ;BEGIN AT ROM ADDRESS 0

;INITIALIZE CRC WORD FOR THE LOW BYTE  
 ;CALCULATION.  
 ;INIT. CRC WORD FOR THE HIGH BYTE.  
 ;COUNTER FOR LOOP TO READ THE ROM CONTENTS  
 ;AND CALCULATE THE CRC - THE COUNTER IS 512..  
 ;BECAUSE 2 ADDRESS LOCATIONS ARE READ FOR EACH  
 ;PASS (I.E. THE ROMS ARE 1K X 8 BITS)



```

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

```

```

5066 ;CALCULATED CRC?
5067 024526 001427 BEQ 50$
5068 024530 005737 002340 TST FLAG
5069 ;IF YES - CHECK THE HIGH BYTE CRC (NEXT ROM)
5070 024534 001007 BNE 41$
5071 024536 012737 000001 002340 MOV #1,FLAG
5072 024544 104455 ERRDF 7,EMT1
5073 024554 ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5074 024554 ;FLAG THAT ERRDF HAS BEEN DETECTED.
5075 024606 ;ROM ERROR
5076 024606 005204 TRAP C$ERRDF
5077 024610 005137 002376 .WORD 7
5078 024614 023737 002376 002402 .WORD EMT1
5079 024622 001427 .WORD 0
5080 024624 005737 002340
5081 41$: PRINTB #FMT3,R4,LOCRC,LOWORD
5082 024630 001007 MOV LOWORD,-(SP)
5083 024632 012737 000001 002340 MOV LOCRC,-(SP)
5084 024640 104455 MOV R4,-(SP)
5085 024640 000007 MOV #FMT3,-(SP)
5086 024642 000007 MOV #4,-(SP)
5087 024644 025362 MOV SP,R0
5088 024646 000000 TRAP C$PNTB
5089 ADD #12,SP
5090 50$: INC R4
5091 ;INCR ROM #
5092 ;COMPLEMENT THE CALCULATED CRC FOR THE HI BYTE
5093 024702 022704 000005 COM HICRC
5094 024706 001403 024312 CMP HICRC,HIWORD
5095 024710 005204 BEQ 60$
5096 024712 000137 024312 BEQ 70$
5097 024716 ;IF YES - CHECK THE ROM LOCATIONS.
5098 ;HAS AN ERRDF ALREADY BEEN DECLARED (REMEMBER
5099 ;WE'RE IN A LOOP)
5100 ;IF YES, DON'T BOTHER WITH ANOTHER ERRDF.
5101 ;FLAG THAT ERRDF HAS BEEN DETECTED.
5102 ;ROM ERROR
5103 TRAP C$ERRDF
5104 .WORD 7
5105 .WORD EMT1
5106 .WORD 0
5107 51$: PRINTB #FMT3,R4,HICRC,HIWORD
5108 MOV HIWORD,-(SP)
5109 MOV HICRC,-(SP)
5110 MOV R4,-(SP)
5111 MOV #FMT3,-(SP)
5112 MOV #4,-(SP)
5113 MOV SP,R0
5114 TRAP C$PNTB
5115 ADD #12,SP
5116 60$: CMP #5,R4
5117 ;IF WE'VE DONE ROMS 0-5, WE'RE DONE.
5118 ;EXIT WHEN DONE
5119 ;CHECK THE NEXT ROM.
5120 BEQ 70$
5121 INC R4
5122 JMP 10$
5123 70$:
5124 ENDSUB
5125 L10027:
5126 TRAP C$ESUB

```

```

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

```

|      |        |        |        |        |                                                                    |
|------|--------|--------|--------|--------|--------------------------------------------------------------------|
|      | 025102 | 051103 | 041517 | 042117 |                                                                    |
|      | 025110 | 020105 | 042522 | 044526 |                                                                    |
|      | 025116 | 044523 | 047117 | 044440 |                                                                    |
|      | 025124 | 020116 | 047125 | 052111 |                                                                    |
|      | 025132 | 042045 | 022463 | 035101 |                                                                    |
|      | 025140 | 047045 | 000    |        |                                                                    |
| 5133 | 025143 | 045    | 051101 | 046517 | FMT2: .ASCIIZ /%AROM%D2%A - REV. %T%N%AROM%D2%A - REV. %T%N/       |
|      | 025150 | 042045 | 022462 | 020101 |                                                                    |
|      | 025156 | 020055 | 042522 | 027126 |                                                                    |
|      | 025164 | 022440 | 022524 | 022516 |                                                                    |
|      | 025172 | 051101 | 046517 | 042045 |                                                                    |
|      | 025200 | 022462 | 020101 | 020055 |                                                                    |
|      | 025206 | 042522 | 027126 | 022440 |                                                                    |
|      | 025214 | 022524 | 000116 |        |                                                                    |
| 5134 | 025220 | 040445 | 047522 | 022515 | FMT3: .ASCIIZ /%AROM%D2%A: CALCUATED CRC =%06%A CRC IN ROM =%06%N/ |
|      | 025226 | 031104 | 040445 | 020072 |                                                                    |
|      | 025234 | 040503 | 041514 | 040525 |                                                                    |
|      | 025242 | 042524 | 020104 | 051103 |                                                                    |
|      | 025250 | 020103 | 022475 | 033117 |                                                                    |
|      | 025256 | 040445 | 020040 | 051103 |                                                                    |
|      | 025264 | 020103 | 047111 | 051040 |                                                                    |
|      | 025272 | 046517 | 036440 | 047445 |                                                                    |
|      | 025300 | 022466 | 000116 |        |                                                                    |
| 5135 | 025304 | 040445 | 022505 | 031104 | FMT4: .ASCIIZ /%AE%D2%A IS ROM %D1%A (SHOULD BE ROM %D1%A)%N/      |
|      | 025312 | 040445 | 044440 | 020123 |                                                                    |
|      | 025320 | 047522 | 020115 | 042045 |                                                                    |
|      | 025326 | 022461 | 020101 | 051450 |                                                                    |
|      | 025334 | 047510 | 046125 | 020104 |                                                                    |
|      | 025342 | 042502 | 051040 | 046517 |                                                                    |
|      | 025350 | 022440 | 030504 | 040445 |                                                                    |
|      | 025356 | 022451 | 000116 |        |                                                                    |
| 5136 | 025362 | 051103 | 026503 | 041503 | EMT1: .ASCIIZ /CRC-CCITT ERROR/                                    |
| 5137 | 025370 | 052111 | 020124 | 051105 |                                                                    |
|      | 025376 | 047522 | 000122 |        |                                                                    |
| 5138 | 025402 | 047514 | 040503 | 044524 | EMT2: .ASCIIZ /LOCATION ERROR/                                     |
|      | 025410 | 047117 | 042440 | 051122 |                                                                    |
|      | 025416 | 051117 | 000    |        |                                                                    |
| 5139 |        |        |        |        |                                                                    |
| 5140 | 025421 | 003    | 002    | 004    | ROMLOC: .BYTE 3,2,4,1,5,14. ;ROM 0 - ROM LOCATION 3 ETC.           |
|      | 025424 | 001    | 005    | 016    |                                                                    |
| 5141 |        | 025430 |        |        | .EVEN                                                              |
| 5142 | 025430 | 000000 |        |        | REV1: .WORD 0 ;ASCII VALUE OF THE REV. NUMBER                      |
| 5143 | 025432 | 000000 |        |        | REV2: .WORD 0 ;ASCII VALUE OF THE REV. NUMBER                      |
| 5144 |        |        |        |        |                                                                    |
| 5145 |        |        |        |        |                                                                    |
| 5146 |        |        |        |        |                                                                    |
| 5147 |        |        |        |        |                                                                    |
| 5148 |        |        |        |        |                                                                    |
| 5149 |        |        |        |        |                                                                    |
| 5150 |        |        |        |        | .SBTTL TEST 3 - MASTER CLEAR AND MICROTTEST                        |
| 5151 |        |        |        |        |                                                                    |
| 5152 |        |        |        |        | *****                                                              |
| 5153 |        |        |        |        | TEST 3 - DMR-11                                                    |
| 5154 |        |        |        |        | * MASTER CLEAR                                                     |
| 5155 |        |        |        |        | * THIS TEST WILL ISSUE 2 MASTER CLEARS. EACH CALL TO THE MASTER    |

```

; * CLEAR ROUTINE WILL ENSURE THAT THE RUN BIT WILL BE SET. ALSO
; * THE MASTER CLEAR WILL CAUSE THE DIAGNOSTIC MICROTESTS TO BE
; * RUN WHEN THE MICRODIAGNOSTIC BIT (BIT 13 IN SEL0) IS CORRECTLY
; * SET OR CLEARED. BECAUSE THE RUNNING OF MICROTESTS DEPENDS ON THE
; * EXCLUSIVE OR OF THE HARDWARE SWITCH 10 ON E134 OF THE M8203 AND
; * THE MICRODIAGNOSTIC BIT, WE CAN'T KNOW WHETHER THE SETTING OR
; * CLEARING OF BIT 13 WILL RESULT IN THE RUNNING OF MICROTESTS.
; * THEREFORE THE MASTER CLEAR SUBROUTINE WILL TOGGLE (I.E. SET
; * BIT 13 ONLY ON EVERY OTHER MASTER CLEAR) THE SOFTWARE BIT.
; * THIS WILL ENSURE THAT REGARDLESS OF THE POSITION OF THE
; * HARDWARE SWITCH, MICROTESTS WILL BE RUN EVERY OTHER MASTER CLEAR.
; * WHEN RUNNING THIS TEST, WE EXPECT TO ADD THE RESULTS OF BSEL3
; * AFTER EACH MASTER CLEAR.
; * BSEL3 = 100 - MICROTESTS DISABLED
; * BSEL3 = 200 - MICROTESTS RUN SUCCESSFULLY
; * 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)
; *****
BGNTST
 T3::
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 L10031-.

TSTB @BSEL3 ;IS THERE A DMR RESPONSE?
BNE 1$
PRINTB #FMG19 ;REPORT DEVICE NOT DMR.

 MOV #FMG19,-(SP)
 MOV #1,-(SP)
 MOV SP,R0
 TRAP C$PNTB
 ADD #4,SP

BR 5$

1$: MOVB @BSEL3,R1 ;SAVE THE RESULT OF THE FIRST MASTER CLEAR.
CLEAR ;MASTER CLEAR AGAIN.
 ;**** MACRO EXPANSION ****
JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
 ;**** ****

ESCAPE TST ;IF ERROR, BR TO TEST END.

 TRAP C$ESCAPE
 .WORD L10031-.

MOVB @BSEL3,R2 ;SAVE THE RESULTS OF THE SECOND MASTER CLEAR
ADD R1,R2 ;ADD THE RESULTS OF THE 2 CLEARS
 ;NOTE: ONE SHOULD BE 100 - MICRO TESTS NOT
 ;ENABLED AND ONE SHOULD BE 200 - MICRO TESTS
 ;SUCCESSFULLY RUN.

```

```

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

```



```

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

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```

5263 ;BASE IN COMMAND WITH NO MAINTENANCE
5264 025726 BASEIN 0,BASE,0 ;AND DMC MODE.
(1) ;**** MACRO EXPANSION ****
(1) 025726 004737 011262 JSR PC,$BASEI ;CALL BASE IN ROUTINE
(1) 025732 000000 .WORD 0 ;MAINTENANCE MODE BITS TO SET IN BSEL1
(1) 025734 002630 .WORD BASE ;BASE TABLE ADDRESS
(1) 025736 000000 .WORD 0 ;MODE
(1) ;****

5265
5266 025740 ESCAPE TST ;IF ERROR, BR TO TEST END
(3) 025740 104410 TRAP C$ESCAPE
(3) 025742 000100 .WORD L10032-.
5267 025744 SHUTDN
(1)
(1) 025744 004737 012560 JSR PC,$HALT ;**** MACRO EXPANSION ****
(1) ;DMR HALT ROUTINE.
5268 025750 132737 000020 002722 BITB #BIT4,BASE+ISP7 ;****
5269 ;SEE IF THE DMR MODE BIT IS CLEAR IN THE
5270 ;DMR SCRATCH PAD REGISTER 7 (BASETABLE
5271 025756 001404 BEQ 10$;LOCATION CONTAINS AN IMAGE OF SP7)
5272 025760 ERRDF 20,EMT6 ;OK IF CLEAR - BR
(4) 025760 104455 TRAP C$ERDF
(5) 025762 000024 .WORD 20
(5) 025764 026357 .WORD EMT6
(5) 025766 000000 .WORD 0
5273 025770 10$:
5274
5275 ;CHECK MESSAGE EXCHANGE VALUES
5276 025770 105737 002672 TSTB BASE+R ;IN THE BASE TABLE.
5277 025774 001015 BNE 20$; #R (MESSAGE RECEIVED) = 0?
5278 025776 105737 002673 TSTB BASE+N ;ERROR IF NON ZERO
5279 026002 001012 BNE 20$; #N (MESSAGE TRANSMITTED) = 0?
5280 026004 105737 002674 TSTB BASE+A ;ERROR IF NON ZERO
5281 026010 001007 BNE 20$; #A (MESSAGE ACKNOWLEDGED) = 0?
5282 026012 122737 000001 002675 CMPB #1,BASE+T ; #T (NEXT MESSAGE # TRANSMITTED) = 1?
5283 026020 001003 BNE 20$;ERROR IF NOT EQUAL TO 1.
5284 026022 105737 002676 TSTB BASE+X ; #X (LAST MESSAGE TRANSMITTED) = 0?
5285 026026 001404 BEQ 30$
5286 026030 20$:
5287 026030 ERRDF 20,EMT5,ERRT1
(4) 026030 104455 TRAP C$ERDF
(5) 026032 000024 .WORD 20
(5) 026034 026311 .WORD EMT5
(5) 026036 026044 .WORD ERRT1
5288 026040 30$:
5289 026040 ENDSUB
(3) 026040
(3) 026040 104403 L10034: TRAP C$ESUB
5290
5291 026042 ENDTST
(3) 026042
(3) 026042 104401 L10032: TRAP C$ETST
5292
5293 026044 BGNMSG ERRT1
(3) 026044
5294 026044 105737 002672 TSTB BASE+R ;IS #R = 0?

```



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

L10035: TRAP C\$MSG

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

.EVEN

5326  
 5327  
 5328  
 5329  
 5330  
 5331  
 5332

```

5333 .SBTTL TEST 5 - DMR COMMANDS
5334
5335 *****
5336 TEST 5 - DMR-11
5337 * DMR COMMANDS
5338 * SUBTEST 1 - ISSUE AN ENABLE EXTENDED ERROR COMMAND AND CHECK THAT
5339 * THE EXT. ENABLE BIT IS SET IS SCRATCH PAD 13. THEN
5340 * DISABLE EXTENDED ERROR AND CHECK THAT THE ENABLE BIT
5341 * IS CLEAR.
5342 * SUBTEST 2 - SET REP/SEL TIMER VALUE AND SET THE DMR THRESHOLD
5343 * VALUES. CHECK THAT THE VALUES ARE CORRECT IN
5344 * THE BASE TABLE AFTER HALTING THE DMR.
5345 *****
5346
5347 BGNTST
5348 026644
5349 (3) 026644 T5::
5350 (3) 026644 BGNSUB T5.1:
5351 (3) 026644 104402 TRAP C$BSUB
5352 (1) 026646 004737 011064 CLEAR ;MACRO FOR MASTER CLEAR COMMAND
5353 (1) 026646 004737 011064 JSR PC, $MSCLR ;**** MACRO EXPANSION ****
5354 (1) 026646 004737 011064 ;ISSUE A DMR MASTER CLEAR
5355 (1) 026646 004737 011064 ;****
5356 026652 ESCAPE TST ;IF ERROR, BR TO TEST END
5357 (3) 026652 104410 TRAP C$ESCAPE
5358 (3) 026654 000330 .WORD L10036-.
5359 026656 BASEIN ;BASE IN COMMAND WITH LINE UNIT LOOP,
5360 (1) 026656 004737 011262 JSR PC, $BASEI ;**** MACRO EXPANSION ****
5361 (1) 026662 004000 .WORD LPLU ;CALL BASE IN ROUTINE WITH DEFAULTS
5362 (1) 026664 002630 .WORD BASE ;SET LINE UNIT LOOP
5363 (1) 026666 000522 .WORD DMR ;BASE TABLE ADDRESS
5364 (1) 026666 000522 ;DMR-11 MODE
5365 (1) 026666 000522 ;****
5366 026670 ESCAPE TST ;IF ERROR, BR TO TEST END
5367 (3) 026670 104410 TRAP C$ESCAPE
5368 (3) 026672 000312 .WORD L10036-.
5369 026674 DMRIN EXERR ;ENABLE EXTENDED ERROR NOTIFICATION
5370 (1) 026674 004737 012064 JSR PC, $DMRIN ;**** MACRO EXPANSION ****
5371 (1) 026700 000006 .WORD EXERR ;CALL DMR MODE INPUT ROUTINE
5372 (1) 026702 000000 .WORD 0 ;INPUT COMMAND
5373 (1) 026704 000000 .WORD 0 ;NO SEL4
5374 (1) 026704 000000 .WORD 0 ;NO SEL6
5375 (1) 026704 000000 ;****
5376 026706 ESCAPE TST ;IF ERROR, BR TO TEST END
5377 (3) 026706 104410 TRAP C$ESCAPE
5378 (3) 026710 000274 .WORD L10036-.
5379 026712 SHUTDN ;HALT THE DMR
5380 (1) 026712 004737 012560 JSR PC, $HALT ;**** MACRO EXPANSION ****
5381 (1) 026712 004737 012560 ;DMR HALT ROUTINE.
5382 (1) 026712 004737 012560 ;****
5383 026716 ESCAPE TST ;IF ERROR, BR TO TEST END

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

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

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





|      |        |        |        |        |                                                |
|------|--------|--------|--------|--------|------------------------------------------------|
| 5450 | 027616 | 020120 | 031461 | 036440 |                                                |
|      | 027624 | 022440 | 031504 | 047045 |                                                |
|      | 027632 | 000    |        |        |                                                |
|      | 027633 | 045    | 051101 | 050105 | FMT12: .ASCIIZ /%AREP-SEL TIME VALUE = %D3%N/  |
|      | 027640 | 051455 | 046105 | 052040 |                                                |
|      | 027646 | 046511 | 020105 | 040526 |                                                |
|      | 027654 | 052514 | 020105 | 020075 |                                                |
|      | 027662 | 042045 | 022463 | 000116 |                                                |
| 5451 | 027670 | 040445 | 040516 | 020113 | FMT13: .ASCIIZ /%ANAK RCVD THRESHOLD = %D3%N/  |
|      | 027676 | 041522 | 042126 | 052040 |                                                |
|      | 027704 | 051110 | 051505 | 047510 |                                                |
|      | 027712 | 042114 | 036440 | 022440 |                                                |
|      | 027720 | 031504 | 047045 | 000    |                                                |
| 5452 | 027725 | 045    | 047101 | 045501 | FMT14: .ASCIIZ /%ANAK SENT THRESHOLD = %D3%N/  |
|      | 027732 | 051440 | 047105 | 020124 |                                                |
|      | 027740 | 044124 | 042522 | 044123 |                                                |
|      | 027746 | 046117 | 020104 | 020075 |                                                |
|      | 027754 | 042045 | 022463 | 000116 |                                                |
| 5453 | 027762 | 040445 | 042522 | 020120 | FMT15: .ASCIIZ /%AREP SENT THRESHOLD = %D3%N/  |
|      | 027770 | 042523 | 052116 | 052040 |                                                |
|      | 027776 | 051110 | 051505 | 047510 |                                                |
|      | 030004 | 042114 | 036440 | 022440 |                                                |
|      | 030012 | 031504 | 047045 | 000    |                                                |
| 5454 | 030017 | 045    | 047101 | 020117 | FMT16: .ASCIIZ /%ANO BUFFER THRESHOLD = %D3%N/ |
|      | 030024 | 052502 | 043106 | 051105 |                                                |
|      | 030032 | 052040 | 051110 | 051505 |                                                |
|      | 030040 | 047510 | 042114 | 036440 |                                                |
|      | 030046 | 022440 | 031504 | 047045 |                                                |
|      | 030054 | 000    |        |        |                                                |
| 5455 |        | 030056 |        |        | .EVEN                                          |

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.SBTTL TEST 6 - CONTROL IN COMMAND

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;* 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.

BGNTST

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To::



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

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5500 030170 132737 000020 002722 BITB #BIT4,BASE+ISP7 ;IS THE DDCMP RUN BIT SET IN IMAGE OF SP 7.
5501 030176 001004 BNE 20$
5502 030200 ERRDF 21,EMT10 ;ERROR DDCMP RUN BIT NOT SET
(4) 030200 104455 TRAP C$ERDF
(5) 030202 000025 .WORD 21
(5) 030204 030524 .WORD EMT10
(5) 030206 000000 .WORD 0
5503 030210 20$:
5504 030210 ENDSUB
(3) 030210 L10043:
(3) 030210 1044C3 TRAP C$ESUB
5505 BGNSUB
5506 030212 T6.2:
(3) 030212 TRAP C$BSUB
(3) 030212 104402
5507 030214 BASEIN LPLU,BASE,RES!DMR ;BASE IN WITH RESUME.
(1) ;**** MACRO EXPANSION ****
(1) 030214 004737 011262 JSR PC,$BASE1 ;CALL BASE IN ROUTINE
(1) 030220 004000 .WORD LPLU ;MAINTENANCE MODE BITS TO SET IN BSEL1
(1) 030222 002630 .WORD BASE ;BASE TABLE ADDRESS
(1) 030224 010522 .WORD RES!DMR ;MODE
(1) ;****
5508 ;****
5509 030226 CNTRIN HDX ;CONTROL IN COMMAND WITH HDX.
(1) ;**** MACRO EXPANSION ****
(1) 030226 004737 011516 JSR PC,$CNTIN ;CALL CONTROL IN ROUTINE
(1) 030232 002000 .WORD HDX ;SEL6 - (DUPLEX, MODE)
(1) ;****
5510 ;****
5511 030234 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 030234 104410 TRAP C$ESCAPE
(3) 030236 000234 .WORD L10042-.
5512 030240 052777 000057 151764 BIS #RQI!RMODEM,@SELO ;SET RQI AND READ MODEM COMMAND
5513 030246 WAIT RDI ;WAIT FOR RDI TO BE SET
(1) ;**** MACRO EXPANSION ****
(1) 030246 004737 010266 JSR PC,$WAIT ;CALL WAIT ROUTINE
(1) 030252 000000 .WORD 0 ;FLAG THAT WE'RE WAITING FOR RDI
(1) ;****
5514 030254 032777 000020 151754 BIT #BIT4,@SEL4 ;IS THE HDX BIT SET IN MODEM STATUS REG?
5515 030262 001004 BNE 10$;OK - IF BIT SET
5516 030264 ERRDF 21,EMT11 ;ERROR HDX BIT CLEAR.
(4) 030264 104455 TRAP C$ERDF
(5) 030266 000025 .WORD 21
(5) 030270 030552 .WORD EMT11
(5) 030272 000000 .WORD 0
5517 030274 10$:
5518 030274 SHUTDN ;HALT THE DMR.
(1) ;**** MACRO EXPANSION ****
(1) 030274 004737 012560 JSR PC,$HALT ;DMR HALT ROUTINE.
(1) ;****
5519 ;****
5520 030300 ENDSUB
(3) 030300 L10044:
(3) 030300 104403 TRAP C$ESUB
5521 BGNSUB
5522 030302

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

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(1)
5543 ;*****
5544 030404 ;IF ERROR, BR TO TEST END.
(3) 030404 104410 TRAP C$ESCAPE
(3) 030406 000064 .WORD L10042-.
5545 030410 005737 002254 TST DMTURN ;IS INTERNAL LOOPBACK REQUESTED?
5546 030414 001004 BNE 1$;IF NOT, BR
5547 030416 052737 004000 030440 BIS #LPLU,100$;SET LINE UNIT LOOPBACK.
5548 030424 000403 BR 2$
5549 030426 1$:
5550 030426 042737 004000 030440 BIC #LPLU,100$;CLEAR LINE UNIT LOOPBACK.
5551 030434 2$:
5552 030434 CALL $BASEI ;BASE IN COMMAND.
5553 030440 000000 .WORD 0 ;MAINTENANCE BITS (L. U. LOOPBACK?)
5554 030442 002630 .WORD BASE ;BASE TABLE ADDRESS.
5555 030444 000522 .WORD DMR ;DMR MODE.
5556 030446 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 030446 104410 TRAP C$ESCAPE
(3) 030450 000022 .WORD L10042-.
5557 030452 CALL $LOOP ;EXTENDED DMR COMMAND TO SET MAINT. BITS
5558 ;IF NEEDED. THIS WILL ALLOW MODEM LOOPBACK
5559 ;IF THE USER REQUESTED IT.
5560 030456 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 030456 104410 TRAP C$ESCAPE
(3) 030460 000012 .WORD L10042-.
5561 030462 CNTRIN ;MACRO FOR CONTROL IN (FULL DUPLEX)
(1) ;***** MACRO EXPANSION *****
(1) 030462 004737 011516 JSR PC, $CNTIN ;CALL CONTROL IN ROUTINE WITH DEFAULT
(1) 030466 000000 .WORD 0 ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1) ;*****
5562 030470 ENDSUB
(3) 030470 L10046:
(3) 030470 104403 TRAP C$ESUB
5563
5564
5565
5566 030472 ENDTST
(3) 030472 L10042:
(3) 030472 104401 TRAP C$ETST
5567
5568 030474 042110 020130 044502 EMT9: .ASCIIZ /HDX BIT SET WHEN IN FDX/
030502 020124 042523 020124
030510 044127 047105 044440
030516 020116 042106 000130
5569 030524 042104 046503 020120 EMT10: .ASCIIZ /DDCMP RUN BIT NOT SET/
030532 052522 020116 044502
030540 020124 047516 020124
030546 042523 000124
5570 030552 042110 020130 044502 EMT11: .ASCIIZ /HDX BIT NOT SET WHEN IN HDX/
030560 020124 047516 020124
030566 042523 020124 044127
030574 047105 044440 020116
030602 042110 000130
5571 030606 040515 047111 027124 EMT12: .ASCIIZ /MAINT. MODE BIT NOT SET/
030614 046440 042117 020105
030622 044502 020124 047516

```

030630 020124 042523 000124

5572 .EVEN

5573

5574

5575

5576

5577

5578

5579

.SBTTL TEST 7 - MODEM WRITE COMMAND

5580

5581

\*\*\*\*\*

5582

TEST 7 - DMR-11

5583

\* MODEM WRITE COMMAND

5584

\* SUBTEST 1 - WRITE DATA PATTERNS INTO THE MODEM WRITE REGISTER.

5585

\* ENSURE THAT ON THE NEXT MODEM READ THAT THE

5586

\* MICROCODE RETURNS THE PATTERN WRITTEN INTO BSEL6.

5587

\* SUBTEST 2 - ATTEMPT TO WRITE BOTH THE HALF-DUPLEX BIT AND THE

5588

\* RTS HOLD BIT. THE MICROCODE SHOULD NOT ALLOW THIS

5589

\* TO HAPPEN. WHEN READING THE MODEM STATUS, ONLY

5590

\* THE HALF-DUPLEX SHOULD BE SET.

5591

\*\*\*\*\*

5592

\*\*\*\*\*

5593

030636

BGNTST

(3)

030636

5594

(3)

030636

5595

030636

(3)

030636

104402

5596

030640

(1)

CLEAR

;MACRO FOR MASTER CLEAR

(1)

030640

004737

011064

JSR PC, \$MSCLR

;\*\*\*\* MACRO EXPANSION \*\*\*\*

;ISSUE A DMR MASTER CLEAR

;\*\*\*\*

5597

030644

ESCAPE TST

;IF ERROR, BR TO TEST END.

(3)

030644

104410

(3)

030646

000232

TRAP

C\$ESCAPE

5599

030650

BASEIN

;BASE IN COMMAND.

(1)

030650

004737

011262

JSR PC, \$BASEI

;\*\*\*\* MACRO EXPANSION \*\*\*\*

;CALL BASE IN ROUTINE WITH DEFAULTS

(1)

030654

004000

.WORD LPLU

;SET LINE UNIT LOOP

(1)

030656

002630

.WORD BASE

;BASE TABLE ADDRESS

(1)

030660

000522

.WORD DMR

;DMR-11 MODE

;\*\*\*\*

5600

5601

030662

ESCAPE TST

;IF ERROR, BR TO TEST END.

(3)

030662

104410

(3)

030664

000214

TRAP

C\$ESCAPE

.WORD

L10047-

5602

5603

030666

012701

000005

MOV #5,R1

;COUNTER

5604

030672

012702

031102

MOV #MODEM,R2

;PATTERN TO WRITE INTO MODEM

5605

030676

10\$:

5606

030676

012237

030712

MOV (R2)+,15\$

;WRITE PATTERN

5607

030702

004737

012064

JSR PC,\$DMRIN

;ISSUE DMR MODE COMMAND

5608

030706

000005

.WORD WMODEM

;WRITE MODEM COMMAND

5609

030710

000377

.WORD 377

;CLEAR ALL BITS IN BSEL6

5610

030712

000000

15\$:

.WORD 0

;SET THE BITS IN BSEL6 (FROM PATTERN)

```

5611 030714 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 030714 104410
(3) 030716 000162 TRAP C$ESCAPE
 .WORD L10047-.
5612
5613 030720 052777 000057 151304 BIS #RQI!RMODEM,@SELO ;SET RQI AND READ MODEM COMMAND
5614 030726 WAIT RDI ;WAIT FOR RDI TO BE SET.
(1)
(1) 030726 004737 010266 JSR PC, $WAIT ;**** MACRO EXPANSION ****
(1) 030732 000000 .WORD 0 ;CALL WAIT ROUTINE
(1) ;FLAG THAT WE'RE WAITING FOR RDI
5615 030734 ESCAPE TST ;****
 ;IF ERROR, EXIT TEST.
(3) 030734 104410 TRAP C$ESCAPE
(3) 030736 000142 .WORD L10047-.
5616 030740
5617 030740 127737 151274 030712 20$: CMPB @BSEL6,15$;DID THE MICROCODE COPY THE BITS?
5618 030746 001406 BEQ 25$;IF YES CONTINUE
5619 030750 013703 030712 MOV 15$,R3 ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
5620 030754 ERRDF 22,EMT13,ERRT2 ;WRITE MODEM ERROR
(4) 030754 104455 TRAP C$ERDF
(5) 030756 000026 .WORD 22
(5) 030760 031146 .WORD EMT13
(5) 030762 031114 .WORD ERRT2
5621 030764 25$:
5622 030764 WAIT RQI ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
(1)
(1) 030764 004737 010702 JSR PC, $CLRQI ;**** MACRO EXPANSION ****
(1) ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
5623 030770 ESCAPE TST ;****
(3) 030770 104410 ;IF ERROR, EXIT TEST.
(3) 030772 000106 TRAP C$ESCAPE
5624 030774 005301 .WORD L10047-.
5625 030776 001337 DEC R1 ;DECREMENT COUNTER
5626 031000 BNE 10$;CONTINUE UNTIL ALL 5 PATTERNS TRIED.
5627 30$:
5628 031000 ENDSUB
(3) 031000
(3) 031000 104403 L10050:
5629 TRAP C$ESUB
5630 031002 BGNSUB
(3) 031002
(3) 031002 104402 T7.2:
5631 TRAP C$BSUB
5632 031004 DMRIN WMODEM,377,21 ;ATTEMPT TO WRITE MODEM HDX AND RTS.
(1)
(1) 031004 004737 012064 JSR PC, $DMRIN ;**** MACRO EXPANSION ****
(1) 031010 000005 .WORD WMODEM ;CALL DMR MODE INPUT ROUTINE
(1) 031012 000377 .WORD 377 ;INPUT COMMAND
(1) 031014 000021 .WORD 21 ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
(1) ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
5633 ;****
5634 031016 ESCAPE TST ;IF ERROR, BR TO END.
(3) 031016 104410 TRAP C$ESCAPE
(3) 031020 000060 .WORD L10047-.
5635 031022 052777 000057 151202 BIS #RQI!RMODEM,@SELO ;SET RQI AND READ MODEM COMMAND.
5636 031030 WAIT RDI ;WAIT FOR RDI TO BE SET
(1) ;**** MACRO EXPANSION ****

```



```

(1) 031030 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 031034 000000 .WORD 0 ;FLAG THAT WE'RE WAITING FOR RDI
(1) ;*****
5637 031036 ESCAPE TST ;IF ERROR, EXIT TEST.
(3) 031036 104410 TRAP C$ESCAPE
(3) 031040 000040 .WORD L10047-.
5638
5639 031042 122777 000020 151170 CMPB #20,@BSEL6 ;IS ONLY HDX SET?
5640 031050 001406 BEQ 10$;IF YES - OK
5641 031052 012703 000021 MOV #21,R3 ;SAVE THE PATTERN FOR THE ERROR MESSAGE.
5642 031056 ERRDF 22,EMT13,ERRT2
(4) 031056 104455 TRAP C$ERRDF
(5) 031060 000026 .WORD 22
(5) 031062 031146 .WORD EMT13
(5) 031064 031114 .WORD ERRT2
5643 031066
5644 031066 10$: WAIT RQI ;CLEAR RQI AND WAIT FOR RDI TO CLEAR.
(1) ;***** MACRO EXPANSION *****
(1) 031066 004737 010702 JSR PC, $CLRQI ;CLEAR RQI AND WAIT FOR IT TO BE CLEARED.
(1) ;*****
5645 031072 SHUTDN
(1) ;***** MACRO EXPANSION *****
(1) 031072 004737 012560 JSR PC, $HALT ;DMR HALT ROUTINE.
(1) ;*****
5646
5647 031076 ENDSUB
(3) 031076
(3) 031076 104403 L10051: TRAP C$ESUB
5648
5649 031100 ENDTST
(3) 031100
(3) 031100 104401 L10047: TRAP C$ETST
5650
5651 031102 000000 000376 000001 MODEM: .WORD 0,376,1,252,357 ;PATTERN TO WRITE INTO MODEM
031110 000252 000357
5652
5653 031114 BGNMSG ERRT2
(3) 031114
5654 031114 PRINTB #FMT19,R3,<B,@BSEL6>
(9) 031114 005046
(9) 031116 157716 151116
(8) 031122 010346
(7) 031124 012746 031172
(6) 031130 012746 000003
(3) 031134 010600
(4) 031136 104414
(4) 031140 062706 000010
5655 031144 ENDMSG
(3) 031144
(3) 031144 104423 L10052: TRAP C$MSG
5656
5657
5658 031146 051127 052111 020105 EMT13: .ASCIIZ /WRITE MODEM ERROR /
031154 047515 042504 020115
031162 051105 047522 020122
031170 000

```

5659 031172 .EVEN  
 5660  
 5661 031172 040445 051127 052117 FMT19: .ASCII /%AWROTE IN BSEL6: %03%A MODEM FORMAT IN BSEL6: %03%N/  
 031200 020105 047111 041040  
 031206 042523 033114 020072  
 031214 047445 022463 020101  
 031222 046440 042117 046505  
 031230 043040 051117 040515  
 031236 020124 047111 041040  
 031244 042523 033114 020072  
 031252 047445 022463 000116

5662 .EVEN  
 5663  
 5664  
 5665  
 5666  
 5667  
 5668  
 5669  
 5670

.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.  
 \*\*\*\*\*

BGNTST

BGNSUB

T8::

T8.1:

TRAP C\$BSUB

CLEAR

;MACRO FOR MASTER CLEAR  
 :\*\*\*\* MACRO EXPANSION \*\*\*\*  
 :ISSUE A DMR MASTER CLEAR  
 :\*\*\*\*

JSR PC, \$MSCLR

ESCAPE TST

;IF ERROR, BR TO TEST END.

TRAP C\$ESCAPE  
 .WORD L10053-

BASEIN

;MACRO FOR BASE IN COMMAND  
 :\*\*\*\* MACRO EXPANSION \*\*\*\*  
 :CALL BASE IN ROUTINE WITH DEFAULTS  
 :SET LINE UNIT LOOP  
 :BASE TABLE ADDRESS  
 :DMR-11 MODE  
 :\*\*\*\*

JSR PC, \$BASEI  
 .WORD LPLU  
 .WORD BASE  
 .WORD DMR

ESCAPE TST

;IF ERROR, BR TO TEST END.

TRAP C\$ESCAPE  
 .WORD L10053-

CNTRIN MAINT

;MACRO FOR CONTROL IN (FULL DUPLEX AND MAINT)

5682 031260  
 (3) 031260  
 5683 031260  
 (3) 031260  
 (3) 031260 104402  
 5684 031262  
 (1)  
 (1) 031262 004737 011064  
 (1)  
 5685  
 5686 031266  
 (3) 031266 104410  
 (3) 031270 000416  
 5687 031272  
 (1)  
 (1) 031272 004737 011262  
 (1) 031276 004000  
 (1) 031300 002630  
 (1) 031302 000522  
 (1)  
 5688  
 5689 031304  
 (3) 031304 104410  
 (3) 031306 000400  
 5690 031310



```

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

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

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```

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

```

```

(1)
(1) 031650 004737 012560 JSR PC, $HALT ;**** MACRO EXPANSION ****
(1) ;DMR HALT ROUTINE.
5765 031654 123727 002633 000003 CMPB BASE+3,#3 ;****
5766 031662 001004 BNE 35$;NAKS REC. - NO BUFFER = 3?
5767 031664 123727 002636 000003 CMPB BASE+6,#3 ;IF NOT ERROR
5768 031672 001404 BEQ 40$;NAKS SENT - NO BUFFER = 3?
5769 031674 35$: ;IF OK - SKIP.
5770 031674 ERRDF 23,EMT20,ERRT4
(4) 031674 104455 TRAP C$ERDF
(5) 031676 000027 .WORD 23
(5) 031700 031746 .WORD EMT20
(5) 031702 031710 .WORD ERRT4
5771
5772 031704 40$:
5773 031704 ENDSUB
(3) 031704 L10055:
(3) 031704 104403 TRAP C$ESUB
5774 031706 ENDTST
(3) 031706 L10053:
(3) 031706 104401 TRAP C$ETST
5775
5776
5777 031710 BGNMSG ERRT4
(3) 031710
5778 031710 PRINTB #FMG7,<B,BASE+3>,<B,BASE+6> ERRT4::
(9) 031710 005046 CLR -(SP)
(9) 031712 153716 002636 BISB BASE+6,(SP)
(8) 031716 005046 CLR -(SP)
(8) 031720 153716 002633 BISB BASE+3,(SP)
(7) 031724 012746 016557 MOV #FMG7,-(SP)
(6) 031730 012746 000003 MOV #3,-(SP)
(3) 031734 010600 MOV SP,R0
(4) 031736 104414 TRAP C$PNTB
(4) 031740 062706 000010 ADD #10,SP
5779 031744 ENDMSG
(3) 031744 L10056:
(3) 031744 104423 TRAP C$MSG
5780
5781 031746 040516 051513 042440 EMT20: .ASCIZ /NAKS ERROR/
031754 051122 051117 000
5782 .EVEN
5783
5784
5785
5786
5787
5788 .SBTTL TEST 9 - NON-EXISTENT MEMORY ERROR
5789
5790 ;*****
5791 ;* TEST 9 - DMR-11
5792 ;* NON-EXISTENT MEMORY (NXM) ERROR CHECK
5793 ;* PERFORM DMR COMMANDS USING NXM ADDRESSES; VERIFY THAT NXM ERROR IS
5794 ;* REPORTED IN EACH OF THE FOLLOWING SUBTESTS:
5795 ;* SUBTEST 1 - BASE IN RESUME COMMAND - BASE TABLE ADDRESS IS NXM
5796 ;* SUBTEST 2 - BA/CC IN RECEIVE COMMAND - BA/CC IN ADDRESS IS NXM

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|      |        |        |        |        |  |                                     |                                                                 |       |           |
|------|--------|--------|--------|--------|--|-------------------------------------|-----------------------------------------------------------------|-------|-----------|
| 5797 |        |        |        |        |  | :*                                  | SUBTEST 3 - BA/CC IN TRANSMIT COMMAND - BA/CC IN ADDRESS IS NXM |       |           |
| 5798 |        |        |        |        |  | :                                   | *                                                               |       |           |
| 5799 |        |        |        |        |  | :                                   | *                                                               |       |           |
| 5800 | 031762 |        |        |        |  | *****                               |                                                                 |       |           |
| (3)  | 031762 |        |        |        |  | BGNTST                              |                                                                 |       |           |
| 5801 | 031762 |        |        |        |  |                                     | T9::                                                            |       |           |
| (3)  | 031762 |        |        |        |  | BGNSUB                              |                                                                 |       |           |
| (3)  | 031762 | 104402 |        |        |  |                                     | T9.1:                                                           |       |           |
| 5802 | 031764 |        |        |        |  | CLEAR                               |                                                                 | TRAP  | C\$BSUB   |
| (1)  |        |        |        |        |  |                                     | ;MASTER CLEAR MACRO                                             |       |           |
| (1)  | 031764 | 004737 | 011064 |        |  | JSR PC, \$MSCLR                     | ;**** MACRO EXPANSION ****                                      |       |           |
| (1)  |        |        |        |        |  |                                     | ;ISSUE A DMR MASTER CLEAR                                       |       |           |
| 5803 |        |        |        |        |  |                                     | ;****                                                           |       |           |
| 5804 | 031770 |        |        |        |  | ESCAPE TST                          | ;IF ERROR, BR TO TEST END                                       |       |           |
| (3)  | 031770 | 104410 |        |        |  |                                     |                                                                 | TRAP  | C\$ESCAPE |
| (3)  | 031772 | 000500 |        |        |  |                                     |                                                                 | .WORD | L10057-   |
| 5805 | 031774 |        |        |        |  | BASEIN                              | ;BASE IN COMMAND - DMR MODE                                     |       |           |
| (1)  |        |        |        |        |  |                                     | ;**** MACRO EXPANSION ****                                      |       |           |
| (1)  | 031774 | 004737 | 011262 |        |  | JSR PC, \$BASEI                     | ;CALL BASE IN ROUTINE WITH DEFAULTS                             |       |           |
| (1)  | 032000 | 004000 |        |        |  | .WORD LPLU                          | ;SET LINE UNIT LOOP                                             |       |           |
| (1)  | 032002 | 002630 |        |        |  | .WORD BASE                          | ;BASE TABLE ADDRESS                                             |       |           |
| (1)  | 032004 | 000522 |        |        |  | .WORD DMR                           | ;DMR-11 MODE                                                    |       |           |
| 5806 |        |        |        |        |  |                                     | ;****                                                           |       |           |
| 5807 | 032006 |        |        |        |  | ESCAPE TST                          | ;IF ERROR, BR TO TEST END                                       |       |           |
| (3)  | 032006 | 104410 |        |        |  |                                     |                                                                 | TRAP  | C\$ESCAPE |
| (3)  | 032010 | 000462 |        |        |  |                                     |                                                                 | .WORD | L10057-   |
| 5808 | 032012 |        |        |        |  | SHUTDN                              | ;HALT                                                           |       |           |
| (1)  |        |        |        |        |  |                                     | ;**** MACRO EXPANSION ****                                      |       |           |
| (1)  | 032012 | 004737 | 012560 |        |  | JSR PC, \$HALT                      | ;DMR HALT ROUTINE.                                              |       |           |
| (1)  |        |        |        |        |  |                                     | ;****                                                           |       |           |
| 5809 | 032016 |        |        |        |  | ESCAPE TST                          | ;IF ERROR, BR TO TEST END.                                      |       |           |
| (3)  | 032016 | 104410 |        |        |  |                                     |                                                                 | TRAP  | C\$ESCAPE |
| (3)  | 032020 | 000452 |        |        |  |                                     |                                                                 | .WORD | L10057-   |
| 5810 | 032022 | 012737 | 000001 | 002360 |  | MOV #CNTRL,ERROR                    | ;THIS FLAG WILL INHIBIT CONTROL OUT                             |       |           |
| 5811 |        |        |        |        |  |                                     | ;ERROR REPORTING - BECAUSE WE EXPECT ONE.                       |       |           |
| 5812 |        |        |        |        |  |                                     |                                                                 |       |           |
| 5813 |        |        |        |        |  |                                     | ;BASE IN RESUME COMMAND WITH NXM BASE TABLE.                    |       |           |
| 5814 | 032030 |        |        |        |  | BASEIN 0,160000,BIT15!BIT14!RES!DMR |                                                                 |       |           |
| (1)  |        |        |        |        |  |                                     | ;**** MACRO EXPANSION ****                                      |       |           |
| (1)  | 032030 | 004737 | 011262 |        |  | JSR PC, \$BASEI                     | ;CALL BASE IN ROUTINE                                           |       |           |
| (1)  | 032034 | 000000 |        |        |  | .WORD 0                             | ;MAINTENANCE MODE BITS TO SET IN BSEL1                          |       |           |
| (1)  | 032036 | 160000 |        |        |  | .WORD 160000                        | ;BASE TABLE ADDRESS                                             |       |           |
| (1)  | 032040 | 150522 |        |        |  | .WORD BIT15!BIT14!RES!DMR           | ;MODE                                                           |       |           |
| 5815 |        |        |        |        |  |                                     | ;****                                                           |       |           |
| 5816 | 032042 |        |        |        |  | WAIT RDO                            | ;WAIT FOR RDO TO BE SET                                         |       |           |
| (1)  |        |        |        |        |  |                                     | ;**** MACRO EXPANSION ****                                      |       |           |
| (1)  | 032042 | 004737 | 010266 |        |  | JSR PC, \$WAIT                      | ;CALL WAIT ROUTINE                                              |       |           |
| (1)  | 032046 | 000001 |        |        |  | .WORD 1                             | ;FLAG THAT WE'RE WAITING FOR RDO                                |       |           |
| (1)  |        |        |        |        |  |                                     | ;****                                                           |       |           |
| 5817 | 032050 | 032777 | 000001 | 150156 |  | BIT #CNTRL,\$SEL2                   | ;IS THERE A CONTROL OUT REPORTED ?                              |       |           |
| 5818 | 032056 | 001005 |        |        |  | BNE 10\$                            | ;IF YES, PROCEED.                                               |       |           |
| 5819 | 032060 |        |        |        |  | ERRDF 8,EMG8,ERRG2                  | ;EXPECTED CONTROL OUT                                           |       |           |
| (4)  | 032060 | 104455 |        |        |  |                                     |                                                                 | TRAP  | C\$ERDF   |
| (5)  | 032062 | 000010 |        |        |  |                                     |                                                                 | .WORD | 8         |

| Line | Address | Offset               | Label  | Operation                        | Comments                                    | Trap    | Word      |
|------|---------|----------------------|--------|----------------------------------|---------------------------------------------|---------|-----------|
| (5)  | 032064  | 020072               |        |                                  |                                             |         | EMG8      |
| (5)  | 032066  | 015070               |        |                                  |                                             |         | ERRG2     |
| 5820 | 032070  | 000410               |        |                                  |                                             |         |           |
| 5821 | 032072  |                      | 10\$:  | BR 20\$                          | :EXIT                                       |         |           |
| 5822 | 032072  | 032777 000400 150140 |        | BIT #NXM,@SEL6                   | :IS THE NXM FLAG SET?                       |         |           |
| 5823 | 032100  | 001004               |        | BNE 20\$                         | :IF YES - ERROR REPORTED CORRECTLY          |         |           |
| 5824 | 032102  |                      |        | ERRDF 9,EMG9,ERRG2               | :UNEXPECTED CONTROL OUT RECEIVED            |         |           |
| (4)  | 032102  | 104455               |        |                                  |                                             | TRAP    | C\$ERDF   |
| (5)  | 032104  | 000011               |        |                                  |                                             | .WORD   | 9         |
| (5)  | 032106  | 020136               |        |                                  |                                             | .WORD   | EMG9      |
| (5)  | 032110  | 015070               |        |                                  |                                             | .WORD   | ERRG2     |
| 5825 | 032112  |                      | 20\$:  |                                  |                                             |         |           |
| 5826 | 032112  | 042777 000207 150114 |        | BIC #RDO!CMD,@SEL2               | :CLEAR RDO AND THE COMMAND BITS             |         |           |
| 5827 | 032120  | 005037 002360        |        | CLR ERROR                        | :ALLOW ERROR REPORTING                      |         |           |
| 5828 | 032124  |                      | ENDSUB |                                  |                                             |         |           |
| (3)  | 032124  |                      |        |                                  |                                             |         |           |
| (3)  | 032124  | 104403               |        |                                  |                                             | L10060: |           |
| 5829 |         |                      |        |                                  |                                             | TRAP    | C\$ESUB   |
| 5830 | 032126  |                      | BGNSUB |                                  |                                             |         |           |
| (3)  | 032126  |                      |        |                                  |                                             |         |           |
| (3)  | 032126  | 104402               |        |                                  |                                             | T9.2:   |           |
| 5831 | 032130  |                      |        |                                  |                                             | TRAP    | C\$BSUB   |
| (1)  |         |                      |        | CLEAR                            | :MACRO FOR MASTER CLEAR                     |         |           |
| (1)  | 032130  | 004737 011064        |        | JSR PC, \$MSCLR                  | :**** MACRO EXPANSION ****                  |         |           |
| (1)  |         |                      |        |                                  | :ISSUE A DMR MASTER CLEAR                   |         |           |
| 5832 |         |                      |        |                                  | :****                                       |         |           |
| 5833 | 032134  |                      |        | ESCAPE TST                       | :IF ERROR, BR TO TEST END.                  |         |           |
| (3)  | 032134  | 104410               |        |                                  |                                             | TRAP    | C\$ESCAPE |
| (3)  | 032136  | 000334               |        |                                  |                                             | .WORD   | L10057-   |
| 5834 | 032140  |                      |        | BASEIN                           | :MACRO FOR BASE IN COMMAND                  |         |           |
| (1)  |         |                      |        |                                  | :**** MACRO EXPANSION ****                  |         |           |
| (1)  | 032140  | 004737 011262        |        | JSR PC, \$BASEI                  | :CALL BASE IN ROUTINE WITH DEFAULTS         |         |           |
| (1)  | 032144  | 004000               |        | .WORD LPLU                       | :SET LINE UNIT LOOP                         |         |           |
| (1)  | 032146  | 002630               |        | .WORD BASE                       | :BASE TABLE ADDRESS                         |         |           |
| (1)  | 032150  | 000522               |        | .WORD DMR                        | :DMR-11 MODE                                |         |           |
| (1)  |         |                      |        |                                  | :****                                       |         |           |
| 5835 |         |                      |        |                                  |                                             |         |           |
| 5836 | 032152  |                      |        | ESCAPE TST                       | :IF ERROR, BR TO TEST END.                  |         |           |
| (3)  | 032152  | 104410               |        |                                  |                                             | TRAP    | C\$ESCAPE |
| (3)  | 032154  | 000316               |        |                                  |                                             | .WORD   | L10057-   |
| 5837 | 032156  |                      |        | CNTRIN                           | :MACRO FOR CONTROL IN (FULL DUPLEX)         |         |           |
| (1)  |         |                      |        |                                  | :**** MACRO EXPANSION ****                  |         |           |
| (1)  | 032156  | 004737 011516        |        | JSR PC, \$CNTIN                  | :CALL CONTROL IN ROUTINE WITH DEFAULT       |         |           |
| (1)  | 032162  | 000000               |        | .WORD 0                          | :SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START. |         |           |
| (1)  |         |                      |        |                                  | :****                                       |         |           |
| 5838 |         |                      |        |                                  |                                             |         |           |
| 5839 | 032164  |                      |        | ESCAPE TST                       | :IF ERROR, BR TO TEST END.                  |         |           |
| (3)  | 032164  | 104410               |        |                                  |                                             | TRAP    | C\$ESCAPE |
| (3)  | 032166  | 000304               |        |                                  |                                             | .WORD   | L10057-   |
| 5840 | 032170  | 012737 000001 002360 |        | MOV #CNTRL,ERROR                 | :INHIBIT CONTROL OUT ERROR REPORTING AGAIN. |         |           |
| 5841 |         |                      |        |                                  |                                             |         |           |
| 5842 |         |                      |        |                                  | :BA/CC IN REC. COMMAND WITH NXM             |         |           |
| 5843 |         |                      |        |                                  | :ADDR = 760000 AND A CHARACTER COUNT = 3.   |         |           |
| 5844 | 032176  |                      |        | BACCIR 160000,BIT15:BIT14!RCOUNT |                                             |         |           |
| (1)  |         |                      |        |                                  | :**** MACRO EXPANSION ****                  |         |           |
| (1)  | 032176  | 004737 012274        |        | JSR PC, \$BACC                   | :CALL BA/CC IN ROUTINE                      |         |           |



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

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(1) 032324 004000 .WORD LPLU ;SET LINE UNIT LOOP
(1) 032326 002630 .WORD BASE ;BASE TABLE ADDRESS
(1) 032330 000522 .WORD DMR ;DMR-11 MODE
(1) *****

5868
5869 032332 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032332 104410 TRAP C$ESCAPE
(3) 032334 000136 .WORD L10057-.
5870 032336 CNTRIN ;MACRO FOR CONTROL IN (FULL DUPLEX)
(1) ***** MACRO EXPANSION *****
(1) 032336 004737 011516 JSR PC, $CNTIN ;CALL CONTROL IN ROUTINE WITH DEFAULT
(1) 032342 000000 .WORD 0 ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1) *****

5871
5872 032344 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032344 104410 TRAP C$ESCAPE
(3) 032346 000124 .WORD L10057-.
5873 032350 BACCIR ;BA/CC IN RCV
(1) ***** MACRO EXPANSION *****
(1) 032350 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1) 032354 000044 .WORD RQI!BACC ;BA/CC IN RECEIVE COMMAND
(1) 032356 002562 .WORD RBUF ;RECEIVE BUFFER
(1) 032360 000044 .WORD RCOUNT ;RECEIVE CHARACTER COUNT
(1) *****

5874
5875 032362 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032362 104410 TRAP C$ESCAPE
(3) 032364 000106 .WORD L10057-.
5876 032366 012737 000001 002360 MOV #CNTRL,ERROR ;INHIBIT CONTROL OUT ERROR REPORTING AGAIN.
5877
5878 ;BA/CC IN XMIT COMMAND WITH NXM BUFFER
5879 ;ADDRESS (760000) AND A CHAR. COUNT = 1
5880 032374 BACCIT 160000,BIT15!BIT14!1
(1) ***** MACRO EXPANSION *****
(1) 032374 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE
(1) 032400 000040 .WORD RQI!BACC ;BA/CC IN TRANSMIT COMMAND
(1) 032402 160000 .WORD 160000 ;BUFFER ADDRESS BITS 0-15
(1) 032404 140001 .WORD BIT15!BIT14!1 ;BA BITS 16 & 17 AND CHAR. COUNT
(1) *****

5881
5882 032406 WAIT RDO ;WAIT FOR RDO TO BE SET.
(1) ***** MACRO EXPANSION *****
(1) 032406 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 032412 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) *****

5883 032414 032777 000001 147612 BIT #CNTRL,@SEL2 ;IS THERE A CONTROL OUT REPORTED ?
5884 032422 001005 BNE 10$;IF YES, PROCEED.
5885 032424 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT
(4) 032424 104455 TRAP C$ERRDF
(5) 032426 000010 .WORD 8
(5) 032430 020072 .WORD EMG8
(5) 032432 015070 .WORD ERRG2
5886 032434 000410 BR 20$;EXIT
5887 032436 10$:
5888 032436 032777 000400 147574 BIT #NXM,@SEL6 ;IS THE NXM FLAG SET?
5889 032444 001004 BNE 20$;IF YES - ERROR REPORTED CORRECTLY

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5890 032446 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED CONTROL OUT RECEIVED  
 (4) 032446 104455 TRAP C\$ERDF  
 (5) 032450 000011 .WORD 9  
 (5) 032452 020136 .WORD EMG9  
 (5) 032454 015070 .WORD ERRG2

5891 032456 20\$: BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS.  
 5892 032456 042777 000207 147550 CLR ERROR ;DON'T INHIBIT CONTROL OUT ERRORS  
 5893 032464 005037 002360 ENDSUB  
 5894 032470 L10062: TRAP C\$ESUB  
 (3) 032470 104403  
 (3) 032470  
 5895  
 5896 032472 ENDTST L10057: TRAP C\$ETST  
 (3) 032472  
 (3) 032472 104401

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5904  
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5907  
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5910  
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 5912 032474

(3) 032474  
 5913 032474  
 (1)

(1) 032474 004737 011064  
 (1)  
 5914

5915 032500  
 (3) 032500 104410  
 (3) 032502 000172

5916 032504  
 (1)  
 (1) 032504 004737 011262

(1) 032510 004000  
 (1) 032512 002630  
 (1) 032514 000522

(1)  
 5917  
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5920  
 5921  
 5922  
 5923 032516

(1)  
 (1) 032516 004737 012064

.SBTTL TEST 10 - TIME OUT ERROR

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

CLEAR ;MACRO FOR MASTER CLEAR T10::  
 JSR PC, \$MSCLR ;\*\*\*\* MACRO EXPANSION \*\*\*\*  
 ;ISSUE A DMR MASTER CLEAR  
 ;\*\*\*\*  
 ESCAPE TST ;IF ERROR, BR TO TEST END. TRAP C\$ESCAPE  
 .WORD L10063-  
 BASEIN ;MACRO FOR BASE IN COMMAND  
 JSR PC, \$BASEI ;\*\*\*\* MACRO EXPANSION \*\*\*\*  
 .WORD LPLU ;CALL BASE IN ROUTINE WITH DEFAULTS  
 .WORD BASE ;SET LINE UNIT LOOP  
 .WORD DMR ;BASE TABLE ADDRESS  
 ;DMR-11 MODE  
 ;\*\*\*\*  
 ;SET THRESHOLD VALUES AS FOLLOWS:  
 ;BSEL4 = NAKS RECEIVED (377)  
 ;BSEL5 = NAKS TRANSMITTED (377)  
 ;BSEL6 = REP/SEL SENT (1)  
 ;BSEL7 = NO BUFFER (377)  
 DMRIN THRESH,177777,177401  
 JSR PC, \$DMRIN ;\*\*\*\* MACRO EXPANSION \*\*\*\*  
 ;CALL DMR MODE INPUT ROUTINE

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(1) 032522 000013 .WORD THRESH ;INPUT COMMAND
(1) 032524 177777 .WORD 177777 ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
(1) 032526 177401 .WORD 177401 ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
(1) ;*****
5924
5925 032530 ESCAPE TST ;IF ERROR, BR TO TEST END
(3) 032530 104410 TRAP C$ESCAPE
(3) 032532 000142 .WORD L10063-.
5926 032534 DMRIN TIMER,0,1 ;SET REP/SEL TIMER TO MINIMUM (100 MSECs)
(1) ;***** MACRO EXPANSION *****
(1) 032534 004737 012064 JSR PC, $DMRIN ;CALL DMR MODE INPUT ROUTINE
(1) 032540 000012 .WORD TIMER ;INPUT COMMAND
(1) 032542 000000 .WORD 0 ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
(1) 032544 000001 .WORD 1 ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
(1) ;*****
5927
5928 032546 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032546 104410 TRAP C$ESCAPE
(3) 032550 000124 .WORD L10063-.
5929 032552 CNTRIN ;MACRO FOR CONTROL IN (FULL DUPLEX)
(1) ;***** MACRO EXPANSION *****
(1) 032552 004737 011516 JSR PC, $CNTIN ;CALL CONTROL IN ROUTINE WITH DEFAULT
(1) 032556 000000 .WORD 0 ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1) ;*****
5930
5931 032560 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032560 104410 TRAP C$ESCAPE
(3) 032562 000112 .WORD L10063-.
5932
5933
5934 032564 DMRIN WMODEM,0,BIT4 ;BLIND THE RECEIVER BY GOING INTO HDX.
(1) ;USE WRITE MODEM COMMAND TO SET HALF DUPLEX.
(1) 032564 004737 012064 JSR PC, $DMRIN ;***** MACRO EXPANSION *****
(1) 032570 000005 .WORD WMODEM ;CALL DMR MODE INPUT ROUTINE
(1) 032572 000000 .WORD 0 ;INPUT COMMAND
(1) 032574 000020 .WORD BIT4 ;SEL4 VALUE (OR BITS TO CLEAR IN BSEL6)
(1) ;SEL6 VALUE (OR BITS TO SET IN BSEL6)
(1) ;*****
5935
5936 032576 BACCIT ;BA/CC IN XMIT BUFFER
(1) ;***** MACRO EXPANSION *****
(1) 032576 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1) 032602 000040 .WORD RQI!BACC ;BA/CC IN TRANSMIT COMMAND
(1) 032604 002512 .WORD TBUF ;TRANSMIT BUFFER ADDRESS
(1) 032606 000044 .WORD TCOUNT ;TRANSMIT CHARACTER COUNT
(1) ;*****
5937
5938 032610 ESCAPE TST ;IF ERROR, EXIT
(3) 032610 104410 TRAP C$ESCAPE
(3) 032612 000062 .WORD L10063-.
5939 032614 WAIT RDO ;WAIT FOR THE READY OUT.
(1) ;***** MACRO EXPANSION *****
(1) 032614 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 032620 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;*****
5940 032622 ESCAPE TST ;IF ERROR, EXIT.
(3) 032622 104410 TRAP C$ESCAPE

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(3) 032624 000050
5941 032626 032777 000001 147400 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT
5942 032634 001005 BNE 10$;IF YES, PROCEED.
5943 032636 ERRDF 8,EMG8,ERRG2 ;EXPECTED A CONTROL OUT.
(4) 032636 104455
(5) 032640 000010 TRAP C$ERDF
(5) 032642 020072 .WORD 8
(5) 032644 015070 .WORD EMG8
5944 032646 000410 .WORD ERRG2
5945 032650
5946 032650 032777 000002 147362 10$: BR 20$;EXIT
5947 032656 001004 BIT #TOUT,@SEL6 ;WAS THE TIME OUT REPORTED?
5948 032660 BNE 20$;IF YES, EXIT
(4) 032660 104455 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED ERROR.
(5) 032662 000011 TRAP C$ERDF
(5) 032664 020136 .WORD 9
(5) 032666 015070 .WORD EMG9
5949 032670 .WORD ERRG2
5950 032670 20$: SHUTDN
(1)
(1) 032670 004737 012560 JSR PC, $HALT ;**** MACRO EXPANSION ****
(1) JSR PC, $HALT ;DMR HALT ROUTINE.
5951 ;****
5952 032674 ENDTST
(3) 032674
(3) 032674 104401 L10063: TRAP C$ETST
5953
5954
5955
5956
5957 .SBTTL TEST 11 - MESSAGE TOO LONG ERROR
5958
5959 ;*****
5960 ;* TEST 11 - DMR-11
5961 ;* MESSAGE TOO LONG - TRANSMIT A MESSAGE THAT IS TOO LONG FOR THE
5962 ;* RECEIVE BUFFER AND VERIFY THAT THE 'TOO LONG' ERROR IS RECEIVED.
5963 ;*
5964 ;*****
5965 032676 BGNTST
(3) 032676
5966 032676 T11::
(1) CLEAR ;MACRO FOR MASTER CLEAR
(1) 032676 004737 011064 JSR PC, $MSCLR ;**** MACRO EXPANSION ****
(1) JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
5967 ;****
5968 032702 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032702 104410 TRAP C$ESCAPE
(3) 032704 000150 .WORD L10064-.
5969 032706
(1) BASEIN ;MACRO FOR BASE IN COMMAND
(1) 032706 004737 011262 JSR PC, $BASEI ;**** MACRO EXPANSION ****
(1) 032712 004000 ;CALL BASE IN ROUTINE WITH DEFAULTS
(1) 032714 002630 .WORD LPLU ;SET LINE UNIT LOOP
(1) 032716 000522 .WORD BASE ;BASE TABLE ADDRESS
(1) .WORD DMR ;DMR-11 MODE
5970 ;****

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5971 032720 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032720 104410
(3) 032722 000132 TRAP C$ESCAPE
5972 032724 CNTRIN ;MACRO FOR CONTROL IN (FULL DUPLEX)
(1) ;**** MACRO EXPANSION ****
(1) 032724 004737 011516 JSR PC, $CNTIN ;CALL CONTROL IN ROUTINE WITH DEFAULT
(1) 032730 000000 .WORD 0 ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1) ;****
5973
5974 032732 ESCAPE TST ;IF ERROR, BR TO TEST END.
(3) 032732 104410 TRAP C$ESCAPE
(3) 032734 000120 .WORD L10064-.
5975 032736 BACCIR RBUF,RCOUNT/2 ;SET UP THE RECEIVE BUFFER WITH 1/2 BUF. SPACE
(1) ;**** MACRO EXPANSION ****
(1) 032736 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE
(1) 032742 000044 .WORD RQI!BACCR ;BA/CC IN RECEIVE COMMAND
(1) 032744 002562 .WORD RBUF ;BUFFER ADDRESS BITS 0-15
(1) 032746 000022 .WORD RCOUNT/2 ;BA BITS 16/17 AND CHAR. COUNT
(1) ;****
5976
5977 032750 012737 000001 002360 MOV #CNTRL,ERROR ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
5978 ;REPORTING BECAUSE WE ARE INTENTIONALLY
5979 ;CAUSING ONE IN THIS TEST.
5980 032756 BACCIT ;BA/CC IN XMIT COMMAND
(1) ;**** MACRO EXPANSION ****
(1) 032756 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1) 032762 000040 .WORD RQI!BACCT ;BA/CC IN TRANSMIT COMMAND
(1) 032764 002512 .WORD TBUF ;TRANSMIT BUFFER ADDRESS
(1) 032766 000044 .WORD TCOUNT ;TRANSMIT CHARACTER COUNT
(1) ;****
5981 10$:
5982 032770 WAIT RDO ;WAIT FOR RDO TO BE SET
(1) ;**** MACRO EXPANSION ****
(1) 032770 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 032774 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;****
5983 032776 ESCAPE TST ;IF RDO NOT SET, BR TO TEST END.
(3) 032776 104410 TRAP C$ESCAPE
(3) 033000 000054 .WORD L10064-.
5984 033002 032777 000001 147224 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT?
5985 033010 001005 BNE 20$;IF YES, PROCEED
5986 033012 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT.
(4) 033012 104455 TRAP C$ERDF
(5) 033014 000010 .WORD 8
(5) 033016 020072 .WORD EMG8
(5) 033020 015070 .WORD ERRG2
5987 033022 000410 BR 40$;EXIT
5988 033024 20$:
5989 033024 032777 000020 147206 BIT #TOLONG,@SEL6 ;IS THE TOO LONG BIT SET?
5990 033032 001004 BNE 40$;IF YES, TEST OK - FINISH UP.
5991 033034 30$:
5992 033034 ERRDF 9,EMG9,ERRG2 ;WE'RE NOT GETTING EXPECTED RESULT
(4) 033034 104455 TRAP C$ERDF
(5) 033036 000011 .WORD 9
(5) 033040 020136 .WORD EMG9
(5) 033042 015070 .WORD ERRG2

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5993
5994 033044
5995 033044 005037 002360
5996 033050
(1)
(1) 033050 004737 012560
(1)
5997
5998
5999
6000 033054
(3) 033054
(3) 033054 104401
6001
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6016
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6018
6019
6020 033056
(3) 033056
6021 033056
(3) 033056
(3) 033056 104402
6022
6023 033060
(1)
(1) 033060 004737 011064
(1)
6024
6025 033064
(1)
(1) 033064 004737 011262
(1) 033070 004000
(1) 033072 002630
(1) 033074 000522
(1)
6026
6027 033076 012737 000001 002360
6028
6029
6030 033104
(1)

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40$:
CLR ERROR ;RESTORE ERROR FLAG TO NORMAL STATE.
SHUTDN ;HALT THE DMR.
 ;**** MACRO EXPANSION ****
JSR PC, $HALT ;DMR HALT ROUTINE.
 ;****

ENDTST

L10064:
TRAP C$SETST

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

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

BASEIN
 ;**** MACRO EXPANSION ****
JSR PC, $BASEI ;CALL BASE IN ROUTINE WITH DEFAULTS
 ;SET LINE UNIT LOOP
 ;BASE TABLE ADDRESS
 ;DMR-11 MODE
 ;****

MOV #CNTRL,ERROR ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
 ;REPORTING BECAUSE WE ARE INTENTIONALLY
 ;CAUSING ONE IN THIS TEST.
 ;SECOND BASE IN
 ;**** MACRO EXPANSION ****
BASEIN

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(1) 033104 004737 011262 JSR PC, $BASEI ;CALL BASE IN ROUTINE WITH DEFAULTS
(1) 033110 004000 .WORD LPLU ;SET LINE UNIT LOOP
(1) 033112 002630 .WORD BASE ;BASE TABLE ADDRESS
(1) 033114 000522 .WORD DMR ;DMR-11 MODE
(1) *****

6031 033116 WAIT RDO ;WAIT FOR RDO TO BE SET
(1) ***** MACRO EXPANSION *****
(1) 033116 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 033122 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) *****

6033 033124 ESCAPE TST ;IF RDO NOT SET, BR TO TEST END.
(3) 033124 104410 TRAP C$ESCAPE
(3) 033126 000632 .WORD L10065-.
6034 033130 032777 000001 147076 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT?
6035 033136 001005 BNE 10$;IF YES, PROCEED.
6036 033140 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT
(4) 033140 104455 TRAP C$ERDF
(5) 033142 000010 .WORD 8
(5) 033144 020072 .WORD EMG8
(5) 033146 015070 .WORD ERRG2
6037 033150 000410 BR 15$;EXIT
6038 033152 10$: BIT #HALTC,@SEL6 ;IS THE HALT - PROCEDURE ERROR BIT SET?
6039 033152 032777 001000 147060 BNE 15$;IF YES - ERROR REPORTED CORRECTLY
6040 033160 001004 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED CONTROL OUT RECEIVED
(4) 033162 104455 TRAP C$ERDF
(5) 033164 000011 .WORD 9
(5) 033166 020136 .WORD EMG9
(5) 033170 015070 .WORD ERRG2
6042 033172 15$: BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS
6043 033172 042777 000207 147034 CLR ERROR ;RESTORE FLAG
6044 033200 005037 002360 ENDSUB
(3) 033204 L10066: TRAP C$ESUB
(3) 033204 104403 BGNSUB
6046 033206 T12.2: TRAP C$BSUB
(3) 033206 104402
(3) 033206
6048 033210 CLEAR ;MASTER CLEAR MACRO
(1) (1) 033210 004737 011064 JSR PC, $MSCLR ;***** MACRO EXPANSION *****
(1) ;ISSUE A DMR MASTER CLEAR
(1) *****

6050 033214 012737 000001 002360 MOV #CNTRL,ERROR ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
6051 ;REPORTING BECAUSE WE ARE INTENTIONALLY
6052 ;CAUSING ONE IN THIS TEST.
6053 033222 005037 002260 CLR DMRFLG ;CLEAR FLAG THAT IS SET IN BASEIN IN ORDER
6054 ;TO FLAG THAT A CONTROL OUT-DMR RUN MODE
6055 ;COMMAND IS EXPECTED (THIS FLAG WAS SET IN
6056 ;THE PREVIOUS SUBTEST BASEIN)
6057 033226 CNTRIN ;CONTROL IN
(1) (1) 033226 004737 011516 JSR PC, $CNTIN ;***** MACRO EXPANSION *****
(1) ;CALL CONTROL IN ROUTINE WITH DEFAULTT

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(1) 033232 000000 .WORD 0 ;SEL6 - FULL DUPLEX, RUN MODE, 1 SEC START.
(1) ;****
6059
6060 033234 WAIT RDO ;WAIT FOR RDO TO BE SET
(1) ;**** MACRO EXPANSION ****
(1) 033234 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 033240 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;****
6061 033242 ESCAPE TST ;IF RDO NOT SET, BR TO TEST END.
(3) 033242 104410 ;
(3) 033244 000514 TRAP C$ESCAPE
6062 033246 032777 000001 146760 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT?
6063 033254 001005 BNE 10$;IF YES - PROCEED.
6064 033256 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT
(4) 033256 104455 ;
(5) 033260 000010 TRAP C$ERDF
(5) 033262 020072 .WORD 8
(5) 033264 015070 .WORD EMG8
6065 033266 000410 .WORD ERRG2
6066 033270 BR 15$;EXIT
6067 033270 032777 001000 146742 10$: BIT #HALTC,@SEL6 ;IS THE HALT - PROCEDURE ERROR BIT SET?
6068 033276 001004 BNE 15$;IF YES - ERROR REPORTED CORRECTLY
6069 033300 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED CONTROL OUT RECEIVED
(4) 033300 104455 ;
(5) 033302 000011 TRAP C$ERDF
(5) 033304 020136 .WORD 9
(5) 033306 015070 .WORD EMG9
6070 033310 15$: .WORD ERRG2
6071 033310 042777 000207 146716 BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS.
6072 033316 005037 002360 CLR ERROR ;RESTORE FLAG
6073 033322 ENDSUB
(3) 033322 104403 L10067: TRAP C$ESUB
6074
6075 033324 BGNSUB
(3) 033324 104402 T12.3: TRAP C$BSUB
(3) 033324
6076
6077 033326 CLEAR ;MASTER CLEAR MACRO
(1) ;**** MACRO EXPANSION ****
(1) 033326 004737 011064 JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
(1) ;****
6078
6079 033332 012737 000001 002360 MOV #CNTRL,ERROR ;THIS FLAG WILL DISABLE ANY CONTROL OUT ERROR
6080 ;REPORTING BECAUSE WE ARE INTENTIONALLY
6081 ;CAUSING ONE IN THIS TEST.
6082 033340 BACCIR ;BA/CC IN RCV. COMMAND
(1) ;**** MACRO EXPANSION ****
(1) 033340 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1) 033344 000044 .WORD RQI!BACCR ;BA/CC IN RECEIVE COMMAND
(1) 033346 002562 .WORD RBUF ;RECEIVE BUFFER
(1) 033350 000044 .WORD RCOUNT ;RECEIVE CHARACTER COUNT
(1) ;****
6083
6084 033352 WAIT RDO ;WAIT FOR RDO TO BE SET
(1) ;**** MACRO EXPANSION ****

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(1) 033352 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 033356 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;*****
6085 033360 ESCAPE TST ;IF RDO NOT SET, BR TO TEST END.
(3) 033360 104410 ;*****
(3) 033362 000376 TRAP C$ESCAPE
6086 033364 032777 000001 146642 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT?
6087 033372 001005 BNE 10$;IF YES - PROCEED.
6088 033374 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT
(4) 033374 104455 TRAP C$ERDF
(5) 033376 000010 .WORD 8
(5) 033400 020072 .WORD EMG8
(5) 033402 015070 .WORD ERRG2
6089 033404 000410 BR 15$;EXIT
6090 033406 10$:
6091 033406 032777 001000 146624 BIT #HALTC,@SEL6 ;IS THE HALT - PROCEDURE ERROR BIT SET?
6092 033414 001004 BNE 15$;IF YES - ERROR REPORTED CORRECTLY
6093 033416 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED CONTROL OUT RECEIVED
(4) 033416 104455 TRAP C$ERDF
(5) 033420 000011 .WORD 9
(5) 033422 020136 .WORD EMG9
(5) 033424 015070 .WORD ERRG2
6094 033426 15$:
6095 033426 042777 000207 146600 BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS.
6096 033434 005037 002360 CLR ERROR ;RESTORE FLAG
6097 033440 ENDSUB
(3) 033440 L10070:
(3) 033440 104403 TRAP C$ESUB
6098 033442 BGNSUB
(3) 033442 T12.4:
(3) 033442 104402 TRAP C$BSUB
6100 033444 CLEAR ;MASTER CLEAR
(1) ;***** MACRO EXPANSION *****
(1) 033444 004737 011064 JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
(1) ;*****
6101 033450 ESCAPE TST ;IF ERROR, EXIT.
(3) 033450 104410 TRAP C$ESCAPE
(3) 033452 000306 .WORD L10065-.
6103 033454 BASEIN ;BASE IN COMMAND
(1) ;***** MACRO EXPANSION *****
(1) 033454 004737 011262 JSR PC, $BASE1 ;CALL BASE IN ROUTINE WITH DEFAULTS
(1) 033460 004000 .WORD LPLU ;SET LINE UNIT LOOP
(1) 033462 002630 .WORD BASE ;BASE TABLE ADDRESS
(1) 033464 000522 .WORD DMR ;DMR-11 MODE
(1) ;*****
6104 033466 ESCAPE TST ;IF ERROR, EXIT.
(3) 033466 104410 TRAP C$ESCAPE
(3) 033470 000270 .WORD L10065-.
6106 033472 BACCIR ;ASSIGN A BA/CC IN RECEIVE BUFFER
(1) ;***** MACRO EXPANSION *****
(1) 033472 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE WITH DEFAULTS
(1) 033476 000044 .WORD RQI!BACC ;BA/CC IN RECEIVE COMMAND
(1) 033500 002562 .WORD RBUF ;RECEIVE BUFFER

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(1) 033502 000044 .WORD RCOUNT ;RECEIVE CHARACTER COUNT
(1) ;*****
6107
6108 033504 ESCAPE TST ;IF ERROR, EXIT.
(3) 033504 104410 TRAP C$ESCAPE
(3) 033506 000252 .WORD L10065-.
6109 033510 012737 000001 002360 MOV #CNTRL,ERROR ;THIS FLAG WILL DISABLE ANY CONTROL OUT
6110 ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY
6111 ;CAUSING ONE.
6112 033516 BACCIT TBUF,0 ;ASSIGN A BA/CC IN XMIT BUFFER LENGTH = 0.
(1) ;***** MACRO EXPANSION *****
(1) 033516 004737 012274 JSR PC, $BACC ;CALL BA/CC IN ROUTINE
(1) 033522 000040 .WORD RQI!BACC ;BA/CC IN TRANSMIT COMMAND
(1) 033524 002512 .WORD TBUF ;BUFFER ADDRESS BITS 0-15
(1) 033526 000000 .WORD 0 ;BA BITS 16 & 17 AND CHAR. COUNT
(1) ;*****
6113
6114 033530 WAIT RDO ;WAIT FOR RDO TO BE SET
(1) ;***** MACRO EXPANSION *****
(1) 033530 004737 010266 JSR PC, $WAIT ;CALL WAIT ROUTINE
(1) 033534 000001 .WORD 1 ;FLAG THAT WE'RE WAITING FOR RDO
(1) ;*****
6115 033536 ESCAPE TST ;IF RDO NOT SET, BR TO TEST END.
(3) 033536 104410 TRAP C$ESCAPE
(3) 033540 000220 .WORD L10065-.
6116 033542 032777 000001 146464 BIT #CNTRL,@SEL2 ;IS THIS A CONTROL OUT?
6117 033550 001005 BNE 10$;IF YES - PROCEED.
6118 033552 ERRDF 8,EMG8,ERRG2 ;EXPECTED CONTROL OUT
(4) 033552 104455 TRAP C$ERDF
(5) 033554 000010 .WORD 8
(5) 033556 020072 .WORD EMG8
(5) 033560 015070 .WORD ERRG2
6119 033562 000410 BR 15$;EXIT
6120 033564 10$: BIT #HALTC,@SEL6 ;IS THE HALT - PROCEDURE ERROR BIT SET?
6121 033564 032777 001000 146446 BNE 15$;IF YES - ERROR REPORTED CORRECTLY
6122 033572 001004 ERRDF 9,EMG9,ERRG2 ;UNEXPECTED CONTROL OUT RECEIVED
(4) 033574 104455 TRAP C$ERDF
(5) 033576 000011 .WORD 9
(5) 033600 020136 .WORD EMG9
(5) 033602 015070 .WORD ERRG2
6124 033604 15$: BIC #RDO!CMD,@SEL2 ;CLEAR RDO AND THE COMMAND BITS.
6125 033604 042777 000207 146422 CLR ERROR ;RESTORE FLAG
6126 033612 005037 002360 ENDSUB
(3) 033616 L10071: TRAP C$ESUB
(3) 033616 104403
6128
6129 033620 BGNSUB
(3) 033620
(3) 033620 104402 T12.5: TRAP C$BSUB
6130 033622 CLEAR ;MASTER CLEAR
(1) ;***** MACRO EXPANSION *****
(1) 033622 004737 011064 JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
(1) ;*****
6131

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|      |        |        |               |        |                |  |                                               |         |           |
|------|--------|--------|---------------|--------|----------------|--|-----------------------------------------------|---------|-----------|
| 6132 | 033626 |        |               | ESCAPE | TST            |  | ;IF ERROR, EXIT.                              |         |           |
| (3)  | 033626 | 104410 |               |        |                |  |                                               | TRAP    | C\$ESCAPE |
| (3)  | 033630 | 000130 |               |        |                |  |                                               | .WORD   | L10065-   |
| 6133 | 033632 |        |               | BASEIN |                |  | ;BASE IN COMMAND                              |         |           |
| (1)  |        |        |               |        |                |  | ;**** MACRO EXPANSION ****                    |         |           |
| (1)  | 033632 | 004737 | 011262        | JSR    | PC, \$BASEI    |  | ;CALL BASE IN ROUTINE WITH DEFAULTS           |         |           |
| (1)  | 033636 | 004000 |               |        | .WORD LPLU     |  | ;SET LINE UNIT LOOP                           |         |           |
| (1)  | 033640 | 002630 |               |        | .WORD BASE     |  | ;BASE TABLE ADDRESS                           |         |           |
| (1)  | 033642 | 000522 |               |        | .WORD DMR      |  | ;DMR-11 MODE                                  |         |           |
| (1)  |        |        |               |        |                |  | ;****                                         |         | ****      |
| 6134 |        |        |               | ESCAPE | TST            |  | ;IF ERROR, EXIT.                              |         |           |
| (3)  | 033644 | 104410 |               |        |                |  |                                               | TRAP    | C\$ESCAPE |
| (3)  | 033646 | 000112 |               |        |                |  |                                               | .WORD   | L10065-   |
| 6136 | 033650 | 012737 | 000001 00236C | MOV    | #CNTRL,ERROR   |  | ;THIS FLAG WILL DISABLE ANY CONTROL OUT       |         |           |
| 6137 |        |        |               |        |                |  | ;ERROR REPORTING BECAUSE WE ARE INTENTIONALLY |         |           |
| 6138 |        |        |               |        |                |  | ;CAUSING ONE.                                 |         |           |
| 6139 | 033656 |        |               | BACCIR | RBUF,0         |  | ;ASSIGN A BA/CC IN REC. BUFFER LENGTH = 0     |         |           |
| (1)  |        |        |               |        |                |  | ;**** MACRO EXPANSION ****                    |         |           |
| (1)  | 033656 | 004737 | 012274        | JSR    | PC, \$BACC     |  | ;CALL BA/CC IN ROUTINE                        |         |           |
| (1)  | 033662 | 000044 |               |        | .WORD RQI!BACC |  | ;BA/CC IN RECEIVE COMMAND                     |         |           |
| (1)  | 033664 | 002562 |               |        | .WORD RBUF     |  | ;BUFFER ADDRESS BITS 0-15                     |         |           |
| (1)  | 033666 | 000000 |               |        | .WORD 0        |  | ;BA BITS 16/17 AND CHAR. COUNT                |         |           |
| (1)  |        |        |               |        |                |  | ;****                                         |         | ****      |
| 6140 |        |        |               | WAIT   | RDO            |  | ;WAIT FOR RDO TO BE SET                       |         |           |
| (1)  |        |        |               |        |                |  | ;**** MACRO EXPANSION ****                    |         |           |
| (1)  | 033670 | 004737 | 010266        | JSR    | PC, \$WAIT     |  | ;CALL WAIT ROUTINE                            |         |           |
| (1)  | 033674 | 000001 |               |        | .WORD 1        |  | ;FLAG THAT WE'RE WAITING FOR RDO              |         |           |
| (1)  |        |        |               |        |                |  | ;****                                         |         | ****      |
| 6142 | 033676 |        |               | ESCAPE | TST            |  | ;IF RDO NOT SET. BR TO TEST END.              |         |           |
| (3)  | 033676 | 104410 |               |        |                |  |                                               | TRAP    | C\$ESCAPE |
| (3)  | 033700 | 000060 |               |        |                |  |                                               | .WORD   | L10065-   |
| 6143 | 033702 | 032777 | 000001 146324 | BIT    | #CNTRL,@SEL2   |  | ;IS THIS A CONTROL OUT?                       |         |           |
| 6144 | 033710 | 001005 |               | BNE    | 10\$           |  | ;IF YES - PROCEED.                            |         |           |
| 6145 | 033712 |        |               | ERRDF  | 8,EMG8,ERRG2   |  | ;EXPECTED CONTROL OUT                         |         |           |
| (4)  | 033712 | 104455 |               |        |                |  |                                               | TRAP    | C\$ERDF   |
| (5)  | 033714 | 000010 |               |        |                |  |                                               | .WORD   | 8         |
| (5)  | 033716 | 020072 |               |        |                |  |                                               | .WORD   | EMG8      |
| (5)  | 033720 | 015070 |               |        |                |  |                                               | .WORD   | ERRG2     |
| 6146 | 033722 | 000410 |               | BR     | 15\$           |  | ;EXIT                                         |         |           |
| 6147 | 033724 |        |               |        |                |  |                                               |         |           |
| 6148 | 033724 | 032777 | 001000 146306 | BIT    | #HALTC,@SEL6   |  | ;IS THE HALT - PROCEDURE ERROR BIT SET?       |         |           |
| 6149 | 033732 | 001004 |               | BNE    | 15\$           |  | ;IF YES - ERROR REPORTED CORRECTLY            |         |           |
| 6150 | 033734 |        |               | ERRDF  | 9,EMG9,ERRG2   |  | ;UNEXPECTED CONTROL OUT RECEIVED              |         |           |
| (4)  | 033734 | 104455 |               |        |                |  |                                               | TRAP    | C\$ERDF   |
| (5)  | 033736 | 000011 |               |        |                |  |                                               | .WORD   | 9         |
| (5)  | 033740 | 020136 |               |        |                |  |                                               | .WORD   | EMG9      |
| (5)  | 033742 | 015070 |               |        |                |  |                                               | .WORD   | ERRG2     |
| 6151 | 033744 |        |               |        |                |  |                                               |         |           |
| 6152 | 033744 | 042777 | 000207 146262 | BIC    | #RDO!CMD,@SEL2 |  | ;CLEAR RDO AND THE COMMAND BITS.              |         |           |
| 6153 | 033752 | 005037 | 002360        | CLR    | ERROR          |  | ;RESTORE FLAG                                 |         |           |
| 6154 | 033756 |        |               | ENDSUB |                |  |                                               |         |           |
| (3)  | 033756 |        |               |        |                |  |                                               |         |           |
| (3)  | 033756 | 104403 |               |        |                |  |                                               | L10072: |           |
| 6155 |        |        |               |        |                |  |                                               | TRAP    | C\$ESUB   |

6156 033760 ENDTST  
 (3) 033760  
 (3) 033760 104401 L10065: TRAP C\$ETST

6157  
 6158  
 6159  
 6160  
 6161

.SBTTL TEST 13 - DATA TEST

6162  
 6163  
 6164

\*\*\*\*\*  
 :\* 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.  
 :\*\*\*\*\*  
 BGNTST

6165  
 6166  
 6167  
 6168  
 6169  
 6170  
 6171

6172 033762  
 (3) 033762  
 6173 033762 013700 000044  
 6174 033766 062700 000002

MOV RCOUNT,R0 ;BYTE COUNT FOR RECEIVE BUFFER  
 ADD #2,R0 ;2 ADDITIONAL BYTES AT END OF BUFFER ARE  
 ;USED FOR DELIMITOR  
 MOV #RBUF,R1 ;ADDRESS OF RECEIVE BUFFER  
 .10\$: CLRB (R1)+ ;CLEAR A BYTE IN THE BUFFER  
 DEC R0 ;CONTINUE - UNTIL ENTIRE BUFFER DONE  
 BNE 10\$

6175 033772 012701 002562  
 6177 033776  
 6178 033776 105021  
 6179 034000 005300  
 6180 034002 001375

6181  
 6182 034004 005037 002510  
 6183 034010 005037 002560  
 6184 034014

CLR TFLAG ;CLEAR TRANSMIT FLAG  
 CLR RFLAG ;CLEAR RECEIVER FLAG  
 CLEAR ;MACRO FOR MASTER CLEAR  
 JSR PC, \$MSCLR ;\*\*\*\* MACRO EXPANSION \*\*\*\*  
 ;ISSUE A DMR MASTER CLEAR  
 ;\*\*\*\*

(1)  
 (1) 034014 004737 011064  
 (1)

6185  
 6186 034020  
 (3) 034020 104410  
 (3) 034022 000432  
 6187 034024

ESCAPE TST ;IF ERROR, BR TO TEST END.  
 TRAP C\$ESCAPE  
 .WORD L10073-.

(1)  
 (1) 034024 004737 011262  
 (1) 034030 004000  
 (1) 034032 002630  
 (1) 034034 000522  
 (1)

BASEIN ;MACRO FOR BASE IN COMMAND  
 JSR PC, \$BASEI ;\*\*\*\* MACRO EXPANSION \*\*\*\*  
 .WORD LPLU ;CALL BASE IN ROUTINE WITH DEFAULTS  
 .WORD BASE ;SET LINE UNIT LOOP  
 .WORD DMR ;BASE TABLE ADDRESS  
 ;DMR-11 MODE  
 ;\*\*\*\*

6188  
 6189 034036  
 (3) 034036 104410  
 (3) 034040 000414  
 6190 034042

ESCAPE TST ;IF ERROR, BR TO TEST END.  
 TRAP C\$ESCAPE  
 .WORD L10073-.

(1)  
 (1) 034042 004737 011516  
 (1) 034046 000000  
 (1)

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

6191 034050

ESCAPE TST ;IF ERROR, BR TO TEST END.



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

```

6253 034352
6254 034352 122122
6255 034354 001011
6256 034356 005300
6257 034360 001374
6258 034362 005712
6259
6260 034364 001412
6261 034366
(4) 034366 104455
(5) 034370 000016
(5) 034372 020315
(5) 034374 015070
6262 034376 000422
6263 034400
6264 034400
(4) 034400 104455
(5) 034402 000017
(5) 034404 020341
(5) 034406 015070
6265 034410 000415
6266
6267
6268
6269 034412
6270 034412 042777 000213 145614
6271 034420 005737 002560
6272 034424 001002
6273 034426 000137 034110
6274 034432
6275 034432 005737 002510
6276 034436 001002
6277 034440 000137 034110
6278 034444
6279 034444
(1)
(1) 034444 004737 012560
(1)
6280
6281 034450
6282
6283 034454
(3) 034454
(3) 034454 104401
6284
6285
6286
6287
6288
6289
6290
6291
6292
6293
6294
6295

45$:
CMPB (R1)+,(R2)+ ;IS THE DATA THE SAME ?
BNE 46$;IF NOT, BRANCH TO DATA ERROR MESSAGE
DEC R0 ;CONTINUE CHECKING UNTIL DONE WITH BUFFER.
BNE 45$
TST @R2 ;THIS SHOULD BE 0 - REMEMBER WE CLEARED
;2 EXTRA BYTES DURING BUFFER INIT.
BEQ 50$;IF OK - PROCEED
ERRDF 14,EMG14,ERRG2 ;RECEIVED EXTRA DATA

TRAP C$ERDF
.WORD 14
.WORD EMG14
.WORD ERRG2

46$:
BR 52$
ERRDF 15,EMG15,ERRG2 ;DATA ERROR

TRAP C$ERDF
.WORD 15
.WORD EMG15
.WORD ERRG2

BR 52$

; TRANSMIT OR RECEIVE CHECK DONE

50$:
BIC #RDO+RCV+CMD,@SEL2 ;CLEAR RDO, RCV & COMMAND BITS (0,1)
TST RFLAG ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1)
BNE 51$;YES - SEE IF TRANSMIT DONE
JMP 20$;NO - GO BACK AND DO IT.

51$:
TST TFLAG ;IS THE TRANSMIT DONE ?
BNE 52$;YES - BR TO SHUTDOWN
JMP 20$;NO - DO IT

52$:
SHUTDN ;SHUTDOWN DMR
;**** MACRO EXPANSION ****
JSR PC, $HALT ;DMR HALT ROUTINE.
;****

CALL $ERROR ;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS

ENDTST

L10073:
TRAP C$ETST

.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

```



```

6296
6297
6298
6299
6300
6301 034456
(3) 034456
6302
6303
6304 034456
(7) 034456 012746 000340
(6) 034462 012746 023512
(5) 034466 012746 000004
(4) 034472 012746 000003
(3) 034476 104437
(2) 034500 062706 000010
6305 034504 005037 002340
6306 034510 005737 177572
6307 034514
(3) 034514 012700 000004
(3) 034520 104436
6308 034522 005737 002340
6309
6310
6311 034526 001404
6312 034530 005037 002340
6313 034534 000137 036044
6314 034540
6315
6316
6317
6318 034540 023727 002120 002200
6319 034546 002002
6320 034550 000137 036044
6321 034554
6322 034554
(3) 034554 012700 000340
(3) 034560 104441
6323
6324
6325 034562 012701 172300
6326 034566 012700 000010
6327 034572
6328 034572 012721 077406
6329
6330 034576 005300
6331 034600 001374
6332 034602 012701 172340
6333 034606 005011
6334 034610 012761 000200 000002
6335 034616 012761 000400 000004
6336 034624 012761 000600 000006
6337 034632 012761 001000 000010
6338 034640 012761 002000 000012
6339 034646 012761 004000 000014
6340 034654 012761 007600 000016

```

;\* US TO TRANSFER DATA USING THOSE EXTENDED ADDRESSING BITS. AS IN  
 ;\* TEST 13 THE TEST IS NON-INTERRUPT AND INTERNAL (TTL) LOOPBACK IS  
 ;\* USED.  
 ;\*  
 ;\*\*\*\*\*

BGNTST

```

;*****
;T14::
.ENABL LSB ;ENABLE LOCAL BLOCK - NEEDED BECAUSE OF
;USE OF SYMBOLIC LABELS 'RSEL4' ETC.
SETVEC #4,#NOXMEM,#PRI07 ;SET UP TRAP VECTOR 4
;*****
MOV #PRI07,-(SP)
MOV #NOXMEM,-(SP)
MOV #4,-(SP)
MOV #3,-(SP)
TRAP C$SVEC
ADD #10,SP

CLR FLAG ;CLEAR FLAG - SET IF TRAP TO 4.
TST @#177572 ;ADDRESS MEMORY MANAGEMENT REGISTER.
CLRVEC #4 ;RESTORE TRAP VECTOR 4.

MOV #4,R0
TRAP C$CVEC

TST FLAG ;IS THE FLAG STILL CLEARED?
;NOTE: THE FLAG WILL BE SET BY TRAP 4
;IF THERE IS NO MEMORY MANAGEMENT.
;IF FLAG IS CLEARED, PROCEED WITH TEST.
;RESTORE FLAG
;EXIT - CAN'T TEST WITHOUT MEM. MANAG.

BEQ 10$
CLR FLAG
JMP 85$

10$:
;NOTE: L$HIMEM IS SIZE OF TOTAL MEMORY IN
;PAGE ADDRESS REGISTER FORM - DETERMINED BY
;BY DIAGNOSTIC SUPERVISOR AT STARTUP.
;DO WE HAVE ENOUGH MEMORY TO ADDRESS BIT 16?
;IF YES - PROCEED WITH TEST
;IF NOT - EXIT

CMP L$HIMEM,#2200
BGE 15$
JMP 85$

15$:
SETPRI #PRI07 ;MAKE SURE WE ARE IN KERNEL MODE.

MOV #PRI07,R0
TRAP C$SPRI

;SETTING PRI SHOULD ALSO CLEAR BITS 14 & 15
;IN PSW WHICH PLACES PROCESSOR IN KERNEL MODE.
;GET ADDRESS OF KERNEL PDR REG 0
;GOING TO WRITE PDR REG 0-7

20$:
MOV #77406,(R1)+ ;WRITE BITS FOR THE FOLLOWING PAGE DESCRIPTION
;READ/WRITE ACCESS, 128. BLOCK PAGE LENGTH.
;WRITE ALL PDRS

DEC R0
BNE 20$
MOV #172340,R1 ;GET ADDRESS OF KERNAL PAR 0
CLR (R1)
MOV #200,2(R1) ;PAR 0, ADDRS 0 - 17776
MOV #400,4(R1) ;PAR 1, ADDRS 20000 - 37776
MOV #600,6(R1) ;PAR 2, ADDRS 40000 - 57776
MOV #1000,10(R1) ;PAR 3, ADDRS 60000 - 77776
MOV #2000,12(R1) ;PAR 4, ADDRS 100000 - 117776
MOV #4000,14(R1) ;PAR 5, ADDRS 200000 - 217776
MOV #7600,16(R1) ;PAR 6, ADDRS 400000 - 417776
;PAR 7, ADDRS 160000 - 177776 (I/O PAGE)

```

```

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

```



```

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

```

```

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

```

|      |        |        |        |        |           |                    |                                             |       |         |
|------|--------|--------|--------|--------|-----------|--------------------|---------------------------------------------|-------|---------|
| 6442 | 035406 | 012737 | 177777 | 002560 | MOV       | #-1,RFLAG          | ;FLAG THAT THE RECEIVE IS DONE.             |       |         |
| 6443 | 035414 | 023777 | 035170 | 144614 | CMP       | RSEL4,@SEL4        | ;IS THE BUFFER ADDRESS CORRECT?             |       |         |
| 6444 | 035422 | 001405 |        |        | BEQ       | 62\$               | ;IF OK, PROCEED WITH CHECK.                 |       |         |
| 6445 | 035424 |        |        |        | ERRDF     | 11,EMG11,ERRG2     | ;BUFFER ADDRESS ERROR                       |       |         |
| (4)  | 035424 | 104455 |        |        |           |                    |                                             | TRAP  | C\$ERDF |
| (5)  | 035426 | 000013 |        |        |           |                    |                                             | .WORD | 11      |
| (5)  | 035430 | 020214 |        |        |           |                    |                                             | .WORD | EMG11   |
| (5)  | 035432 | 015070 |        |        |           |                    |                                             | .WORD | ERRG2   |
| 6446 | 035434 | 000577 |        |        | BR        | 80\$               | ;EXIT                                       |       |         |
| 6447 | 035436 |        |        |        |           |                    |                                             |       |         |
| 6448 | 035436 | 023777 | 035172 | 144574 | 62\$: CMP | RSEL6,@SEL6        | ;IS THE CHAR. COUNT CORRECT?                |       |         |
| 6449 | 035444 | 001404 |        |        | BEQ       | 63\$               | ;IF OK, PROCEED                             |       |         |
| 6450 | 035446 |        |        |        | ERRDF     | 12,EMG12,ERRG2     | ;CHARACTER COUNT ERROR                      |       |         |
| (4)  | 035446 | 104455 |        |        |           |                    |                                             | TRAP  | C\$ERDF |
| (5)  | 035450 | 000014 |        |        |           |                    |                                             | .WORD | 12      |
| (5)  | 035452 | 020241 |        |        |           |                    |                                             | .WORD | EMG12   |
| (5)  | 035454 | 015070 |        |        |           |                    |                                             | .WORD | ERRG2   |
| 6451 | 035456 |        |        |        | 63\$: TST | SFLAG              | ;WHICH EXTENDED ADDRESS ARE WE CHECKING?    |       |         |
| 6452 | 035456 | 005737 | 002342 |        | BNE       | 65\$               | ;BR FOR BIT 17 CHECK                        |       |         |
| 6453 | 035462 | 001007 |        |        | MOV       | #4000,R0           | ;IN THE TEST OF BIT 16 WE SENT 4K BYTES     |       |         |
| 6454 | 035464 | 012700 | 004000 |        | MOV       | #120000,R1         | ;THE XMIT BUFFER BEGAN AT THIS VIRTUAL ADDR |       |         |
| 6455 | 035470 | 012701 | 120000 |        |           |                    | ;WHICH WILL MAP TO 200000                   |       |         |
| 6456 |        |        |        |        | MOV       | #130000,R2         | ;THE REC BUF. MAPS TO 210000                |       |         |
| 6457 | 035474 | 012702 | 130000 |        | BR        | 66\$               | ;GO COMPARE THE XMIT AND REC BUFFERS        |       |         |
| 6458 | 035500 | 000406 |        |        |           |                    |                                             |       |         |
| 6459 | 035502 |        |        |        | 65\$: MOV | #10000,R0          | ;IN THE TEST OF BIT 17 WE SENT 8K BYTES     |       |         |
| 6460 | 035502 | 012700 | 010000 |        | MOV       | #120000,R1         | ;THE XMIT BUFFER MAPS TO 200000             |       |         |
| 6461 | 035506 | 012701 | 120000 |        | MOV       | #140000,R2         | ;THE REC BUF. MAPS TO 400000                |       |         |
| 6462 | 035512 | 012702 | 140000 |        |           |                    |                                             |       |         |
| 6463 | 035516 |        |        |        | 66\$: MOV | #1,@#177572        | ;TURN MEMORY MANAGEMENT BACK ON.            |       |         |
| 6464 | 035516 | 012737 | 000001 | 177572 | 67\$: CMP | (R1)+,(R2)+        | ;IS THE DATA THE SAME?                      |       |         |
| 6465 | 035524 |        |        |        | BNE       | 68\$               | ;IF NOT THERE IS A DATA ERROR.              |       |         |
| 6466 | 035524 | 022122 |        |        | DEC       | R0                 | ;CHECK ENTIRE BUFFER                        |       |         |
| 6467 | 035526 | 001003 |        |        | BNE       | 67\$               |                                             |       |         |
| 6468 | 035530 | 005300 |        |        | BR        | 70\$               | ;IF DATA OK, PROCEED WITH TEST.             |       |         |
| 6469 | 035532 | 001374 |        |        |           |                    |                                             |       |         |
| 6470 | 035534 | 000407 |        |        | 68\$: CLR | @#177572           | ;TURN MEMORY MANAGEMENT OFF.                |       |         |
| 6471 | 035536 |        |        |        | ERRDF     | 15,EMG15,ERRG2     | ;DATA ERROR                                 |       |         |
| 6472 | 035536 | 005037 | 177572 |        |           |                    |                                             | TRAP  | C\$ERDF |
| 6473 | 035542 |        |        |        |           |                    |                                             | .WORD | 15      |
| (4)  | 035542 | 104455 |        |        |           |                    |                                             | .WORD | EMG15   |
| (5)  | 035544 | 000017 |        |        |           |                    |                                             | .WORD | ERRG2   |
| (5)  | 035546 | 020341 |        |        |           |                    |                                             |       |         |
| (5)  | 035550 | 015070 |        |        |           |                    |                                             |       |         |
| 6474 | 035552 | 000530 |        |        | 70\$: BR  | 80\$               | ;EXIT                                       |       |         |
| 6475 | 035554 |        |        |        |           |                    |                                             |       |         |
| 6476 | 035554 | 005037 | 177572 |        | CLR       | @#177572           | ;TURN MEMORY MANAGEMENT OFF.                |       |         |
| 6477 | 035560 | 042777 | 000213 | 144446 | BIC       | #RDO+RCV+CMD,@SEL2 | ;CLEAR RDO, RCV & COMMAND BITS (0,1)        |       |         |
| 6478 | 035566 | 005737 | 002560 |        | TST       | RFLAG              | ;IS THE RECEIVE DONE ? (IF DONE, FLAG = -1) |       |         |
| 6479 | 035572 | 001002 |        |        | BNE       | 71\$               | ;YES - SEE IF TRANSMIT DONE                 |       |         |
| 6480 | 035574 | 000137 | 035216 |        | JMP       | 40\$               | ;NO - GO BACK AND DO IT.                    |       |         |
| 6481 | 035600 |        |        |        | 71\$: TST | TFLAG              | ;IS THE TRANSMIT DONE ?                     |       |         |
| 6482 | 035600 | 005737 | 002510 |        | BNE       | 72\$               | ;YES - SEE IF THERE IS MORE                 |       |         |
| 6483 | 035604 | 001002 |        |        | JMP       | 40\$               | ;NO - DO IT                                 |       |         |
| 6484 | 035606 | 000137 | 035216 |        |           |                    |                                             |       |         |
| 6485 | 035612 |        |        |        | 72\$:     |                    |                                             |       |         |

```
6486 035612 005737 002342 TST SFLAG ;HAVE WE ALREADY TESTED BIT 17
6487 035616 001106 BNE 80$;IF SO - END OF TEST
6488
6489 035620 012737 177777 002342 MOV #-1,SFLAG ;FLAG SO WE DON'T COME THIS WAY AGAIN.
6490 035626 023727 002120 004200 CMP L$HIMEM,#4200 ;IS THERE ENOUGH MEMORY TO TEST BIT 17?
6491 035634 002477 BLT 80$;IF NOT - END OF TEST.
6492 035636 005037 002510 CLR TFLAG ;CLEAR FLAGS FOR NEXT TEST
6493 035642 005037 002560 CLR RFLAG
6494
6495 ;SET UP TO TEST BIT 17, IF THERE IS ENOUGH MEMORY.
6496 ;THIS TEST WILL TRANSMIT 8K BYTES STARTING AT PHYSICAL ADDRESS 200000
6497 ;TO PHYSICAL ADDRESS 400000. THE TRANSMITTED BUFFER STILL CONTAINS
6498 ;THE TEST PATTERN GENERATED IN THE BIT 16 TEST.
6499
6500 035646 005037 035170 CLR RSEL4 ;RECEIVE BUFFER ADDRESS (BITS 0-15)
6501 035652 012737 120000 035172 MOV #BIT15!20000,RSEL6 ;REC BUFFER ADDR BIT 17 SET AND 8K
6502 ;BYTE RECEIVE CHARACTER COUNT
6503 035660 005037 035206 CLR TSEL4 ;TRANSMIT BUFFER ADDRESS (BITS 0-15)
6504 035664 012737 060000 035210 MOV #BIT14!20000,TSEL6 ;XMIT BUFFER ADDR BIT 16 SET AND 8K
6505 ;BYTE XMIT CHARACTER COUNT
6506 035672 012701 010000 MOV #10000,R1 ;COUNTER TO CLEAR 8K BYTES
6507 035676 012704 140000 MOV #140000,R4 ;VIRTUAL ADDRESS THAT WILL MAP INTO PAR 6
6508 ;WITH THE PHYSICAL ADDRESS 400000
6509 035702 005037 002340 CLR FLAG ;ENSURE FLAG IS CLEAR
6510 035706 SETVEC #4,#NOXMEM,#PRI07 ;SET UP TRAP TO VECTOR 4 (WILL SET FLAG)
6511 (7) 035706 012746 000340 MOV #PRI07,-(SP)
6512 (6) 035712 012746 023512 MOV #NOXMEM,-(SP)
6513 (5) 035716 012746 000004 MOV #4,-(SP)
6514 (4) 035722 012746 000003 MOV #3,-(SP)
6515 (3) 035726 104437 TRAP C$SVEC
6516 (2) 035730 062706 000010 ADD #10,SP
6517 035734 012737 000001 177572 MOV #1,@#177572 ;TURN ON MEMORY MANAGEMENT
6518 74$:
6519 035742 005024 CLR (R4)+ ;CLEAR 400000 - 417776
6520 035744 005737 002340 TST FLAG ;DOES A NXM TRAP 4 OCCUR?
6521 035750 001002 BNE 75$;IF YES, EXIT
6522 035752 005300 DFC R0
6523 035754 001372 BNE 74$
6524 75$:
6525 035756 005037 177572 CLR @#177572 ;TURN OFF MEMORY MANAGEMENT
6526 035762 012700 000004 CLRVEC #4 ;RESTORE TRAP 4
6527 (3) 035766 104436 MOV #4,R0
6528 (3) 035770 005737 002340 TRAP C$CVEC
6529 035774 001002 TST FLAG ;WAS THIS AN ERROR EXIT?
6530 035776 000137 035162 BNE 76$;IF YES - REPORT ERROR
6531 76$:
6532 036002 JMP 35$;START THE SECOND TEST
6533 ERRDF 19,EMT22
6534 (4) 036002 104455 TRAP C$ERDF
6535 (5) 036004 000023 .WORD 19
6536 (5) 036006 036046 .WORD EMT22
6537 (5) 036010 000000 .WORD 0
6538 036012 PRINTB #FMT25,R4
6539 (8) 036012 010446 MOV R4,-(SP)
6540 (7) 036014 012746 036104 MOV #FMT25,-(SP)
6541 (6) 036020 012746 000002 MOV #2,-(SP)
```

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(3) 036024 010600
(4) 036026 104414
(4) 036030 062706 000006
6527 036034
6528 036034
(1)
(1) 036034 004737 012560
(1)
6529 036040
6530
6531 036044
6532
6533 036044
(3) 036044
(3) 036044 104401
6534
6535
6536 036046 040503 023516 020124
036054 042101 051104 051505
036062 020123 054105 042524
036070 042116 042105 046440
036076 046505 051117 000131
6537 036104 040445 042515 047515
036112 054522 040440 042104
036120 042522 051523 022440
036126 033117 020045 047504
036134 051505 047040 052117
036142 051040 051505 047520
036150 042116 026440 052040
036156 040522 020120 022464
036164 000116

80$: SHUTDN ;SHUTDOWN DMR
;**** MACRO EXPANSION ****
JSR PC, $HALT ;DMR HALT ROUTINE.
CALL $ERROR ;****
;CHECK BASE TABLE AND REPORT ANY SOFT ERRORS

85$: .DSABL LSB ;DISABLE LOCAL SYMBOL BLOCK
ENDTST

L10074:
TRAP C$ETST

EMT22: .ASCIZ /CAN'T ADDRESS EXTENDED MEMORY/

FMT25: .ASCIZ /%AMEMORY ADDRESS %06% DOES NOT RESPOND - TRAP 4%N/

.EVEN

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6538  
6539  
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.SBTTL TEST 15 - DMC MODE (RESUME) INTERRUPT TEST

```

* TEST 15 - DMR-11
* RESUME BASE IN - DMC MODE
* ** WILL NOT RUN IF MODEM LOOPBACK IS SELECTED **
* IN THIS TEST THE DMR WILL TRANSMIT AND RECEIVE 7 BUFFERS. DURING THE
* TEST THE DMR WILL BE HALTED AND RESTARTED BY A BASE-IN RESUME IN THE
* FOLLOWING MANNER:
* BASE IN
* CONTROL IN
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 2 BA/CC IN RECEIVE
* HALT - BASE IN RESUME
* 1 BA/CC IN RECEIVE
* HALT - BASE IN RESUME

```

TEST 15 - DMC MODE (RESUME) INTERRUPT TEST

BGNIST

| PC | OP | OP2 | OP3 | OP4 | OP5 | OP6 | OP7 | OP8 | OP9 | OP10 | OP11 | OP12 | OP13 | OP14 | OP15 | OP16 | OP17 | OP18 | OP19 | OP20 | OP21 | OP22 | OP23 | OP24 | OP25 | OP26 | OP27 | OP28 | OP29 | OP30 | OP31 | OP32 | OP33 | OP34 | OP35 | OP36 | OP37 | OP38 | OP39 | OP40 | OP41 | OP42 | OP43 | OP44 | OP45 | OP46 | OP47 | OP48 | OP49 | OP50 | OP51 | OP52 | OP53 | OP54 | OP55 | OP56 | OP57 | OP58 | OP59 | OP60 | OP61 | OP62 | OP63 | OP64 | OP65 | OP66 | OP67 | OP68 | OP69 | OP70 | OP71 | OP72 | OP73 | OP74 | OP75 | OP76 | OP77 | OP78 | OP79 | OP80 | OP81 | OP82 | OP83 | OP84 | OP85 | OP86 | OP87 | OP88 | OP89 | OP90 | OP91 | OP92 | OP93 | OP94 | OP95 | OP96 | OP97 | OP98 | OP99 | OP100 | OP101 | OP102 | OP103 | OP104 | OP105 | OP106 | OP107 | OP108 | OP109 | OP110 | OP111 | OP112 | OP113 | OP114 | OP115 | OP116 | OP117 | OP118 | OP119 | OP120 | OP121 | OP122 | OP123 | OP124 | OP125 | OP126 | OP127 | OP128 | OP129 | OP130 | OP131 | OP132 | OP133 | OP134 | OP135 | OP136 | OP137 | OP138 | OP139 | OP140 | OP141 | OP142 | OP143 | OP144 | OP145 | OP146 | OP147 | OP148 | OP149 | OP150 | OP151 | OP152 | OP153 | OP154 | OP155 | OP156 | OP157 | OP158 | OP159 | OP160 | OP161 | OP162 | OP163 | OP164 | OP165 | OP166 | OP167 | OP168 | OP169 | OP170 | OP171 | OP172 | OP173 | OP174 | OP175 | OP176 | OP177 | OP178 | OP179 | OP180 | OP181 | OP182 | OP183 | OP184 | OP185 | OP186 | OP187 | OP188 | OP189 | OP190 | OP191 | OP192 | OP193 | OP194 | OP195 | OP196 | OP197 | OP198 | OP199 | OP200 | OP201 | OP202 | OP203 | OP204 | OP205 | OP206 | OP207 | OP208 | OP209 | OP210 | OP211 | OP212 | OP213 | OP214 | OP215 | OP216 | OP217 | OP218 | OP219 | OP220 | OP221 | OP222 | OP223 | OP224 | OP225 | OP226 | OP227 | OP228 | OP229 | OP230 | OP231 | OP232 | OP233 | OP234 | OP235 | OP236 | OP237 | OP238 | OP239 | OP240 | OP241 | OP242 | OP243 | OP244 | OP245 | OP246 | OP247 | OP248 | OP249 | OP250 | OP251 | OP252 | OP253 | OP254 | OP255 | OP256 | OP257 | OP258 | OP259 | OP260 | OP261 | OP262 | OP263 | OP264 | OP265 | OP266 | OP267 | OP268 | OP269 | OP270 | OP271 | OP272 | OP273 | OP274 | OP275 | OP276 | OP277 | OP278 | OP279 | OP280 | OP281 | OP282 | OP283 | OP284 | OP285 | OP286 | OP287 | OP288 | OP289 | OP290 | OP291 | OP292 | OP293 | OP294 | OP295 | OP296 | OP297 | OP298 | OP299 | OP300 | OP301 | OP302 | OP303 | OP304 | OP305 | OP306 | OP307 | OP308 | OP309 | OP310 | OP311 | OP312 | OP313 | OP314 | OP315 | OP316 | OP317 | OP318 | OP319 | OP320 | OP321 | OP322 | OP323 | OP324 | OP325 | OP326 | OP327 | OP328 | OP329 | OP330 | OP331 | OP332 | OP333 | OP334 | OP335 | OP336 | OP337 | OP338 | OP339 | OP340 | OP341 | OP342 | OP343 | OP344 | OP345 | OP346 | OP347 | OP348 | OP349 | OP350 | OP351 | OP352 | OP353 | OP354 | OP355 | OP356 | OP357 | OP358 | OP359 | OP360 | OP361 | OP362 | OP363 | OP364 | OP365 | OP366 | OP367 | OP368 | OP369 | OP370 | OP371 | OP372 | OP373 | OP374 | OP375 | OP376 | OP377 | OP378 | OP379 | OP380 | OP381 | OP382 | OP383 | OP384 | OP385 | OP386 | OP387 | OP388 | OP389 | OP390 | OP391 | OP392 | OP393 | OP394 | OP395 | OP396 | OP397 | OP398 | OP399 | OP400 | OP401 | OP402 | OP403 | OP404 | OP405 | OP406 | OP407 | OP408 | OP409 | OP410 | OP411 | OP412 | OP413 | OP414 | OP415 | OP416 | OP417 | OP418 | OP419 |
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|



```

6607
6608 036250 ESCAPE TST ;IF ERROR, EXIT TEST
(3) 036250 104410
(3) 036252 000016 TRAP C$ESCAPE
6609 036254 SHUTDN .WORD L10075-.
(1)
(1) 036254 004737 012560 JSR PC, $HALT ;HALT
(1) ;**** MACRO EXPANSION ****
6610 036260 ESCAPE TST ;DMR HALT ROUTINE.
(3) 036260 104410 ;****
(3) 036262 000006 ;IF ERROR, EXIT TEST.
6611 ;AFTER SETTING INTERFACE OR LOOPBACK MAINT.
6612 ;((CAN'T BE DONE IN DMC MODE), START IN
6613 ;DMC MODE.
6614
6615
6616 036264 CALL $INOUT ;THIS ROUTINE WILL MANAGE ALL THE DMR
6617 ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES
6618 ;((FROM BASE IN UNTIL SHUT DOWN). BESIDES
6619 ;CONTROLLING THE SOFTWARE TIMEOUT, THIS
6620 ;ROUTINE WILL ALSO CHECK THAT BUFFER
6621 ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT
6622 ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS
6623
6624 036270 40$:
6625 036270 ENDTST
(3) 036270
(3) 036270 104401 L10075:
6626 TRAP C$ETST
6627
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.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 - BASE IN RESUME
;* 2 BA/CC IN RECEIVE
;* HALT - BASE IN RESUME
;* 2 BA/CC IN RECEIVE
;* HALT - BASE IN RESUME
;* 2 BA/CC IN RECEIVE
;* HALT - BASE IN RESUME
;* 1 BA/CC IN RECEIVE
;* HALT - BASE IN RESUME
;* 2 BA/CC IN TRANSMIT
;* HALT - BASE IN RESUME
;* 2 BA/CC IN TRANSMIT

```

```

6654 ;* HALT - BASE IN RESUME
6655 ;* 2 BA/CC IN TRANSMIT
6656 ;* HALT - BASE IN RESUME
6657 ;* 1 BA/CC IN TRANSMIT
6658 ;* HALT - BASE IN RESUME
6659 ;*
6660 ;* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
6661 ;* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
6662 ;* THE RECEIVE/TRANSMIT TABLE.
6663 ;*
6664 ;* THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS. THIS
6665 ;* SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
6666 ;* SEVEN RECEIVE AND SEVEN TRANSMIT BUFFERS. THE ROUTINE WILL
6667 ;* ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
6668 ;* HIERARCHY:
6669 ;* A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
6670 ;* B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
6671 ;* THAN 2K BYTES, USE THAT MEMORY
6672 ;* C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
6673 ;* THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
6674 ;*
6675 ;*
6676 ;*
6677 ;*****
6677 036272 BGNTST
6678 (3) 036272
6678 036272 012737 000007 002322 MOV #7,BUFNUM ;# OF RCV & XMIT BUFFERS.
6679 036300 012737 000001 002274 MOV #1,RESUME ;FLAG SET TO REQUEST USE OF RESUME.
6680 036306 005037 002276 CLR DMCMD ;FLAG CLEARED - DMR MODE.
6681 036312 005037 002300 CLR MNTMDE ;FLAG NOT TO REQUEST MAINTENANCE MODE.
6682
6683 036316 CALL $BUFFS ;DETERMINE 7 RCV & 7 XMIT BUFFERS
6684
6685 036322 CLEAR ;MASTER CLEAR
6686 (1)
6687 (1) 036322 004737 011064 JSR PC, $MSCLR ;**** MACRO EXPANSION ****
6688 (1)
6689
6689 036326 ESCAPE TST ;IF ERROR, EXIT TEST
6690 (3) 036326 104410
6691 (3) 036330 000006 TRAP C$ESCAPE
6692
6693 036332 CALL $INOUT ;THIS ROUTINE WILL MANAGE ALL THE DMR
6694
6695
6696
6697
6698
6699 036336 ENDTST
6700 (3) 036336
6701 (3) 036336 104401 L10076: RAP C$ETST

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 036340  
 036340 012737 000100 002322  
 036346 005037 002274  
 036352 005037 002276  
 036356 005037 002300  
 036362  
 036366  
 036366 004737 011064  
 036372  
 036372 104410  
 036374 000012  
 036376  
 036402  
 036406

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

:*****
: TEST 17 - DMR-11
:* INTERRUPT DRIVEN EXERCISE
:* IN THIS TEST 64 BUFFERS WILL BE TRANSMITTED AND RECEIVED
:*
:* ALL BA/CC OUTS RECEIVES AND TRANSMITS WILL BE ACCOUNTED FOR AND
:* THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
:* THE RECEIVE/TRANSMIT TABLE.
:*
:* THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS. THIS
:* SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
:* 64 RECEIVE AND 64 TRANSMIT BUFFERS. THE ROUTINE WILL
:* ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
:* HIERARCHY:
:* A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
:* B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
:* THAN 2K BYTES, USE THAT MEMORY
:* C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE, USE
:* THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
:*
:*****
BGNTST
 T17::
MOV #64.,BUFNUM ;# OF RCV & XMIT BUFFERS.
CLR RESUME ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
CLR DMCMD ;FLAG CLEARED TO ALLOW DMR MODE.
CLR MNTMD ;FLAG NOT TO REQUEST MAINTENANCE MODE.
CALL $BUFFS ;DETERMINE 64 RCV & 64 XMIT BUFFERS
CLEAR ;MASTER CLEAR
 ;**** MACRO EXPANSION ****
JSR PC, $MSCLR ;ISSUE A DMR MASTER CLEAR
 ;****
ESCAPE TST ;IF ERROR, EXIT TEST
 TRAP C$ESCAPE
 .WORD L10077-.

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

CALL $ERROR ;CHECK BASE TABLE FOR SOFT ERRORS

ENDTST
```

L10077: TRAP C\$ETST

(3) 036406  
 (3) 036406 104401

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.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.

```

BGNTST

T18::

```

MOV #1,BUFNUM ;# OF RCV & XMIT BUFFERS.
CLR RESUME ;FLAG CLEARED IN ORDER NOT TO USE RESUME.
CLR DMCMD ;FLAG CLEARED TO ALLOW DMR MODE.
CLR MNTMDE ;FLAG NOT TO REQUEST MAINTENANCE MODE.

```

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

```

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

```

ESCAPE TST ;IF ERROR, EXIT TEST

TRAP C\$ESCAPE  
 .WORD L10100-

```

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

```

```

6800 036452 CALL $ERROR ;CHECK BASE TABLE FOR SOFT ERRORS
6801 ;NOTE: NORMALLY ANY NON-ZERO ERROR COUNT IS
6802 ;REPORTED; HOWEVER IN THIS TEST A REP COUNT
6803 ;OF 1 IS ALLOWED, BECAUSE AT LOW BAUD RATES
6804 ;WE WOULD EXPECT 1 REP.
6805
6806
6807
6808 036456 ENDTST
6809 (3) 036456 L10100:
6810 (3) 036456 104401 TRAP C$ETST
6811
6812
6813 .SBTTL TEST 19 - DMR MAINTENANCE MODE MESSAGE
6814
6815 *****
6816 * TEST 19 - DMR-11
6817 * MAINTENANCE MODE OPERATION
6818 *
6819 * THE BA/CC OUT RECEIVE AND TRANSMIT WILL BE ACCOUNTED FOR AND
6820 * THE CHARACTER COUNTS AND BUFFER ADDRESSES WILL BE CHECKED AGAINST
6821 * THE RECEIVE/TRANSMIT TABLE.
6822 *
6823 * THE BUFFERS ARE DETERMINED IN THE SUBROUTINE $BUFFS. THIS
6824 * SUBROUTINE WILL DETERMINE THE ADDRESS AND CHARACTER COUNT OF
6825 * ONE RECEIVE AND ONE TRANSMIT BUFFER. THE ROUTINE WILL
6826 * ATTEMPT TO USE AS LARGE BUFFERS AS POSSIBLE IN THE FOLLOWING
6827 * HIERARCHY:
6828 * A. IF THERE IS MEMORY MANAGEMENT, USE A PAGE ABOVE 32K.
6829 * B. IF THERE IS FREE MEMORY ABOVE THE SUPERVISOR GREATER
6830 * THAN 2K BYTES, USE THAT MEMORY
6831 * C. IF NEITHER OF THE PRECEEDING TWO ARE POSSIBLE; USE
6832 * THE 2K BYTE DEFAULT BUFFER WITHIN THIS DIAGNOSTIC.
6833 *****
6834
6835 036460 BGNTST
6836 (3) 036460 T19::
6837 036460 012737 000001 002322 MOV #1,BUFNUM ;# OF RCV & XMIT BUFFERS.
6838 036466 005037 002274 CLR RESUME ;DON'T ALLOW RESUME
6839 036472 005037 002276 CLR DMCMD ;FLAG CLEARED TO ALLOW DMR MODE.
6840 036476 012737 000001 002300 MOV #1,MNTMDE ;FLAG SET TO REQUEST MAINTENANCE MODE.
6841
6842 036504 CALL $BUFFS ;DETERMINE 1 RCV & 1 XMIT BUFFER
6843
6844 036510 CLEAR ;MASTER CLEAR
6845 (1) 036510 004737 011064 JSR PC, $MSCLR ;**** MACRO EXPANSION ****
6846 (1) ;ISSUE A DMR MASTER CLEAR
6847 (1) ;****
6848 036514 ESCAPE TST ;IF ERROR, EXIT TEST
6849 (3) 036514 104410
6850 (3) 036516 000012 TRAP C$ESCAPE
6851 L10101-

```

6848 036520 CALL \$INOUT ;THIS ROUTINE WILL MANAGE ALL THE DMR  
6849 ;COMMANDS ISSUED IN THE INTERRUPT ROUTINES  
6850 ;(FROM BASE IN UNTIL SHUT DOWN). BESIDES  
6851 ;CONTROLLING THE SOFTWARE TIMEOUT, THIS  
6852 ;ROUTINE WILL ALSO CHECK THAT BUFFER  
6853 ;CHARACTER COUNTS AND ADDRESSES ARE CORRECT  
6854 ;AND THAT THE DATA IS CORRECT IN THOSE BUFFERS  
6855

6856 036524 CALL \$ERROR ;CHECK BASE TABLE FOR SOFT ERRORS  
6857  
6858

6859 036530 ENDTST

(3) 036530 L10101: TRAP C\$ETST  
(3) 036530 104401

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.SBTTL HARDWARE PARAMETER CODING SECTION

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

BGNHRD

.WORD L10102-L\$HARD/2  
L\$HARD::

GPRMA P1,2,0,160000,177776,YES

.WORD T\$CODE  
.WORD P1  
.WORD T\$LOLIM  
.WORD T\$HILIM

GPRMA P2,4,0,0,776,YES

.WORD T\$CODE  
.WORD P2  
.WORD T\$LOLIM  
.WORD T\$HILIM

GPRMD P3,20,0,7,0,7,YES

.WORD T\$CODE  
.WORD P3  
.WORD 7  
.WORD T\$LOLIM  
.WORD T\$HILIM

ENDHRD

.EVEN  
L10102:

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

037236 020054 047111 042524  
037244 051107 046101 041055  
037252 032503 040465 030455  
037260 026060  
6897 037262 051040 031123 031063  
037270 026503 031510 032462  
037276 020054 051522 031064  
037304 027463 031064 026462  
037312 031510 032462 024461  
037320 005015  
6898 037322 020052 042523 042514  
037330 052103 052040 042510  
037336 043040 046117 047514  
037344 044527 043516 047440  
037352 046116 020131 043111  
037360 052040 042510 046440  
037366 042117 046505 051440  
037374 050125 047520 052122  
037402 020123 047514 050117  
037410 040502 045503 025040  
6899 037416 005015 020040 020066  
037424 020075 047514 040503  
037432 020114 047514 050117  
037440 005015  
6900 037442 020040 020067 020075  
037450 042522 047515 042524  
037456 046040 047517 006520  
037464 000012

.ASCII / RS232C-H325, RS423/<57>/422-H3251)/<CR><LF>

.ASCII /\* SELECT THE FOLLOWING ONLY IF THE MODEM SUPPORTS LOOPBACK \*/

.ASCII <CR><LF>/ 6 = LOCAL LOOP/<CR><LF>

.ASCIIZ / 7 = REMOTE LOOP/<CR><LF>

.EVEN

.SBTTL SOFTWARE PARAMETER CODING SECTION

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

BGNSFT

.WORD L10103-L\$SOFT/2  
L\$SOFT::

GPRMD S1,0,0,7,1,5,YES

.WORD T\$CODE  
.WORD S1  
.WORD 7  
.WORD T\$LOLIM  
.WORD T\$HILIM

6901  
6902  
6903  
6904  
6905  
6906  
6907  
6908  
6909  
6910  
6911  
6912  
6913  
6914  
6915  
6916  
6917  
6918 037466  
(3) 037466 000005  
(3) 037470  
6919  
6920 037470  
(4) 037470 000032  
(4) 037472 037502  
(4) 037474 000007  
(4) 037476 000001  
(4) 037500 000005  
6921



```
6922 037502 ENDSFT
(2)
(3) 037502 L10103: .EVEN
6923
6924 037502 042523 042514 052103 S1: .ASCII /SELECTABLE PROGRAM LOOP TIME-OUT VARIABLE/<CR><LF>
 037510 041101 042514 050040
 037516 047522 051107 046501
 037524 046040 047517 020120
 037532 044524 042515 047455
 037540 052125 053040 051101
 037546 040511 046102 006505
 037554 012
6925 037555 133 042522 042506 .ASCIIZ /[REFER TO LISTING 6.3.13] (MAX=5; MIN=1) /
 037562 020122 047524 046040
 037570 051511 044524 043516
 037576 033040 031456 030456
 037604 056463 020040 024040
 037612 040515 036530 035465
 037620 046440 047111 030475
 037626 020051 000
6926 037632 .EVEN
6927
6928 ;***** PATCH AREA *****
6929 037632 PATCH:
6930 .=. +100
6931 037732 000240 NOP
6932 037734 000240 NOP
6933 037736 000240 NOP
6934 ;*****
6935 037740 ;ENDMOD
6936
6937 037740 LASTAD
(2)
(4) 037740 000000 .EVEN
(4) 037742 000000 .WORD 0
(3) 037744 .WORD 0
6938 L$LAST::
 .END
```

[illegible]





[illegible]

|        |        |   |       |       |       |       |       |       |       |       |      |      |      |      |      |
|--------|--------|---|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| EMG17  | 020405 |   | 4209# | 4505  |       |       |       |       |       |       |      |      |      |      |      |
| EMG18  | 020457 |   | 4210# | 4740  |       |       |       |       |       |       |      |      |      |      |      |
| EMG2   | 020025 |   | 3973  | 4196# |       |       |       |       |       |       |      |      |      |      |      |
| EMG8   | 020072 |   | 3338  | 4199# | 5715  | 5756  | 5819  | 5851  | 5885  | 5943  | 5986 | 6036 | 6064 | 6088 | 6118 |
|        |        |   | 6145  |       |       |       |       |       |       |       |      |      |      |      |      |
| EMG9   | 020136 |   | 3014  | 3343  | 4200# | 4751  | 5720  | 5761  | 5824  | 5856  | 5890 | 5948 | 5992 | 6041 | 6069 |
|        |        |   | 6093  | 6123  | 6150  | 6203  | 6416  |       |       |       |      |      |      |      |      |
| EMS3   | 012532 |   | 3546  | 3556# |       |       |       |       |       |       |      |      |      |      |      |
| EMS4   | 012722 |   | 3592  | 3597  | 3604# |       |       |       |       |       |      |      |      |      |      |
| EMT0   | 024002 |   | 4921  | 4928# |       |       |       |       |       |       |      |      |      |      |      |
| EMT1   | 025362 |   | 5072  | 5084  | 5137# |       |       |       |       |       |      |      |      |      |      |
| EMT10  | 030524 |   | 5502  | 5569# |       |       |       |       |       |       |      |      |      |      |      |
| EMT11  | 030552 |   | 5516  | 5570# |       |       |       |       |       |       |      |      |      |      |      |
| EMT12  | 030606 |   | 5536  | 5571# |       |       |       |       |       |       |      |      |      |      |      |
| EMT13  | 031146 |   | 5620  | 5642  | 5658# |       |       |       |       |       |      |      |      |      |      |
| EMT2   | 025402 |   | 5116  | 5138# |       |       |       |       |       |       |      |      |      |      |      |
| EMT20  | 031746 |   | 5770  | 5781# |       |       |       |       |       |       |      |      |      |      |      |
| EMT22  | 036046 |   | 6374  | 6525  | 6536# |       |       |       |       |       |      |      |      |      |      |
| EMT3   | 025536 |   | 5198  | 5202# |       |       |       |       |       |       |      |      |      |      |      |
| EMT4   | 026264 |   | 5239  | 5317# |       |       |       |       |       |       |      |      |      |      |      |
| EMT5   | 026311 |   | 5254  | 5287  | 5318# |       |       |       |       |       |      |      |      |      |      |
| EMT6   | 026357 |   | 5272  | 5319# |       |       |       |       |       |       |      |      |      |      |      |
| EMT7   | 027514 |   | 5365  | 5378  | 5446# |       |       |       |       |       |      |      |      |      |      |
| EMT8   | 027545 |   | 5415  | 5447# |       |       |       |       |       |       |      |      |      |      |      |
| EMT9   | 030474 |   | 5495  | 5568# |       |       |       |       |       |       |      |      |      |      |      |
| END    | 021510 |   | 4272  | 4395  | 4398# |       |       |       |       |       |      |      |      |      |      |
| ERRFLG | 002354 |   | 2586# | 2976* | 3004* | 3015* | 3028  | 3069* | 3092* | 3100  |      |      |      |      |      |
| ERRG1  | 014562 | G | 3973  | 4042# |       |       |       |       |       |       |      |      |      |      |      |
| ERRG10 | 016160 | G | 3995  | 4152# |       |       |       |       |       |       |      |      |      |      |      |
| ERRG11 | 016212 | G | 4156# |       |       |       |       |       |       |       |      |      |      |      |      |
| ERRG12 | 016244 | G | 4010  | 4160# |       |       |       |       |       |       |      |      |      |      |      |
| ERRG2  | 015070 | G | 3003  | 3014  | 3091  | 3338  | 3343  | 3592  | 3597  | 4061# | 4505 | 4740 | 4751 | 4771 | 5715 |
|        |        |   | 5720  | 5756  | 5761  | 5819  | 5824  | 5851  | 5856  | 5885  | 5890 | 5943 | 5948 | 5986 | 5992 |
|        |        |   | 6036  | 6041  | 6064  | 6069  | 6088  | 6093  | 6118  | 6123  | 6145 | 6150 | 6206 | 6216 | 6222 |
|        |        |   | 6227  | 6235  | 6241  | 6246  | 6261  | 6264  | 6416  | 6423  | 6429 | 6434 | 6439 | 6445 | 6450 |
|        |        |   | 6473  |       |       |       |       |       |       |       |      |      |      |      |      |
| ERRG3  | 015204 | G | 3183  | 4070# | 5198  |       |       |       |       |       |      |      |      |      |      |
| ERRG4  | 015464 | G | 3546  | 4102# |       |       |       |       |       |       |      |      |      |      |      |
| ERRG7  | 015760 | G | 4139# | 4813  |       |       |       |       |       |       |      |      |      |      |      |
| ERRG8  | 016056 | G | 4145# | 4802  | 4807  |       |       |       |       |       |      |      |      |      |      |
| ERROR  | 002360 |   | 2592# | 3009  | 3259  | 4251* | 5810* | 5     |       |       |      |      |      |      |      |

[illegible]

```
GETPRM 020666
GSCNT0= 000200
GSDLM= 000372
GSDISP= 000003
GSEXCP= 000400
GSHILI= 000002
GSLOLI= 000001
```

|       |      |      |      |      |      |      |      |      |      |      |      |      |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 5623  | 5628 | 5630 | 5634 | 5637 | 5647 | 5649 | 5653 | 5682 | 5683 | 5686 | 5689 | 5692 |
| 5701  | 5707 | 5725 | 5729 | 5731 | 5734 | 5737 | 5740 | 5749 | 5753 | 5773 | 5774 | 5777 |
| 5800  | 5801 | 5804 | 5807 | 5809 | 5828 | 5830 | 5833 | 5836 | 5839 | 5861 | 5863 | 5866 |
| 5869  | 5872 | 5875 | 5894 | 5896 | 5912 | 5915 | 5925 | 5928 | 5931 | 5938 | 5940 | 5952 |
| 5965  | 5968 | 5971 | 5974 | 5983 | 6000 | 6020 | 6021 | 6033 | 6045 | 6047 | 6061 | 6073 |
| 6075  | 6085 | 6097 | 6099 | 6102 | 6105 | 6108 | 6115 | 6127 | 6129 | 6132 | 6135 | 6142 |
| 6154  | 6156 | 6172 | 6186 | 6189 | 6191 | 6195 | 6199 | 6283 | 6301 | 6380 | 6383 | 6385 |
| 6403  | 6409 | 6412 | 6533 | 6588 | 6602 | 6608 | 6610 | 6625 | 6677 | 6687 | 6699 | 6727 |
| 6738  | 6751 | 6779 | 6791 | 6808 | 6835 | 6846 | 6859 | 6878 | 6918 | 6935 |      |      |
| 2209# | 4459 | 4461 |      |      |      |      |      |      |      |      |      |      |
| 2209# | 4853 | 4858 |      |      |      |      |      |      |      |      |      |      |
| 2209# | 2212 | 4058 | 4068 | 4099 | 4135 | 4143 | 4149 | 4154 | 4158 | 4164 | 4399 | 4439 |
| 4461  | 4730 | 4830 | 4839 | 4858 | 4885 | 4913 | 4926 | 4966 | 4967 | 4990 | 4993 | 5094 |
| 5096  | 5129 | 5131 | 5178 | 5181 | 5190 | 5200 | 5224 | 5225 | 5229 | 5233 | 5256 | 5258 |
| 5261  | 5266 | 5289 | 5291 | 5315 | 5348 | 5349 | 5352 | 5356 | 5359 | 5361 | 5372 | 5374 |
| 5380  | 5382 | 5385 | 5389 | 5392 | 5401 | 5403 | 5417 | 5418 | 5443 | 5480 | 5481 | 5484 |
| 5487  | 5490 | 5499 | 5504 | 5506 | 5511 | 5520 | 5522 | 5525 | 5528 | 5531 | 5533 | 5538 |
| 5540  | 5544 | 5556 | 5560 | 5562 | 5566 | 5593 | 5595 | 5598 | 5601 | 5611 | 5615 | 5623 |
| 5628  | 5630 | 5634 | 5637 | 5647 | 5649 | 5655 | 5682 | 5683 | 5686 | 5689 | 5692 | 5701 |
| 5707  | 5725 | 5729 | 5731 | 5734 | 5737 | 5740 | 5749 | 5753 | 5773 | 5774 | 5779 | 5800 |
| 5801  | 5804 | 5807 | 5809 | 5828 | 5830 | 5833 | 5836 | 5839 | 5861 | 5863 | 5866 | 5869 |
| 5872  | 5875 | 5894 | 5896 | 5912 | 5915 | 5925 | 5928 | 5931 | 5938 | 5940 | 5952 | 5965 |
| 5968  | 5971 | 5974 | 5983 | 6000 | 6020 | 6021 | 6033 | 6045 | 6047 | 6061 | 6073 | 6075 |
| 6085  | 6097 | 6099 | 6102 | 6105 | 6108 | 6115 | 6127 | 6129 | 6132 | 6135 | 6142 | 6154 |
| 6156  | 6172 | 6186 | 6189 | 6191 | 6195 | 6199 | 6283 | 6301 | 6380 | 6383 | 6385 | 6403 |
| 6409  | 6412 | 6533 | 6588 | 6602 | 6608 | 6610 | 6625 | 6677 | 6687 | 6699 | 6727 | 6738 |
| 6751  | 6779 | 6791 | 6808 | 6835 | 6846 | 6859 | 6884 | 6922 | 6935 |      |      |      |
| 2209# | 6878 | 6884 |      |      |      |      |      |      |      |      |      |      |
| 2209# | 2300 | 2314 |      |      |      |      |      |      |      |      |      |      |
| 2209# | 4246 | 4399 |      |      |      |      |      |      |      |      |      |      |
| 2209# |      |      |      |      |      |      |      |      |      |      |      |      |
| 2209# | 2212 | 6935 |      |      |      |      |      |      |      |      |      |      |
| 2209# | 4042 | 4058 | 4061 | 4068 | 4070 | 4099 | 4102 | 4135 | 4139 | 4143 | 4145 | 4149 |
| 4152  | 4154 | 4156 | 4158 | 4160 | 4164 | 5293 | 5315 | 5420 | 5443 | 5653 | 5655 | 5777 |
| 5779  |      |      |      |      |      |      |      |      |      |      |      |      |
| 2209# | 4223 | 4229 |      |      |      |      |      |      |      |      |      |      |
| 2209# |      |      |      |      |      |      |      |      |      |      |      |      |
| 2209# |      |      |      |      |      |      |      |      |      |      |      |      |
| 2209# |      |      |      |      |      |      |      |      |      |      |      |      |
| 2209# | 6918 | 6922 |      |      |      |      |      |      |      |      |      |      |

[illegible]



|       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2209# | 4477# | 4730# | 4735# | 4830# | 4835# | 4839# | 4916# | 4926# |       |       |       |       |
| 2209# | 4885  | 4966  | 4967# | 4990# | 4993# | 5094# | 5096# | 5129# | 5178  | 5224  | 5225# | 5256# |
| 5258# | 5289# | 5348  | 5349# | 5380# | 5382# | 5417# | 5480  | 5481# | 5504# | 5506# | 5520# | 5522# |
| 5538# | 5540# | 5562# | 5593  | 5595# | 5628# | 5630# | 5647# | 5682  | 5683# | 5729# | 5731# | 5773# |
| 5800  | 5801# | 5828# | 5830# | 5861# | 5863# | 5894# | 5912  | 5965  | 6020  | 6021# | 6045# | 6047# |
| 6073# | 6075# | 6097# | 6099# | 6127# | 6129# | 6154# | 6172  | 6301  | 6588  | 6677  | 6727  | 6779  |

|       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2209# | 4885# | 4913# | 4966# | 4967  | 4993  | 5096  | 5131# | 5178# | 5181  | 5190  | 5200# | 5224# |
| 5225  | 5229  | 5233  | 5258  | 5261  | 5266  | 5291# | 5348# | 5349  | 5352  | 5356  | 5359  | 5361  |
| 5372  | 5374  | 5382  | 5385  | 5389  | 5392  | 5401  | 5403  | 5418# | 5480# | 5481  | 5484  | 5487  |
| 5490  | 5499  | 5506  | 5511  | 5522  | 5525  | 5528  | 5531  | 5533  | 5540  | 5544  | 5556  | 5560  |
| 5566# | 5593# | 5595  | 5598  | 5601  | 5611  | 5615  | 5623  | 5630  | 5634  | 5637  | 5649# | 5682# |
| 5683  | 5686  | 5689  | 5692  | 5701  | 5707  | 5725  | 5731  | 5734  | 5737  | 5740  | 5749  | 5753  |
| 5774# | 5800# | 5801  | 5804  | 5807  | 5809  | 5830  | 5833  | 5836  | 5839  | 5863  | 5866  | 5869  |
| 5872  | 5875  | 5896# | 5912# | 5915  | 5925  | 5928  | 5931  | 5938  | 5940  | 5952# | 5965# | 5968  |
| 5971  | 5974  | 5983  | 6000# | 6020# | 6021  | 6033  | 6047  | 6061  | 6075  | 6085  | 6099  | 6102  |
| 6105  | 6108  | 6115  | 6129  | 6132  | 6135  | 6142  | 6156# | 6172# | 6186  | 6189  | 6191  | 6195  |
| 6199  | 6283# | 6301# | 6380  | 6383  | 6385  | 6403  | 6409  | 6412  | 6533# | 6588# | 6602  | 6608  |
| 6610  | 6625# | 6677# | 6687  | 6699# | 6727# | 6738  | 6751# | 6779# | 6791  | 6808# | 6835# | 6846  |

|       |       |       |       |       |       |       |      |      |      |      |      |      |
|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
| 2209# |       |       |       |       |       |       |      |      |      |      |      |      |
| 2590# | 4622* | 4644  | 4659  | 4661  |       |       |      |      |      |      |      |      |
| 2476# | 6888  | 6889  | 6890  | 6892  | 6894  | 6895  | 6897 | 6899 | 6900 | 6924 |      |      |
| 4887  | 4916# |       |       |       |       |       |      |      |      |      |      |      |
| 2603# | 5002* | 5034* | 5040  | 5041* | 5042* | 5064* | 5065 | 5074 |      |      |      |      |
| 2343# |       |       |       |       |       |       |      |      |      |      |      |      |
| 2593# | 4278* | 4282* | 4283  | 4285  | 4435  | 4856  | 4907 | 4974 |      |      |      |      |
| 2343# |       |       |       |       |       |       |      |      |      |      |      |      |
| 2605# | 5016* | 5020* | 5035* | 5065  | 5074  |       |      |      |      |      |      |      |
| 2373# | 4567  | 4570  | 5354  | 5368  | 5387  | 5485  | 5507 | 5526 | 5547 | 5550 | 5599 | 5687 |
| 5735  | 5805  | 5834  | 5867  | 5916  | 5969  | 6025  | 6030 | 6103 | 6133 | 6187 | 6381 | 6606 |

[illegible]

|         |          |       |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
|---------|----------|-------|-------|-------|------|-------|------|------|------|------|------|------|-------|--|--|--|--|--|--|
| L\$HIME | 002120 G | 2251# | 3748  | 6318  | 6490 |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$HPCP | 002016 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$HPTP | 002022 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$HW   | 002174 G | 2251  | 2300# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$ICP  | 002104 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$INIT | 020514 G | 2251  | 4246# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$LADP | 002026 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$LAST | 037744 G | 2251  | 6937# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$LOAD | 002100 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$LUN  | 002074 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$MREV | 002050 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$NAME | 002000 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$PRIO | 002042 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$PROT | 020506 G | 2251  | 4223# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$PRT  | 002112 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$REPP | 002062 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$REV  | 002010 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$SOFT | 037470 G | 2251  | 6918# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$SPC  | 002056 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$SPCP | 002020 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$SPTP | 002024 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$STA  | 002030 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$SW   | 002224 G | 2251  | 2325# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$TEST | 002114 G | 2251# | 3535  |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$TIML | 002014 G | 2251# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L\$UNIT | 002012 G | 2251# | 4283  |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10000  | 002222   | 2300  | 2314# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10001  | 002226   | 2325  | 2329# |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10002  | 015066   | 4058# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10003  | 015202   | 4068# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10004  | 015462   | 4099# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10005  | 015756   | 4135# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10006  | 016054   | 4143# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10007  | 016156   | 4149# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10010  | 016210   | 4154# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10011  | 016242   | 4158# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10012  | 016274   | 4164# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10014  | 021510   | 4399# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10015  | 021766   | 4439# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10016  | 021770   | 4461# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10017  | 023052   | 4730# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10020  | 023510   | 4830# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10021  | 023520   | 4839# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10022  | 023550   | 4858# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10023  | 023722   | 4913# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10024  | 024000   | 4926# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10025  | 025072   | 5131# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10026  | 024274   | 4990# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10027  | 024716   | 5094# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10030  | 025070   | 5129# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10031  | 025534   | 5181  | 5190  | 5200# |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10032  | 026042   | 5229  | 5233  | 5261  | 5266 | 5291# |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10033  | 025712   | 5256# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10034  | 026040   | 5289# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10035  | 026262   | 5315# |       |       |      |       |      |      |      |      |      |      |       |  |  |  |  |  |  |
| L10036  | 027204   | 5352  | 5356  | 5359  | 5361 | 5372  | 5374 | 5385 | 5389 | 5392 | 5401 | 5403 | 5418# |  |  |  |  |  |  |



|         |        |       |       |       |       |       |       |       |       |      |      |       |       |       |
|---------|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|
| L10037  | 027024 | 5380# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10040  | 027202 | 5417# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10041  | 027512 | 5443# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10042  | 030472 | 5484  | 5487  | 5490  | 5499  | 5511  | 5525  | 5528  | 5531  | 5533 | 5544 | 5556  | 5560  | 5566# |
| L10043  | 030210 | 5504# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10044  | 030300 | 5520# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10045  | 030374 | 5538# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10046  | 030470 | 5562# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10047  | 031100 | 5598  | 5601  | 5611  | 5615  | 5623  | 5634  | 5637  | 5649# |      |      |       |       |       |
| L10050  | 031000 | 5628# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10051  | 031076 | 5647# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10052  | 031144 | 5655# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10053  | 031706 | 5686  | 5689  | 5692  | 5701  | 5707  | 5725  | 5734  | 5737  | 5740 | 5749 | 5753  | 5774# |       |
| L10054  | 031500 | 5729# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10055  | 031704 | 5773# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10056  | 031744 | 5779# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10057  | 032472 | 5804  | 5807  | 5809  | 5833  | 5836  | 5839  | 5866  | 5869  | 5872 | 5875 | 5896# |       |       |
| L10060  | 032124 | 5828# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10061  | 032304 | 5861# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10062  | 032470 | 5894# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10063  | 032674 | 5915  | 5925  | 5928  | 5931  | 5938  | 5940  | 5952# |       |      |      |       |       |       |
| L10064  | 033054 | 5968  | 5971  | 5974  | 5983  | 6000# |       |       |       |      |      |       |       |       |
| L10065  | 033760 | 6033  | 6061  | 6085  | 6102  | 6105  | 6108  | 6115  | 6132  | 6135 | 6142 | 6156# |       |       |
| L10066  | 033204 | 6045# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10067  | 033322 | 6073# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10070  | 033440 | 6097# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10071  | 033616 | 6127# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10072  | 033756 | 6154# |       |       |       |       |       |       |       |      |      |       |       |       |
| L10073  | 034454 | 6186  | 6189  | 6191  | 6195  | 6199  | 6283# |       |       |      |      |       |       |       |
| L10074  | 036044 | 6380  | 6383  | 6385  | 6403  | 6409  | 6412  | 6533# |       |      |      |       |       |       |
| L10075  | 036270 | 6602  | 6608  | 6610  | 6625# |       |       |       |       |      |      |       |       |       |
| L10076  | 036336 | 6687  | 6699# |       |       |       |       |       |       |      |      |       |       |       |
| L10077  | 036406 | 6738  | 6751# |       |       |       |       |       |       |      |      |       |       |       |
| L10100  | 036456 | 6791  | 6808# |       |       |       |       |       |       |      |      |       |       |       |
| L10101  | 036530 | 6846  | 6859# |       |       |       |       |       |       |      |      |       |       |       |
| L10102  | 036566 | 6878  | 6884# |       |       |       |       |       |       |      |      |       |       |       |
| L10103  | 037502 | 6918  | 6922# |       |       |       |       |       |       |      |      |       |       |       |
| MAINT = | 000400 | 2402# | 3323  | 4537  | 5529  | 5690  |       |       |       |      |      |       |       |       |
| MAINT1= | 000010 | 2412# | 3682  | 3687  | 4525  | 4528  |       |       |       |      |      |       |       |       |
| MAINT2= | 000004 | 2415# | 3681  | 3688  | 4524  | 4529  |       |       |       |      |      |       |       |       |
| MCLR =  | 040000 | 2370# | 3158  | 3161  |       |       |       |       |       |      |      |       |       |       |
| MDIAG = | 020000 | 2371# | 3161  |       |       |       |       |       |       |      |      |       |       |       |
| MICRO   | 002256 | 2513# |       |       |       |       |       |       |       |      |      |       |       |       |
| MMANAG  | 002302 | 2535# | 3751* | 3816* | 3982  | 3     |       |       |       |      |      |       |       |       |

|         |        |       |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
|---------|--------|-------|-------|-------|-------|------|-------|------|------|------|------|------|--|--|--|--|--|--|--|
| OUTFLG  | 002350 | 2582# | 3945* | 3965  | 4650  | 4756 | 4826* |      |      |      |      |      |  |  |  |  |  |  |  |
| OUTISR  | 023054 | 4331  | 4735# |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OUTRCV  | 002330 | 2567# | 3942* | 4050* | 4054* | 4057 | 4810* | 4822 |      |      |      |      |  |  |  |  |  |  |  |
| OUTXMT  | 002332 | 2568# | 3943* | 4051* | 4055* | 4057 | 4798* | 4820 |      |      |      |      |  |  |  |  |  |  |  |
| OSAPTS= | 000000 | 2209# | 2251  |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSAU =  | 000000 | 2209# | 2251  |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSBGNR= | 000000 | 2209# | 2251  |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSBGNS= | 000001 | 2209# | 2228# | 2251  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSBU =  | 000001 | 2209# | 2228# | 2251  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSERRT= | 000000 | 2209# | 2251  |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSGNSW= | 000001 | 2209# | 2228# | 2251  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSPOIN= | 000001 | 2209# | 2228# | 2251  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| OSSETU= | 000000 | 2209# | 2251  | 6937  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PATCH   | 037632 | 6929# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PNT =   | 001000 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRETIM= | 000055 | 2459# | 5404  | 5423  | 5425  |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI =   | 002000 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI00 = | 000000 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI01 = | 000040 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI02 = | 000100 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI03 = | 000140 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI04 = | 000200 | 2343# | 3952  |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI05 = | 000240 | 2343# | 4330  | 4331  |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI06 = | 000300 | 2343# |       |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| PRI07 = | 000340 | 2343# | 3742  | 3752  | 4020  | 4248 | 4421  | 4887 | 6304 | 6322 | 6347 | 6510 |  |  |  |  |  |  |  |
| PSTACK  | 002364 | 2594# | 4249* |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| P1      | 036566 | 6880  | 6886# |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| P2      | 036604 | 6881  | 6887# |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| P3      | 036625 | 6882  | 6888# |       |       |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| R =     | 000042 | 2454# | 5243  | 5276  | 5294  | 5296 |       |      |      |      |      |      |  |  |  |  |  |  |  |
| RBUF    | 002562 | 2650# | 5873  | 5975  | 6082  | 6106 | 6139  | 6176 | 6193 | 6239 | 6252 |      |  |  |  |  |  |  |  |
| RCOUNT= | 000044 | 2649# | 5844  | 5873  | 5975  | 6082 | 6106  | 6173 | 6193 | 6244 | 6250 |      |  |  |  |  |  |  |  |
| RCV =   | 000004 | 2385# | 4796  | 6209  | 6270  | 6419 | 6477  |      |      |      |      |      |  |  |  |  |  |  |  |
| RCVBUF  | 003630 | 2664# | 3799* | 3832* | 3833* | 3868 | 3876  | 3877 | 3948 | 3950 | 3979 |      |  |  |  |  |  |  |  |
| RDI =   | 000200 | 2378# | 2994  | 3083  | 4482  |      |       |      |      |      |      |      |  |  |  |  |  |  |  |
| RDO =   | 000200 | 2388# | 2992  | 3262  | 3346  | 3599 | 4737  | 4828 | 5710 | 5723 |      |      |  |  |  |  |  |  |  |

|         |          |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SAVE    | 002336   | 2573# | 3400* | 3413  | 3434* |       |       |       |       |       |       |       |       |       |
| SECN    | = 004000 | 2397# |       |       |       |       |       |       |       |       |       |       |       |       |
| SELO    | = 002232 | 2498# | 2994  | 3070* | 3083  | 3158* | 3161* | 3175  | 3239* | 3262  | 3403* | 3581* | 3626* | 3628* |
|         |          | 3633* | 3634* | 3637* | 3641* | 3643* | 3644* | 4016* | 4044  | 4066  | 4075  | 4076  | 4480  | 4482  |
|         |          | 4567* | 4570* | 4630* | 4631* | 4636* | 4653* | 4898  | 5421  | 5491* | 5512* | 5613* | 5635* |       |
| SEL2    | 002234   | 2495# | 2501  | 2992  | 3012  | 3336  | 3346* | 3582* | 3590  | 3599* | 3627* | 4017* | 4044  | 4066  |
|         |          | 4075  | 4297* | 4298* | 4557* | 4737  | 4743  | 4796  | 4825* | 4828* | 4900  | 5421  | 5710* | 5713  |
|         |          | 5723* | 5726* | 5754  | 5817  | 5826* | 5849  | 5859* | 5883  | 5892* | 5941  | 5984  | 6034  | 6043* |
|         |          | 6062  | 6071* | 6086  | 6095* | 6116  | 6125* | 6143  | 6152* | 6204  | 6209  | 6270* | 6414  | 6419  |
|         |          | 6477* |       |       |       |       |       |       |       |       |       |       |       |       |
| SEL4    | 002236   | 2496# | 2503  | 3241* | 3415* | 3479* | 4045  | 4067  | 4141  | 4147  | 4301* | 4302* | 4546* | 4579* |
|         |          | 4587* | 4596  | 4597* | 4604* | 4610* | 4614* | 4775  | 4777* | 4781* | 4786* | 4791* | 4794* | 4799  |
|         |          | 4811  | 4902  | 5493  | 5514  | 6220  | 6239  | 6427  | 6443  |       |       |       |       |       |
| SEL6    | 002240   | 2497# | 2505  | 3243* | 3250  | 3321* | 3323  | 3341  | 3418* | 3423* | 3425* | 3481* | 3595  | 3629* |
|         |          | 3638* | 4045  | 4067  | 4141  | 4147  | 4305* | 4306* | 4524* | 4525* | 4528* | 4529* | 4537* | 4540* |
|         |          | 4550* | 4553* | 4560* | 4580* | 4588* | 4593* | 4745  | 4747  | 4767  | 4774* | 4805  | 4817  | 4904  |
|         |          | 5718  | 5759  | 5822  | 5854  | 5888  | 5946  | 5989  | 6039  | 6067  | 6091  | 6121  | 6148  | 6225  |
|         |          | 6244  | 6432  | 6448  |       |       |       |       |       |       |       |       |       |       |
| SFLAG   | 002342   | 2575# | 6389* | 6452  | 6486  | 6489* |       |       |       |       |       |       |       |       |
| SFPTBL  | 002224 G | 2325# |       |       |       |       |       |       |       |       |       |       |       |       |
| SKIP    | 002344   | 2576# |       |       |       |       |       |       |       |       |       |       |       |       |
| SPEED   | 002224   | 2327# | 4337  |       |       |       |       |       |       |       |       |       |       |       |
| STARES  | 002270   | 2527# | 4275* | 4280* | 4968  |       |       |       |       |       |       |       |       |       |
| STARST  | 020644   | 4265  | 4267  | 4274# |       |       |       |       |       |       |       |       |       |       |
| START   | 002272   | 2531# | 3946* | 4555  | 4667  | 4678  | 4680* |       |       |       |       |       |       |       |
| STLU    | = 010000 | 2372# |       |       |       |       |       |       |       |       |       |       |       |       |
| STREC   | = 000200 | 2407# |       |       |       |       |       |       |       |       |       |       |       |       |
| STUP    | = 000400 | 2376# | 3633  | 3634  | 3641  | 3643  |       |       |       |       |       |       |       |       |
| SUBRPC  | 002366   | 2595# | 2979* | 2980* | 3024* | 3073* | 3074* | 3096* | 3144* | 3145* | 3187* | 3229* | 3230* | 3273* |
|         |          | 3312* | 3313* | 3349* | 3397* | 3398* | 3432* | 3469* | 3470* | 3487* | 3520* | 3521* | 3550* | 3579* |
|         |          | 3580* | 3601* | 3677* | 3678* | 3698* | 3739* | 3740* | 3909* | 3937* | 3938* | 4022* | 4043  | 4062  |
|         |          | 4064  | 4071  | 4073  | 4103  | 4105  | 4250* |       |       |       |       |       |       |       |
| SVCGBL= | 000000   | 2209# | 2220# | 2251  | 2277  | 2300  | 2325  | 2687  | 2692  | 4042  | 4061  | 4070  | 4102  | 4139  |
|         |          | 4145  | 4152  | 4156  | 4160  | 4223  | 4246  | 4419  | 4459  | 4477  | 4735  | 4835  | 4853  | 4916  |
|         |          | 5293  | 5420  | 5653  | 5777  | 6878  | 6918  | 6937# |       |       |       |       |       |       |
| SVCINS= | 000001   | 2209# | 2217# | 2251  | 2277  | 2300  | 2325  | 2687  | 2692  | 2996  | 2999  | 3003  | 3011  | 3014  |
|         |          | 3020  | 3085  | 3088  | 3091  | 3177  | 3180  | 3183  | 3235  | 3247  | 3267  | 3317  | 3332  | 3333  |
|         |          | 3338  | 3343  | 3409  | 3475  | 3546  | 3585  | 3587  | 3589  | 3592  | 3597  | 3742  | 3752  | 3817  |
|         |          | 3818  | 3952  | 3959  | 3968  | 3973  | 3995  | 4010  | 4020  | 4043  | 4044  | 4045  | 4046  | 4047  |
|         |          | 4056  | 4057  | 4058  | 4064  | 4066  | 4067  | 4068  | 4073  | 4075  | 4080  | 4085  | 4088  | 4093  |
|         |          | 4097  | 4099  | 4105  | 4112  | 4119  | 4126  | 4133  | 4135  | 4140  | 4141  | 4142  | 4143  | 4146  |
|         |          | 4147  | 4148  | 4149  | 4153  | 4154  | 4157  | 4158  | 4163  | 4164  | 4248  | 4262  | 4264  | 4265  |
|         |          | 4266  | 4267  | 4268  | 4269  | 4270  | 4271  | 4285  | 4286  | 4292  | 4313  | 4330  | 4331  | 4399  |
|         |          | 4421  | 4432  | 4435  | 4436  | 4439  | 4461  | 4505  | 4730  | 4740  | 4751  | 4762  | 4771  | 4802  |
|         |          | 4807  | 4813  | 4830  | 4839  | 4855  | 4856  | 4858  | 4887  | 4907  | 4908  | 4911  | 4913  | 4921  |
|         |          | 4924  | 4926  | 4967  | 4974  | 4980  | 4990  | 4993  | 5072  | 5074  | 5084  | 5086  | 5094  | 5096  |
|         |          | 5116  | 5118  | 5129  | 5131  | 5181  | 5184  | 5190  | 5198  | 5200  | 5225  | 5229  | 5233  | 5239  |
|         |          | 5254  | 5256  | 5258  | 5261  | 5266  | 5272  | 5287  | 5289  | 5291  | 5296  | 5300  | 5305  | 5309  |
|         |          | 5313  | 5315  | 5349  | 5352  | 5356  | 5359  | 5361  | 5365  | 5372  | 5374  | 5378  | 5380  | 5382  |
|         |          | 5385  | 5389  | 5392  | 5401  | 5403  | 5415  | 5417  | 5418  | 5421  | 5422  | 5425  | 5429  | 5433  |
|         |          | 5437  | 5441  | 5443  | 5481  | 5484  | 5487  | 5490  | 5495  | 5499  | 5502  | 5504  | 5506  | 5511  |
|         |          | 5516  | 5520  | 5522  | 5525  | 5528  | 5531  | 5533  | 5536  | 5538  | 5540  | 5544  | 5556  | 5560  |
|         |          | 5562  | 5566  | 5595  | 5598  | 5601  | 5611  | 5615  | 5620  | 5623  | 5628  | 5630  | 5634  | 5637  |
|         |          | 5642  | 5647  | 5649  | 5654  | 5655  | 5683  | 5686  | 5689  | 5692  | 5701  | 5707  | 5715  | 5720  |
|         |          | 5725  | 5729  | 5731  | 5734  | 5737  | 5740  | 5749  | 5753  | 5756  | 5761  | 5770  | 5773  | 5774  |
|         |          | 5778  | 5779  | 5801  | 5804  | 5807  | 5809  | 5819  | 5824  | 5828  | 5830  | 5833  | 5836  | 5839  |

|          |        |        |       |       |       |       |       |       |       |       |       |       |       |       |
|----------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|          |        | 5851   | 5856  | 5861  | 5863  | 5866  | 5869  | 5872  | 5875  | 5885  | 5890  | 5894  | 5896  | 5915  |
|          |        | 5925   | 5928  | 5931  | 5938  | 5940  | 5943  | 5948  | 5952  | 5968  | 5971  | 5974  | 5983  | 5986  |
|          |        | 5992   | 6000  | 6021  | 6033  | 6036  | 6041  | 6045  | 6047  | 6061  | 6064  | 6069  | 6073  | 6075  |
|          |        | 6085   | 6088  | 6093  | 6097  | 6099  | 6102  | 6105  | 6108  | 6115  | 6118  | 6123  | 6127  | 6129  |
|          |        | 6132   | 6135  | 6142  | 6145  | 6150  | 6154  | 6156  | 6186  | 6189  | 6191  | 6195  | 6199  | 6203  |
|          |        | 6206   | 6216  | 6222  | 6227  | 6235  | 6241  | 6246  | 6261  | 6264  | 6283  | 6304  | 6307  | 6322  |
|          |        | 6347   | 6371  | 6374  | 6375  | 6380  | 6383  | 6385  | 6403  | 6409  | 6412  | 6416  | 6423  | 6429  |
|          |        | 6434   | 6439  | 6445  | 6450  | 6473  | 6510  | 6520  | 6525  | 6526  | 6533  | 6602  | 6608  | 6610  |
|          |        | 6625   | 6687  | 6699  | 6738  | 6751  | 6791  | 6808  | 6846  | 6859  | 6878  | 6880  | 6881  | 6882  |
|          |        | 6884   | 6918  | 6920  | 6922  | 6937  |       |       |       |       |       |       |       |       |
| SVCSUB=  | 000001 | 2209#  | 2219# | 4967  | 4993  | 5096  | 5225  | 5258  | 5349  | 5382  | 5481  | 5506  | 5522  | 5540  |
| SVCTAG=  | 000001 | 5595   | 5630  | 5683  | 5731  | 5801  | 5830  | 5863  | 6021  | 6047  | 6075  | 6099  | 6129  |       |
|          |        | 2209#  | 2221# | 2314  | 2329  | 4058  | 4068  | 4099  | 4135  | 4143  | 4149  | 4154  | 4158  | 4164  |
|          |        | 4399   | 4439  | 4461  | 4730  | 4830  | 4839  | 4858  | 4913  | 4926  | 4990  | 5094  | 5129  | 5131  |
|          |        | 5200   | 5256  | 5289  | 5291  | 5315  | 5380  | 5417  | 5418  | 5443  | 5504  | 5520  | 5538  | 5562  |
|          |        | 5566   | 5628  | 5647  | 5649  | 5655  | 5729  | 5773  | 5774  | 5779  | 5828  | 5861  | 5894  | 5896  |
|          |        | 5952   | 6000  | 6045  | 6073  | 6097  | 6127  | 6154  | 6156  | 6283  | 6533  | 6625  | 6699  | 6751  |
|          |        | 6808   | 6859  | 6884  | 6922  |       |       |       |       |       |       |       |       |       |
| SVCTST=  | 000001 | 2209#  | 2218# | 4885  | 4966  | 5178  | 5224  | 5348  | 5480  | 5593  | 5682  | 5800  | 5912  | 5965  |
|          |        | 6020   | 6172  | 6301  | 6588  | 6677  | 6727  | 6779  | 6835  |       |       |       |       |       |
| SW00     | =      | 000001 | 2364# |       |       |       |       |       |       |       |       |       |       |       |
| SW01     | =      | 000002 | 2363# |       |       |       |       |       |       |       |       |       |       |       |
| SW02     | =      | 000004 | 2362# |       |       |       |       |       |       |       |       |       |       |       |
| SW03     | =      | 000010 | 2361# |       |       |       |       |       |       |       |       |       |       |       |
| SW04     | =      | 000020 | 2360# |       |       |       |       |       |       |       |       |       |       |       |
| SW05     | =      | 000040 | 2359# |       |       |       |       |       |       |       |       |       |       |       |
| SW06     | =      | 000100 | 2358# |       |       |       |       |       |       |       |       |       |       |       |
| SW07     | =      | 000200 | 2357# |       |       |       |       |       |       |       |       |       |       |       |
| SW08     | =      | 000400 | 2356# |       |       |       |       |       |       |       |       |       |       |       |
| SW09     | =      | 001000 | 2355# |       |       |       |       |       |       |       |       |       |       |       |
| SW10     | =      | 002000 | 2354# |       |       |       |       |       |       |       |       |       |       |       |
| SW11     | =      | 004000 | 2353# |       |       |       |       |       |       |       |       |       |       |       |
| SW12     | =      | 010000 | 2352# |       |       |       |       |       |       |       |       |       |       |       |
| SW13     | =      | 020000 | 2351# |       |       |       |       |       |       |       |       |       |       |       |
| SW14     | =      | 040000 | 2350# |       |       |       |       |       |       |       |       |       |       |       |
| SW15     | =      | 100000 | 2349# |       |       |       |       |       |       |       |       |       |       |       |
| S\$LSYM= | 010000 | 2209#  | 2314# | 2329# | 4058# | 4068# | 4099# | 4135# | 4143# | 4149# | 4154# | 4158# | 4164# | 4399# |
|          |        | 4439#  | 4461# | 4730# | 4830# | 4839# | 4858# | 4913# | 4926# | 4990# | 5094# | 5129# |       |       |

|                 |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| TSEL4 035206    | 6395* | 6407# | 6427  | 6503* |       |       |       |       |       |       |       |       |       |  |
| TSEL6 035210    | 6396* | 6408# | 6432  | 6504* |       |       |       |       |       |       |       |       |       |  |
| TSARGC= 000002  | 2251# | 3011# | 3020# | 3333# | 4043# | 4044# | 4045# | 4046# | 4047# | 4056# | 4057# | 4064# | 4066# |  |
|                 | 4067# | 4073# | 4075# | 4080# | 4085# | 4088# | 4093# | 4097# | 4105# | 4112# | 4119# | 4126# | 4133# |  |
|                 | 4140# | 4141# | 4142# | 4146# | 4147# | 4148# | 4153# | 4157# | 4163# | 4292# | 4313# | 4856# | 4924# |  |
|                 | 4974# | 4980# | 5074# | 5086# | 5118# | 5184# | 5296# | 5300# | 5305# | 5309# | 5313# | 5421# | 5422# |  |
|                 | 5425# | 5429# | 5433# | 5437# | 5441# | 5654# | 5778# | 6375# | 6526# |       |       |       |       |  |
| T\$CODE= 000032 | 6880# | 6881# | 6882# | 6920# |       |       |       |       |       |       |       |       |       |  |
| T\$ERRN= 000023 | 2209# | 3003# | 3014# | 3091# | 3183# | 3338# | 3343# | 3546# | 3592# | 3597# | 3973# | 3995# | 4010# |  |
|                 | 4505# | 4740# | 4751# | 4762# | 4771# | 4802# | 4807# | 4813# | 4921# | 5072# | 5084# | 5116# | 5198# |  |
|                 | 5239# | 5254# | 5272# | 5287# | 5365# | 5378# | 5415# | 5495# | 5502# | 5516# | 5536# | 5620# | 5642# |  |
|                 | 5715# | 5720# | 5756# | 5761# | 5770# | 5819# | 5824# | 5851# | 5856# | 5885# | 5890# | 5943# | 5948# |  |
|                 | 5986# | 5992# | 6036# | 6041# | 6064# | 6069# | 6088# | 6093# | 6118# | 6123# | 6145# | 6150# | 6206# |  |
|                 | 6216# | 6222# | 6227# | 6235# | 6241# | 6246# | 6261# | 6264# | 6374# | 6416# | 6423# | 6429# | 6434# |  |
|                 | 6439# | 6445# | 6450# | 6473# | 6525# |       |       |       |       |       |       |       |       |  |
| T\$EXCP= 000000 | 6880# | 6881# | 6882# | 6920# |       |       |       |       |       |       |       |       |       |  |
| T\$FLAG= 000040 | 5181# | 5190# | 5229# | 5233# | 5261# | 5266# | 5352# | 5356# | 5359# | 5361# | 5372# | 5374# | 5385# |  |
|                 | 5389# | 5392# | 5401# | 5403# | 5484# | 5487# | 5490# | 5499# | 5511# | 5525# | 5528# | 5531# | 5533# |  |
|                 | 5544# | 5556# | 5560# | 5598# | 5601# | 5611# | 5615# | 5623# | 5634# | 5637# | 5686# | 5689# | 5692# |  |
|                 | 5701# | 5707# | 5725# | 5734# | 5737# | 5740# | 5749# | 5753# | 5804# | 5807# | 5809# | 5833# | 5836# |  |
|                 | 5839# | 5866# | 5869# | 5872# | 5875# | 5915# | 5925# | 5928# | 5931# | 5938# | 5940# | 5968# | 5971# |  |
|                 | 5974# | 5983# | 6033# | 6061# | 6085# | 6102# | 6105# | 6108# | 6115# | 6132# | 6135# | 6142# | 6186# |  |
|                 | 6189# | 6191# | 6195# | 6199# | 6380# | 6383# | 6385# | 6403# | 6409# | 6412# | 6602# | 6608# | 6610# |  |
|                 | 6687# | 6738# | 6791# | 6846# |       |       |       |       |       |       |       |       |       |  |
| T\$GMAN= 000000 | 2209# |       |       |       |       |       |       |       |       |       |       |       |       |  |
| T\$HILI= 000005 | 6880# | 6881# | 6882# | 6920# |       |       |       |       |       |       |       |       |       |  |
| T\$LAST= 000001 | 2209# | 6937# |       |       |       |       |       |       |       |       |       |       |       |  |
| T\$LOLI= 000001 | 6880# | 6881# | 6882# | 6920# |       |       |       |       |       |       |       |       |       |  |
| T\$LSYM= 010000 | 2209# | 2314  | 2329  | 4058  | 4068  | 4099  | 4135  | 4143  | 4149  | 4154  | 4158  | 4164  | 4399  |  |
|                 | 4439  | 4461  | 4730  | 4830  | 4839  | 4858  | 4913  | 4926  | 4990  | 5094  | 5129  | 5131  | 5200  |  |
|                 | 5256  | 5289  | 5291  | 5315  | 5380  | 5417  | 5418  | 5443  | 5504  | 5520  | 5538  | 5562  | 5566  |  |
|                 | 5628  | 5647  | 5649  | 5655  | 5729  | 5773  | 5774  | 5779  | 5828  | 5861  | 5894  | 5896  | 5952  |  |
|                 | 6000  | 6045  | 6073  | 6097  | 6127  | 6154  | 6156  | 6283  | 6533  | 6625  | 6699  | 6751  | 6808  |  |
|                 | 6859  | 6884  | 6922  |       |       |       |       |       |       |       |       |       |       |  |
| T\$LTNO= 000023 | 6937# |       |       |       |       |       |       |       |       |       |       |       |       |  |
| T\$NEST= 177777 | 2209# | 2212# | 2300# | 2314# | 2325# | 2329# | 4042# | 4058# | 4061# | 4068# | 4070# | 4099# | 4102# |  |
|                 | 4135# | 4139# | 4143# | 4145# | 4149# | 4152# | 4154# | 4156# | 4158# | 4160# | 4164# | 4223# | 4229# |  |
|                 | 4246# | 4399# | 4419# | 4439# | 4459# | 4461# | 4477# | 4730# | 4735# | 4830# | 4835# | 4839# | 4853# |  |
|                 | 4858# | 4885# | 4913# | 4916# | 4926# | 4966# | 4967# | 4990# | 4993# | 5094# | 5096# | 5129# | 5131# |  |
|                 | 5178# | 5200# | 5224# | 5225# | 5256# | 5258# | 5289# | 5291# | 5293# | 5315# | 5348# | 5349# | 5380# |  |
|                 | 5382# | 5417# | 5418# | 5420# | 5443# | 5480# | 5481# | 5504# | 5506# | 5520# | 5522# | 5538# | 5540# |  |
|                 | 5562# | 5566# | 5593# | 5595# | 5628# | 5630# | 5647# | 5649# | 5653# | 5655# | 5682# | 5683# | 5729# |  |
|                 | 5731# | 5773# | 5774# | 5777# | 5779# | 5800# | 5801# | 5828# | 5830# | 5861# | 5863# | 5894# | 5896# |  |
|                 | 5912# | 5952# | 5965# | 6000# | 6020# | 6021# | 6045# | 6047# | 6073# | 6075# | 6097# | 6099# | 6127# |  |
|                 | 6129# | 6154# | 6156# | 6172# | 6283# | 6301# | 6533# | 6588# | 6625# | 6677# | 6699# | 6727# | 6751# |  |
|                 | 6779# | 6808# | 6835# | 6859# | 6878# | 6884# | 6918# | 6922# | 6935# |       |       |       |       |  |
| T\$NSO = 000000 | 2212# | 6935  |       |       |       |       |       |       |       |       |       |       |       |  |
| T\$NS1 = 000005 | 2300# | 2314  | 2325# | 2329  | 4042# | 4058  | 4061# | 4068  | 4070# | 4099  | 4102# | 4135  | 4139# |  |
|                 | 4143  | 4145# | 4149  | 4152# | 4154  | 4156# | 4158  | 4160# | 4164  | 4223# | 4229  | 4246# | 4399  |  |
|                 | 4419# | 4439  | 4459# | 4461  | 4477# | 4730  | 4735# | 4830  | 4835# | 4839  | 4853# | 4858  | 4885# |  |
|                 | 4913  | 4916# | 4926  | 4966# | 5131  | 5178# | 5200  | 5224# | 5291  | 5293# | 5315  | 5348# | 5418  |  |
|                 | 5420# | 5443  | 5480# | 5566  | 5593# | 5649  | 5653# | 5655  | 5682# | 5774  | 5777# | 5779  | 5800# |  |
|                 | 5896  | 5912# | 5952  | 5965# | 6000  | 6020# | 6156  | 6172# | 6283  | 6301# | 6533  | 6588# | 6625  |  |
|                 | 6677# | 6699  | 6727# | 6751  | 6779# | 6808  | 6835# | 6859  | 6878# | 6884  | 6918# | 6922  |       |  |
| T\$NS2 = 000002 | 4967# | 4990  | 4993# | 5094  | 5096# | 5129  | 5225# | 5256  | 5258# | 5289  | 5349# | 5380  | 5382# |  |
|                 | 5417  | 5481# | 5504  | 5506# | 5520  | 5522# | 5538  | 5540# | 5562  | 5595# | 5628  | 5630# | 5647  |  |

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



|         |        | 6150  | 6154  | 6156  | 6186  | 6189  | 6191  | 6195  | 6199  | 6206  | 6216  | 6222  | 6227  | 6235  |
|---------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|         |        | 6241  | 6246  | 6261  | 6264  | 6283  | 6304  | 6307  | 6322  | 6347  | 6371  | 6374  | 6375  | 6380  |
|         |        | 6383  | 6385  | 6403  | 6409  | 6412  | 6416  | 6423  | 6429  | 6434  | 6439  | 6445  | 6450  | 6473  |
|         |        | 6510  | 6520  | 6525  | 6526  | 6533  | 6602  | 6608  | 6610  | 6625  | 6687  | 6699  | 6738  | 6751  |
|         |        | 6791  | 6808  | 6846  | 6859  |       |       |       |       |       |       |       |       |       |
| TSTSTS= | 000001 | 2209# | 4885# | 4966# | 5178# | 5224# | 5348# | 5480# | 5593# | 5682# | 5800# | 5912# | 5965# | 6020# |
|         |        | 6172# | 6301# | 6588# | 6677# | 6727# | 6779# | 6835# |       |       |       |       |       |       |
| TSSAUT= | 010015 | 4419# | 4439  |       |       |       |       |       |       |       |       |       |       |       |
| TSSCLE= | 010016 | 4459# | 4461  |       |       |       |       |       |       |       |       |       |       |       |
| TSSDU = | 010022 | 4853# | 4858  |       |       |       |       |       |       |       |       |       |       |       |
| TSSHAR= | 010102 | 6878# | 6884  |       |       |       |       |       |       |       |       |       |       |       |
| TSSHW = | 010000 | 2300# | 2314  |       |       |       |       |       |       |       |       |       |       |       |
| TSSINI= | 010014 | 4246# | 4399  |       |       |       |       |       |       |       |       |       |       |       |
| TSSMSG= | 010056 | 4042# | 4058  | 4061# | 4068  | 4070# | 4099  | 4102# | 4135  | 4139# | 4143  | 4145# | 4149  | 4152# |
|         |        | 4154  | 4156# | 4158  | 4160# | 4164  | 5293# | 5315  | 5420# | 5443  | 5653# | 5655  | 5777# | 5779  |
| TSSPRO= | 010013 | 4223# |       |       |       |       |       |       |       |       |       |       |       |       |
| TSSSOF= | 010103 | 6918# | 6922  |       |       |       |       |       |       |       |       |       |       |       |
| TSSSRV= | 010024 | 4477# | 4730  | 4735# | 4830  | 4835# | 4839  | 4916# | 4926  |       |       |       |       |       |
| TSSSUB= | 010072 | 4967# | 4990  | 4993# | 5094  | 5096# | 5129  | 5225# | 5256  | 5258# | 5289  | 5349# | 5380  | 5382# |
|         |        | 5417  | 5481# | 5504  | 5506# | 5520  | 5522# | 5538  | 5540# | 5562  | 5595# | 5628  | 5630# | 5647  |
|         |        | 5683# | 5729  | 5731# | 5773  | 5801# | 5828  | 5830# | 5861  | 5863# | 5894  | 6021# | 6045  | 6047# |
|         |        | 6073  | 6075# | 6097  | 6099# | 6127  | 6129# | 6154  |       |       |       |       |       |       |
| TSSSW = | 010001 | 2325# | 2329  |       |       |       |       |       |       |       |       |       |       |       |
| TSTES=  | 010101 | 4885# | 4913  | 4966# | 5131  | 5178# | 5181  | 5190  | 5200  | 5224# | 5229  | 5233  | 5261  | 5266  |
|         |        | 5291  | 5348# | 5352  | 5356  | 5359  | 5361  | 5372  | 5374  | 5385  | 5389  | 5392  | 5401  | 5403  |
|         |        | 5418  | 5480# | 5484  | 5487  | 5490  | 5499  | 5511  | 5525  | 5528  | 5531  | 5533  | 5544  | 5556  |
|         |        | 5560  | 5566  | 5593# | 5598  | 5601  | 5611  | 5615  | 5623  | 5634  | 5637  | 5649  | 5682# | 5686  |
|         |        | 5689  | 5692  | 5701  | 5707  | 5725  | 5734  | 5737  | 5740  | 5749  | 5753  | 5774  | 5800# | 5804  |
|         |        | 5807  | 5809  | 5833  | 5836  | 5839  | 5866  | 5869  | 5872  | 5875  | 5896  | 5912# | 5915  | 5925  |
|         |        | 5928  | 5931  | 5938  | 5940  | 5952  | 5965# | 5968  | 5971  | 5974  | 5983  | 6000  | 6020# | 6033  |
|         |        | 6061  | 6085  | 6102  | 6105  | 6108  | 6115  | 6132  | 6135  | 6142  | 6156  | 6172# | 6186  | 6189  |
|         |        | 6191  | 6195  | 6199  | 6283  | 6301# | 6380  | 6383  | 6385  | 6403  | 6409  | 6412  | 6533  | 6588# |
|         |        | 6602  | 6608  | 6610  | 6625  | 6677# | 6687  | 6699  | 6727# | 6738  | 6751  | 6779# | 6791  | 6808  |
|         |        | 6835# | 6846  | 6859  |       |       |       |       |       |       |       |       |       |       |
| T1      | 023602 | G     | 2277  | 4885# |       |       |       |       | </    |       |       |       |       |       |



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|              |       |       |       |       |       |       |       |      |      |       |       |       |       |
|--------------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|
| SWAIT 010246 | 2975# | 3234  | 3266  | 3316  | 3331  | 3407  | 3474  | 3584 | 3588 | 5492  | 5513  | 5614  | 5636  |
|              | 5706  | 5724  | 5752  | 5816  | 5848  | 5882  | 5939  | 5982 | 6032 | 6060  | 6084  | 6114  | 6141  |
|              | 6202  | 6411  |       |       |       |       |       |      |      |       |       |       |       |
| . = 037744   | 2203# | 2642# | 2650# | 2657# | 2662# | 2664# | 2669# | 2999 | 3088 | 3180  | 3557# | 3605# | 3968  |
|              | 4862# | 5141# | 5181  | 5190  | 5229  | 5233  | 5261  | 5266 | 5352 | 5356  | 5359  | 5361  | 5372  |
|              | 5374  | 5385  | 5389  | 5392  | 5401  | 5403  | 5455# | 5484 | 5487 | 5490  | 5499  | 5511  | 5525  |
|              | 5528  | 5531  | 5533  | 5544  | 5556  | 5560  | 5598  | 5601 | 5611 | 5615  | 5623  | 5634  | 5637  |
|              | 5659# | 5686  | 5689  | 5692  | 5701  | 5707  | 5725  | 5734 | 5737 | 5740  | 5749  | 5753  | 5782# |
|              | 5804  | 5807  | 5809  | 5833  | 5836  | 5839  | 5866  | 5869 | 5872 | 5875  | 5915  | 5925  | 5928  |
|              | 5931  | 5938  | 5940  | 5968  | 5971  | 5974  | 5983  | 6033 | 6061 | 6085  | 6102  | 6105  | 6108  |
|              | 6115  | 6132  | 6135  | 6142  | 6186  | 6189  | 6191  | 6195 | 6199 | 6380  | 6383  | 6385  | 6403  |
|              | 6409  | 6412  | 6602  | 6608  | 6610  | 6687  | 6738  | 6791 | 6846 | 6926# | 6930# |       |       |

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

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|        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MSCHEC | 2118# | 2209# |       |       |       |       |       |       |       |       |       |       |       |       |       |
| MSCNTO | 2182# | 2209# | 6880# | 6881# | 6882# | 6920# |       |       |       |       |       |       |       |       |       |
| MSCOUN | 2066# | 2209# | 3011# | 3020# | 3333# | 4043# | 4044# | 4045# | 4046# | 4047# | 4056# | 4057# | 4064# | 4066# | 4067# |
|        | 4073# | 4075# | 4080# | 4085# | 4088# | 4093# | 4097# | 4105# | 4112# | 4119# | 4126# | 4133# | 4140# | 4141# | 4142# |
|        | 4146# | 4147# | 4148# | 4153# | 4157# | 4163# | 4292# | 4313# | 4856# | 4924# | 4974# | 4980# | 5074# | 5086# | 5118# |
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| MSGETS | 2035# | 2209# | 2314# | 2329# | 4058# | 4068# | 4099# | 4135# | 4143# | 4149# | 4154# | 4158# | 4164# | 4229# | 4399# |
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| MSHNAP | 1824# | 2209# | 2251# |       |       |       |       |       |       |       |       |       |       |       |       |
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| MSRBRO | 1952# | 2209# |       |       |       |       |       |       |       |       |       |       |       |       |       |
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| MS SVC | 1933# | 2209# | 2996# | 3003  | 3011# | 3014  | 3020# | 3085# | 3091  | 3177# | 3183  | 3333# | 3338  | 3343  | 3546  |
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|        | 5683# | 5686# | 5689# | 5692# | 5701# | 5707# | 5715  | 5720  | 5725# | 5729# | 5731# | 5734# | 5737# | 5740# | 5749# |
|        | 5753# | 5756  | 5761  | 5770  | 5773# | 5774# | 5778# | 5779# | 5801# | 5804# | 5807# | 5809# | 5819  | 5824  | 5828# |
|        | 5830# | 5833# | 5836# | 5839# | 5851  | 5856  | 5861# | 5863# | 5866# | 5869# | 5872# | 5875# | 5885  | 5890  | 5894# |
|        | 5896# | 5915# | 5925# | 5928# | 5931# | 5938# | 5940# | 5943  | 5948  | 5952# | 5968# | 5971# | 5974# | 5983# | 5986  |
|        | 5992  | 6000# | 6021# | 6033# | 6036  | 6041  | 6045# | 6047# | 6061# | 6064  | 6069  | 6073# | 6075# | 6085# | 6088  |
|        | 6093  | 6097# | 6099# | 6102# | 6105# | 6108# | 6115# | 6118  | 6123  | 6127# | 6129# | 6132# | 6135# | 6142# | 6145  |
|        | 6150  | 6154# | 6156# | 6186# | 6189# | 6191# | 6195# | 6199# | 6206  | 6216  | 6222  | 6227  | 6235  | 6241  | 6246  |
|        | 6261  | 6264  | 6283# | 6304# | 6307# | 6322# | 6347# | 6371# | 6374  | 6375# | 6380# | 6383# | 6385# | 6403# | 6409# |
|        | 6412# | 6416  | 6423  | 6429  | 6434  | 6439  | 6445  | 6450  | 6473  | 6510# | 6520# | 6525  | 6526# | 6533# | 6602# |
|        | 6608# | 6610# | 6625# | 6687# | 6699# | 6738# | 6751# | 6791# | 6808# | 6846# | 6859# |       |       |       |       |
| MSLAB  | 1929# | 2209# | 2996# | 3003# | 3011# | 3014# | 3020# | 3085# | 3091# | 3177# | 3183# | 3333# | 3338# | 3343# | 3546# |
|        | 3592# | 3597# | 3742# | 3752# | 3817# | 3818# | 3952# | 3959# | 3973# | 3995# | 4010# | 4020# | 4043# | 4044# | 4045# |
|        | 4046# | 4047# | 4056# | 4057# | 4058# | 4064# | 4066# | 4067# | 4068# | 4073# | 4075# | 4080# | 4085# | 4088# | 4093# |
|        | 4097# | 4099# | 4105# | 4112# | 4119# | 4126# | 4133# | 4135# | 4140# | 4141# | 4142# | 4143# | 4146# | 4147# | 4148# |
|        | 4149# | 4153# | 4154# | 4157# | 4158# | 4163# | 4164# | 4248# | 4262# | 4264# | 4266# | 4268# | 4270# | 4285# | 4292# |
|        | 4313# | 4330# | 4331# | 4399# | 4421# | 4432# | 4435# | 4436# | 4439# | 4461# | 4505# | 4740# | 4751# | 4762# | 4771# |
|        | 4802# | 4807# | 4813# | 4855# | 4856# | 4858# | 4887# | 4907# | 4908# | 4911# | 4913# | 4921# | 4924# | 4967# | 4974# |
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|        | 5378# | 5380# | 5382# | 5385# | 5389# | 5392# | 5401# | 5403# | 5415# | 5417# | 5418# | 5421# | 5422# | 5425# | 5429# |
|        | 5433# | 5437# | 5441# | 5443# | 5481# | 5484# | 5487# | 5490# | 5495# | 5499# | 5502# | 5504# | 5506# | 5511# | 5516# |
|        | 5520# | 5522# | 5525# | 5528# | 5531# | 5533# | 5536# | 5538# | 5540# | 5544# | 5556# | 5560# | 5562# | 5566# | 5595# |
|        | 5598# | 5601# | 5611# | 5615# | 5620# | 5623# | 5628# | 5630# | 5634# | 5637# | 5642# | 5647# | 5649# | 5654# | 5655# |
|        | 5683# | 5686# | 5689# | 5692# | 5701# | 5707# | 5715# | 5720# | 5725# | 5729# | 5731# | 5734# | 5737# | 5740# | 5749# |
|        | 5753# | 5756# | 5761# | 5770# | 5773# | 5774# | 5778# | 5779# | 5801# | 5804# | 5807# | 5809# | 5819# | 5824# | 5828# |
|        | 5830# | 5833# | 5836# | 5839# | 5851# | 5856# | 5861# | 5863# | 5866# | 5869# | 5872# | 5875# | 5885# | 5890# | 5894# |
|        | 5896# | 5915# | 5925# | 5928# | 5931# | 5938# | 5940# | 5943# | 5948# | 5952# | 5968# | 5971# | 5974# | 5983# | 5986# |
|        | 5992# | 6000# | 6021# | 6033# | 6036# | 6041# | 6045# | 6047# | 6061# | 6064# | 6069# | 6073# | 6075# | 6085# | 6088# |
|        | 6093# | 6097# | 6099# | 6102# | 6105# | 6108# | 6115# | 6118# | 6123# | 6127# | 6129# | 6132# | 6135# | 6142# | 6145# |
|        | 6150# | 6154# | 6156# | 6186# | 6189# | 6191# | 6195# | 6199# | 6206# | 6216# | 6222# | 6227# | 6235# | 6241# | 6246# |
|        | 6261# | 6264# | 6283# | 6304# | 6307# | 6322# | 6347# | 6371# | 6374# | 6375# | 6380# | 6383# | 6385# | 6403# | 6409# |
|        | 6412# | 6416# | 6423# | 6429# | 6434# | 6439# | 6445# | 6450# | 6473# | 6510# | 6520# | 6525# | 6526# | 6533# | 6602# |
|        | 6608# | 6610# | 6625# | 6687# | 6699# | 6738# | 6751# | 6791# | 6808# | 6846# | 6859# |       |       |       |       |





CZDMIAO DMR-11 FUNCTIONAL TESTS MACY11 30A(1052) 13-MAR-80 09:36 <sup>B 15</sup> PAGE 4-7  
CZDMIA.P11 13-MAR-80 09:34 CROSS REFERENCE TABLE -- MACRO NAMES

CEQ 0183

XFERT 1620# 2209#

. ABS. 037744 000

ERRORS DETECTED: 0

CZDMIA.BIN,CZDMIA.SEQ/CRF/NL:TOC=SVC34R.MLB,CZDMIA.P11

RUN-TIME: 118.144 13 SECONDS

RUN-TIME RATIO: 507/277=1.8

CORE USED: 17K (33 PAGES)