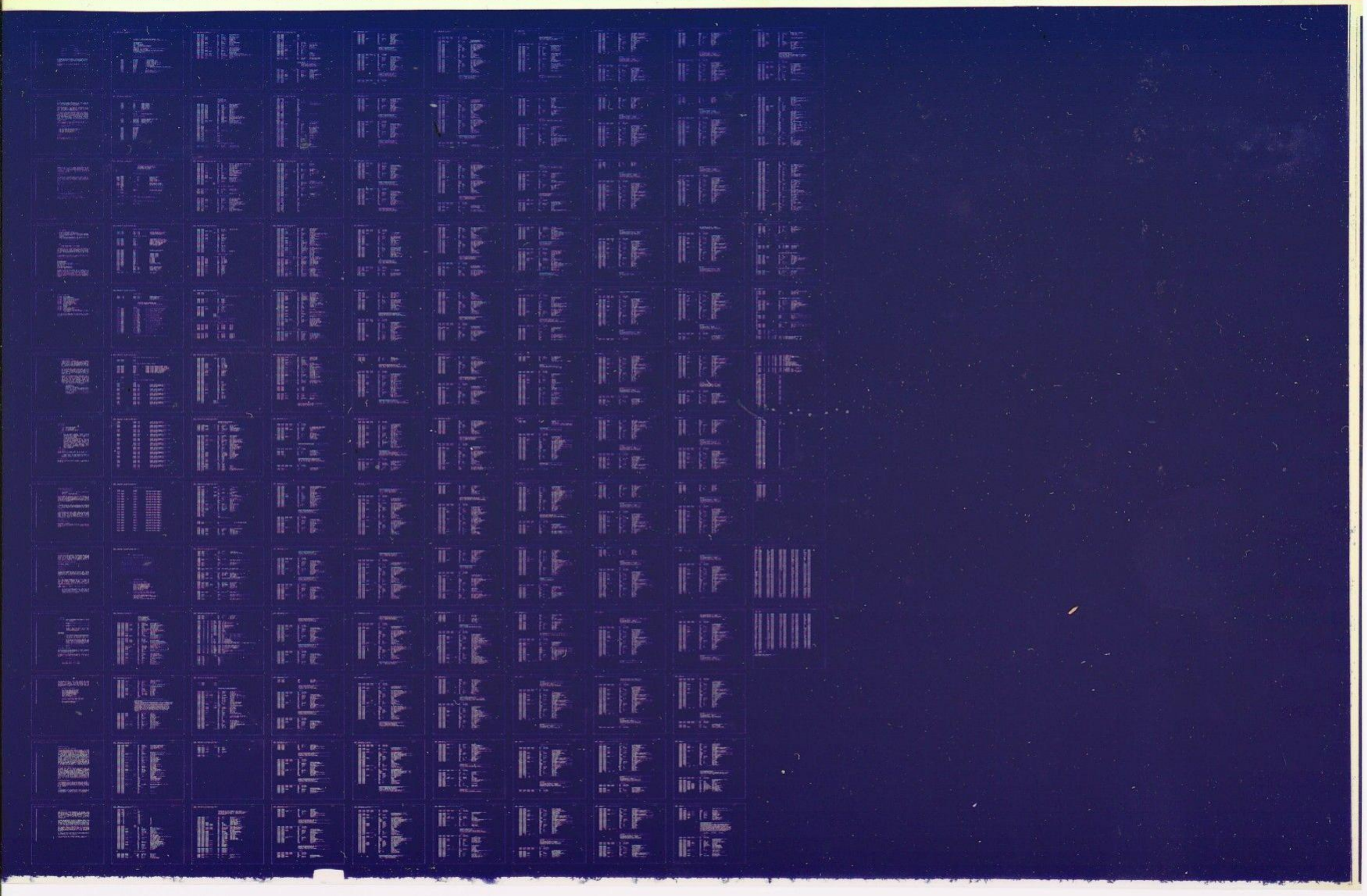
DMC11

DMC11 BSC W/R UPROC
CZDMCD0

AH-8545D-MC
1 OF 1 OCT 1985

digital
MADE IN USA



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IDENTIFICATION

PRODUCT CODE:	AC-8544D-MC
PRODUCT NAME:	CZDMCDO DMC11 BSC W/R UPROC
DATE:	17-JUN-1985
MAINTAINER:	MK NAC SOFTWARE ENGINEERING
AUTHOR:	BRUCE LUHRS

1. ABSTRACT

THE FUNCTION OF THE DMC11 DIAGNOSTICS IS TO VERIFY THAT THE OPTION OPERATES ACCORDING TO SPECIFICATIONS. THE DIAGNOSTICS VERFIY THAT THERE ARE NO MALFUNCTIONS AND THE ALL OPERATIONS OF THE DMC11 ARE CORRECT IN ITS ENVIRONMENT.

PARAMETERS MUST BE SET UP TO ALERT THE DIAGNOSTICS TO THE DMC11 CONFIGURATION. THESE PARAMETERS ARE CONTAINED IN THE STATUS TABLE AND ARE GENERATED IN TWO WAYS: 1) MANUAL INPUT - THE OPERATOR ANSWERS QUESTIONS. 2) AUTOSIZING - THE PROGRAM DETERMINES THE PARAMETERS AUTOMATICALLY.

CZDMC TESTS THE DMC11 MICRO-PROCESSOR (M8200-YA OR M8200-YB). IT PERFORMS WRITE/READ TESTS ON THE DMC UNIBUS REGISTERS, CHECKS THE MICRO-PROCESSOR OPERATION, CHECKS OUT MAIN MEMORY, SCRATCH PAD MEMORY, THE ALU FUNCTIONS AS WELL AS INTERRUPTS AND NPR OPERATION. CZDMC PERFORMS NO TESTS ON THE LINE UNIT OR ANY CROM DEPENDENT TESTS. IT DOES NOT REQUIRE A LINE UNIT TO RUN. NOTE: THIS DIAGNOSTIC WILL RUN ON A KMC11 (M8204), HOWEVER IT IS NOT ADVISED THAT THIS DIAGNOSTIC BE USED TO CHECK A KMC11, RATHER YOU SHOULD CHECK A KMC11 WITH THE KMC11 DIAGNOSTIC PACKAGE.

CURRENTLY THERE ARE FIVE OFF LINE DIAGNOSTICS THAT ARE TO BE RUN IN SEQUENCE TO INSURE THAT IF AN ERROR SHOULD OCCUR IT WILL BE DETECTED AT AN EARLY STAGE.

NOTE: ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.

THE FIVE DIAGNOSTICS ARE:

1. CZDMC [REV] BASIC W/R AND MICRO-PROCESSOR TESTS
2. CZDME [REV] DDCMP MODE LINE UNIT TESTS
3. DZDMF [REV] BITSTUFF LINE UNIT TESTS
4. DZDMG [REV] JUMP AND CROM TESTS
5. DZDMH [REV] FREE-RUNNING TESTS (HEAT TEST TAPE)

2. REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (EXCEPT AN LSI-11) WITH MINIMUM 8K MEMORY
ASR 33 (OR EQUILIVALENT)
DMC11-AR (M8200 YA) OR A DMC11-AL (M8200-YB)

2.2 STORAGE

PROGRAM WILL USE ALL 8K OF MEMORY EXCEPT WHERE ABL AND BOOTSTRAP LOADER RESIDE. LOCATIONS 1500 THRU 1640; CONTAIN THE "STATUS TABLE" INFORMATION WHICH IS GENERATED AT START OF DIAGNOSTICS BY MANUAL INPUT (QUESTIONS) OR AUTOMATICALLY (AUTO-SIZING). THIS AREA IS AN OVERLAY AREA AND SHOULD NOT BE ALTERED BY THE OPERATOR.

3. LOADING PROCEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND ARE LOADED USING THE ABSOLUTE LOADER. NOTE: IF THE DIAGNOSTICS ARE ON A MEDIA SUCH AS DISK ,MAGTAPE,DECTAPE, OR CASSETTE; FOLLOW INSTRUCTIONS FOR THE MONITOR WHICH HAS BEEN PROVIDED ON THAT SPECIFIC MEDIA.

ABSOLUTE LOADER STARTING ADDRESS *500

MEMORY	* SIZE
4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

3.1.1 PLACE ADDRESS OF ABS LOADER INTO SWITCH REGISTER.
(ALSO PLACE 'HALT' SW UP)

3.1.2 DEPRESS 'LOAD ADDRESS' KEY ON CONSOLE AND RELEASE.

3.1.3 DEPRESS 'START KEY' ON CONSOLE AND RELEASE (PROGRAM SHOULD NOW BE LOADING INTO CPU)

4. STARTING PROCEDURE

A. SET SWITCH REGISTER TO 000200
B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE
C. SET SWR TO ZERO FOR 'AUTO SIZING' OR SWR BIT0=1 FOR MANUAL INPUT (QUESTIONS) OR SWR BIT7=1 TO USE EXISTING PARAMETERS SET UP BY A PREVIOUS START OR A PREVIOUSLY RUN DMC11 DIAGNOSTIC.
D. DEPRESS 'START KEY' AND RELEASE. THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME (IF THIS WAS THE FIRST START UP OF THE PROGRAM) AND ALSO THE FOLLOWING:

MAP OF DMC11 STATUS

PC	CSR	STAT1	STAT2	STAT3
001500	160010	145310	177777	000000
001510	160020	145320	177777	000000

THE PROGRAM WILL TYPE 'R' AND PROCEED TO RUN THE DIAGNOSTIC. THE ABOVE IS ONLY AN EXAMPLE. THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD. 1500 IN THE PROGRAM. IN THIS EXAMPLE THE TABLE CONTAINS THE INFORMATION AND STATUS OF TWO DMC11'S. THE STATUS TABLE MUST BE VERIFIED BY THE USER IF AUTO SIZING IS DONE. FOR INFORMATION OF STATUS TABLE SEE SECTION 8.4 FOR HELP.

IF THE DIAGNOSTIC WAS STARTED WITH SW00=1 INDICATING MANUAL PARAMETER INPUT THEN THE FOLLOWING SHOWS AN EXAMPLE OF THE QUESTIONS ASKED AND SOME EXAMPLE ANSWERS:

```
HOW MANY DMC11'S TO BE TESTED?1

01
CSR ADDRESS?160010
VECTOR ADDRESS?310
BR PRIORITY LEVEL?  (4,5,6,7)?5
DOES MICRO-PROCESSOR HAVE CRAM?  (Y OR N)N
WHICH LINE UNIT?  IF NONE TYPE "N".  IF  M8201  TYPE  "1".  IF
M8202 TYPE "2"?1
IS THE LOOP BACK CONNECTOR ON?Y
SWITCH PAC#1 (DDCMP LINE#)?377
SWITCH PAC#2 (BM873 BOOT ADD)?377
```

FOLLOWING THE QUESTIONS THE STATUS MAP IS PRINTED OUT AS DESCRIBED ABOVE. THE INFORMATION IN THE MAP REFLECTS THE ANSWERS TO THE QUESTIONS. IF THE DIAGNOSTIC WAS STARTED WITH SW00=0 AND SW07=0 (AUTO-SIZING) THEN NO QUESTIONS ARE ASKED AND ONLY THE STATUS-MAP IS PRINTED OUT. IF AUTO-SIZING IS USED THE STATUS INFORMATION MUST BE VERIFIED TO BE CORRECT (MATCH THE HARDWARE). IF IT DOES NOT MATCH THE HARDWARE THE DIAGNOSTIC MUST BE RESTARTED WITH SW00=1 AND THE QUESTIONS ANSWERED.

```
58
59
60                          4.1     CONTROL SWITCH SETTINGS
61
62                                  SW 15 SET:  HALT ON ERROR
63                                  SW 14 SET:  LOOP ON CURRENT TEST
64                                  SW 13 SET:  INHIBIT ERROR PRINT OUT
65                                  SW 12 SET:  INHIBIT TYPE OUT/ABELL ON ERROR.
66                                  SW 11 SET:  INHIBIT ITERATIONS.  (QUICK PASS)
67                                  SW 10 SET:  ESCAPE TO NEXT TEST ON ERROR
68                                  SW 09 SET:  LOOP WITH CURRENT DATA
69                                  SW 08 SET:  CATCH ERROR AND LOOP ON IT
70                                  SW 07 SET:  USE PREVIOUS STATUS TABLE.
71                                  SW 06 SET:  HALT IN    ROMCLK    ROUTINE    BEFORE    CLOCKING
72                                              MICRO-PROCESSOR
73                                  SW 05 SET:  RESERVED
74                                  SW 04 SET:  RESERVED
75                                  SW 03 SET:  RESELECT DMC11'S DESIRED ACTIVE
76                                  SW 02 SET:  LOCK ON SELECTED TEST
77                                  SW 01 SET:  RESTART PROGRAM AT SELECTED TEST
78                                  SW 00 SET:  BUILD NEW STATUS TABLE FROM QUESTIONS.  (IF SW07=0
79                                                AND  SW00=0  A  NEW  STATUS  TABLE  IS  BUILT BY
80                                                AUTO SIZING)
81
82                                  SWITCH 06 AND 08-15 ARE DYNAMIC AND CAN BE CHANGED  AS  NEEDED
83                                  WHILE THE DIAGNOSTIC IS RUNNING.  SWITCHES 00-03 AND SWITCH 07
84                                  ARE STATIC, AND ARE USED ONLY ON STARTING  OR  RESTARTING  THE
85                                  DIAGNOSTIC.
```

4.1.2 SWITCH REGISTER OPTIONS (AT START UP)

SW 01 RESTART PROGRAM AT SELECTED TEST. IT IS STRONGLY SUGGESTED THAT AT LEAST ONE PASS HAS BEEN MADE BEFORE TRYING TO SELECT A TEST, THE REASON BEING IS THAT THE PROGRAM HAS TO CLEAR AREAS AND SET UP PARAMETERS. WHEN THIS SWITCH IS USED THE DIAGNOSTIC WILL ASK TEST NO.? ANSWER BY TYPING THE NUMBER OF THE TEST DESIRED AND CARRIGE RETURN TO BEGIN EXECUTION AT THE SELECTED TEST.

SW 02 LOCK ON SELECTED TEST. THIS SWITCH WHEN USED WITH SW01 WILL CAUSE THE PROGRAM TO CONSTANTLY LOOP ON THE SELECTED TEST. HITTING ANY KEY ON THE CONSOLE WILL LET IT ADVANCE TO THE NEXT TEST AND LOOP UNTIL A KEY IS HIT AGAIN. IF SW02=0 WHEN SW01 IS USED. THE PROGRAM WILL BEGIN AT THE SELECTED TEST AND CONTINUE NORMAL OPERATIONS.

SW 03 RESELECT DMC11'S DESIRED ACTIVE. PLEASE NOTE THAT A MESSAGE IS TYPED OUT FOR SETTING THE SWITCH REGISTER EQUAL TO DMC11'S ACTIVE. THIS MEANS IF THE SYSTEM HAS FOUR DMC11S; BITS 00,01,02,03 WILL BE SET IN LOC 'DMACTV' FROM THE SWITCH REGISTER. USING THIS SWITCH(SW00) ALTERS THAT LOCATION;THEREFORE IF FOUR DMC11S ARE IN THE SYSTEM ***DO NOT*** SET SWITCHS GREATER THAN SW 03 IN THE UP POSITION. THIS WOULD BE A FATAL ERROR. DO NOT SELECT MORE ACTIVE DMC11S THAN THERE IS INFORMATION ON IN THE STATUS TABLE.

METHOD: A: LOAD ADDRESS 200
B: START WITH SW 00=1
C: PROGRAM WILL TYPE MESSAGE
D: SET A SWITCH FOR EACH DMC DESIRED ACTIVE. EXAMPLE: IF YOU HAVE 4 DMC'S BUT ONLY WANT TO RUN THE FIRST AND THE LAST SET SWR BITS 0 AND 3 = 1. PRESS CONTINUE
E: NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05)
F: SET WITH ANY OTHER SWITCH SETTINGS DESIRED. PRESS CONTINUE.

4.1.3 DYNAMIC SWITCHES

ERROR SWITCHES

1. SW 12 DELETE PRINT OUT/BELL ON ERROR.
2. SW 13 DELETE ERROR PRINTOUT.
3. SW 15 HALT ON THE ERROR.
4. SW 08 GOTO BEGINNING OF THE TEST(ON ERROR).
5. SW 10 GOTO NEXT TEST(ON ERROR).

SCOPE SWITCHES

1. SW06 HALT IN ROMCLK ROUTINE BEFORE CLOCKING MICRO-PROCESSOR INSTRUCTION. THIS ALLOWS THE OPERATOR TO SCOPE A MICRO-PROCESSOR INSTRUCTION IN THE STATIC STATE BEFORE IT IS CLOCKED. HIT CONTINUE TO RESUME RUNNING.
2. SW09 (IF ENABLED BY 'SCOP1') ON AN ERROR; IF AN '*' IS PRINTED IN FRONT OF THE TEST NO. (EX. *TEST NO. 10) SW09 IS INCORPORATED IN THAT TEST AND THEREFORE SW09 IS USUALLY THE BEST SWITCH FOR THE SCOPE LOOP (SW14=0, SW10=0, SW09=1, SW08=0). IF SW09 IS NOT ENABELED; AND THERE IS A HARD ERROR (CONSTANT); SW08 IS BEST. (SW14=1,0, SW10=0, SW09=0, SW08=1). FOR INTERMITTEMT ERRORS; SW14=1 WILL LOOP ON TEST REGUARDLESS OF ERROR OR NOT ERROR. (SW14=1, SW10=0, SW09=0, SW08=1,0)
3. SW11 INHIBIT INTERATIONS.
4. SW14 LOOP ON CURRENT TEST.

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200 THERE ARE NO OTHER STARTING ADDRESSES FOR THE DMC11 DIAGNOSTICS. (SEE SECTION 4.0)

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY AFTER ALL AVAILABLE DMC11'S ARE TESTED THE PROGRAM WILL RETURN TO 'XXDP' OR 'ACT-11'.

5. OPERATING PROCEDURE

WHEN PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION 4.0 WILL BE PRINTED, AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC

5.2 PROGRAM AND/OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

1. HALT ON ERROR (VTA SW 15=1) WHEN EVER AN ERROR OCCURS.
2. CLEAR SW 15.
3. SET SW 14: (LOOP ON THIS TEST)
4. SET SW 13: (INHIBIT ERROR PRINT OUT)

THE TEST NUMBER AND PC WILL BE TYPED OUT AND POSSIBILY AN ERROR MESSAGE (THIS DEPENDS ON THE TEST) TO GIVE THE OPERATOR AN IDEA AS TO THE SOURCE OF THE PROBLEM. IF IT IS NECESSARY TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT; LOOK IN THE LISTING FOR THAT TEST NUMBER WHICH WAS TYPED OUT AND THEN NOTE THE PC OF THE ERROR REPORT THIS WAY THE EXACT FUNCTION OF THE TEST CAN BE DETERMINED.

6. ERRORS

AS DESCRIBED PREVIOUSLY THERE WILL ALWAYS BE A TEST NUMBER AND PC TYPED OUT AT THE TIME OF AN ERROR (PROVIDING SW 13=0 AND SW 12=0). IN MOST CASES ADDITIONAL INFORMATION WILL BE SUPPLIED IN THE THE ERROR MESSAGE TO GIVE THE OPERATOR AN INDICATION OF THE ERROR.

6.2 ERROR RECOVERY

IF FOR SOME REASON THE DMC11 SHOULD 'HANG THE BUS' (GAIN CONTROL OF BUS SO THAT CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT OR POWER DOWN/UP IS NECESSARY FOR OPERATOR TO REGAIN CONTROL OF CPU. IF THIS SHOULD HAPPEN; LOOK IN LOCATION 'TSTNO' (ADDRESS 1226)FOR THE NUMBER OF THE TEST THAT WAS RUNNING AT THE TIME OF THE CATASTROPHIC ERROR. IN THIS WAY THE OPERATOR WILL HAVE AN IDEA AS TO WHAT THE DMC11 WAS DOING AT THE TIME OF THE ERROR.

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4. (PLEASE)
STATUS TABLE SHOULD BE VERIFIED REGUARDLESS OF HOW PROGRAM WAS STARTED. ALSO IT IS IMPORTANT TO USE THIS LISTING ALONG WITH THE INFORMATION PRINTED ON THE TTY TO COMPLETLY ISOLATE PROBLEMS.

7.2 OPERATING RESTRICTIONS

THE FIRST TIME A DMC11 DIAGNOSTIC IS LOADED INTO CORE AND RUN THE STATUS TABLE MUST BE SET UP. THIS IS DONE BY MANUAL INPUT (SW00=1) OR BY AUTOSIZING (SW00=0 AND SW07=0). THEREAFTER HOWEVER THE STATUS TABLE NEED NOT BE SETUP BY SUBSEQUENT RESTARTS OR EVEN LOADING THE NEXT DMC DIAGNOSTIC BECAUSE THE STATUS TABLE IS OVERLAYED. THE CURRENT PARAMETERS IN THE STATUS TABLE ARE USED WHEN SW07=1 ON START UP.

7.3 HARDWARE CONFIGURATION RESTRICTIONS

DMC11(M8200) JUMPER W1 MUST BE IN, AND SWITCH 7 OF E76 MUST BE IN THE OFF POSITION.

KMC(M8204)- JUMPER W1 MUST BE IN.

8. MISCELLANEOUS

8.1 EXECUTION TIME

ALL DMC11 DEVICE DIAGNOSTICS WILL GIVE AN 'END PASS' MESSAGE (PROVIDING NO ERRORS AND SW12=0) WITHIN 4 MINS. THIS IS ASSUMING SW11=1 (DELETE ITERATIONS) IS SET TO GIVE THE FASTEST POSSIBLE EXECUTION. THE ACTUAL EXECUTION TIME DEPENDS GREATLY ON THE PDP11 CPU CONFIGURATION AND THE AMOUNT OF MEMORY IN THE SYSTEM.

8.2 PASS COMPLETE

NOTE: EVERY TIME THE PROGRAM IS STARTED; THE TESTS WILL RUN AS IF SW11 (DELETE ITERATIONS) WAS UP (=1). THIS IS TO 'VERIFY NO HARD ERRORS' AS SOON AS POSSIBLE. THEREFORE THE FIRST PASS -EACH TIME PROGRAM IS STARTED- WILL BE A 'QUICK PASS' UNTIL ALL DMC11'S IN SYSTEM ARE TESTED. WHEN THE DIAGNOSTIC HAS COMPLETED A PASS THE FOLLOWING IS AN EXAMPLE OF THE PRINT OUT TO BE EXPECTED.

```
END PASS CZDMC CSR:  175000 VEC:  0300 PASSES:  000001
ERRORS:  000000
```

NOTE: THE PASS COUNT AND ERROR COUNTS ARE CUMMULITIVE FOR EACH DMC11 THAT IS RUNNING, AND ARE SET TO ZERO ONLY WHEN THE DIAGNOSTIC IS STARTED. THEREFORE AFTER AN OVERNIGHT RUN FOR EXAMPLE, THE TOTAL PASSES AND ERRORS FOR EACH DMC11 SINCE THE DIAGNOSTIC WAS STARTED ARE REFLECTED IN PASSES: AND ERRORS:.

8.4 KEY LOCATIONS

RETURN (1214) CONTAINS THE ADDRESS WHERE PROGRAM WILL RETURN WHEN ITERATION COUNT IS REACHED OR IF LOOP ON TEST IS ASSERTED.

NEXT (1216) CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PEFORMED.

TSTNO (1226) CONTAINS THE NUMBER OF THE TEST NOW BEING PEFORMED.

RUN (1316) THE BIT IN 'RUN' ALWAYS POINTS TO THE DMC11 CURRENTLY BEING TESTED. EXAMPLE: (RUN) 1302/0000000001000000 MEANS THAT DMC11 NO.06 IS THE DMC11 NOW RUNNING.

DMCR00-DMCR17
DMST00-DMST17
(1500)-(1640)

THESE LOCATIONS CONTAIN THE INFORMATION NEEDED TO TEST UP TO 16 (DECIMAL) DMC11S SEQUENTIALY. THEY CONTAIN THE CSR,VECTOR AND STATUS CONCERNING THE CONFIGURATION OF EACH DMC11.

DMACTV (1306) EACH BIT SET IN THIS LOCATION INDICATES THAT THE ASSOCIATED DMC11 WILL BE TESTED IN TURN. EXAMPLE: (DMACTV) 1276/0000000000011111 MEANS THAT DMC11 NO. 00,01,02,03,04 WILL BE TESTED. EXAMPLE: (DMACTV) 1276/0000000000010001 MEANS THAT DMC11 NO. 00,04 WILL BE TESTED.

DMCSR (1404) CONTAINS THE CSR OF THE CURRENT DMC11 UNDER TEST.

8.4A 'STATUS TABLE' (1500-1640)

THE TABLE IS FILLED BY AUTO SIZING OR BY THE MANUAL PARAMETER INPUT (QUESTIONS) AS DESCRIBED PREVIOUSLY. ALSO IF DESIRED BY USER; THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION.

THE EXAMPLE STATUS MAP SHOWN BELOW CONTAINS INFORMATION FOR TWO DMC11'S. THE TABLE CAN CONTAIN UP TO 16 DMC11'S. FOLLOWING THE MAP IS A DESCRIPTION OF THE BITS FOR EACH MAP ENTRY

MAP OF DMC11 STATUS

PC	CSR	STAT1	STAT2	STAT3
001500	160010	145310	177777	000000
001510	160020	016320	000000	000000

```
58
59                              EACH MAP ENTRY CONTAINS     ORDS  WHICH  CONTAIN  THE  STATUS
60                              INFORMATION  FOR  1  DMC11.  THE PC SHOWS WHERE IN CORE MEMORY
61                              THE FIRST OF THE 4 WORDS IS.  IN THE EXAMPLE ABOVE  THE  FIRST
62                              DMC'S STATUS IS IN LOCATIONS. 1500, 1502, 1504, AND 1506.  THE
63                              SECOND DMC STATUS IS LOCATED AT 1510, 1512,  1514,  AND  1516.
64                              THE  INFORMATION  CONTAINED IN EACH 4 WORD ENTRY IS DEFINED AS
65                              FOLLOWS:
66
67                              CSR:    CONTAINS DMC11 CSR ADDRESS
68
69                              STAT1:  BITS 00-08 IS DMC11 VECTOR ADDRESS
70                                      BIT15=1 MICRO-PROCESSOR HAS CRAM
71                                      BIT15=0 MICRO-PROCESSOR HAS CROM
72                                      BIT14=1 TURNAROUND CONNECTOR IS ON
73                                      BIT14=0 NO TURNAROUND CONNECTOR
74                                      BIT13=0 LINE UNIT IS AN M8201
75                                      BIT13=1 LINE UNIT IS AN M8202
76                                      BIT12=1 NO LINE UNIT
77                                      BITS 09-11 IS DMC11 BR PRIORITY LEVEL
78
79                              STAT2:  LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
80                                      HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)
81
82                              STAT3:  BIT0=1 RUN FREE RUNNING TESTS ON KMC11
83                                      BIT1=0 DMC11-AR (LOW SPEED)
84                                      BIT1=1 DMC11-AL (HIGH SPEED)
85
```

8.5 METHOD OF AUTO SIZING

8.5.1 FINDING THE CONTROL STATUS REGISTER.

THE AUTO-SIZING ROUTINE FINDS A DMC11 AS FOLLOWS: IT STARTS AT ADDRESS 160000 AND TESTS ALL ADDRESS IN INCREMENTS OF 10 UP TO AND INCLUDING ADDRESS 167760. IF THE ADDRESS DOES NOT TIME OUT, THE FOLLOWING IS DONE, THE FIRST CROM ADDRESS IS WRITTEN TO A 125252 THEN IT IS READ BACK. IF IT CONTAINS A -1 OR 125252 OR 626 OR 16520 A DMC11 OR KMC11 HAS BEEN FOUND, IF NOT, THE ADDRESS IS UPDATED BY 10 AND THE SEARCH CONTINUES. A -1 INDICATES A DMC11 WITH NO CROM, A 125252 INDICATES A KMC11 WITH CRAM, A 626 INDICATES A DMC11-AL AND A 16520 INDICATES A DMC11-AR. FURTHER TESTS ARE PERFORMED AT THIS POINT TO DETERMINE WHICH LINE UNIT, IF ANY, IS INSTALLED, IF A LOOP-BACK CONNECTOR IS INSTALLED AND VARIOUS SWITCH SETTINGS ON THE LINE UNIT. THIS IS WHY THE STATUS TABLE MUST BE VERIFIED BY THE USER AND IF ANY OF THE INFORMATION DOES NOT AGREE WITH THE HARDWARE THE DIAGNOSTIC MUST BE RESTARTED AND THE QUESTIONS MUST BE ANSWERED. ALL DMC11'S IN THE SYSTEM WILL BE FOUND BY THE AUTO-SIZER. IF IT DOES NOT FIND A DMC11 THE DIAGNOSTIC MUST BE RESTARTED AND THE QUESTIONS ANSWERED.

8.5.2 FINDING THE VECTOR AND BR LEVEL

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION IOT AND '.+2' (NEXT ADDRESS). THE PROCESSOR STATUS IS STARTED AT 7 AND THE DMC IS PROGRAMMED TO INTERRUPT. THE PS IS LOWERED BY 1 UNTIL THE DMC INTERRUPTS, A DELAY IS MADE AND IF NO INTERUPT OCCURES AT PS LEVEL 3 (BECAUSE OF A BAD DMC11) THE PROGRAM ASSUMES VECTOR ADDRESS 300 AT BR LEVEL 5 AND THE PROBLEM SHOULD BE FIXED IN THE DIAGNOSTIC. ONCE THE PROBLEM IS FIXED; THE PROGRAM SHOULD BE RE-SETUP AGAIN TO GET CORRECT VECTOR. IF AN INTERUPT OCCURED; THE ADDRESS TO WHICH THE DMC11 INTERUPTED TO IS PICKED UP AND REPORTED AS THE VECTOR. NOTE: IF THE VECTOR REPORTED IS NOT THE VECTOR SET UP BY YOU; THERE IS A PROBLEM AND AUTO SIZING SHOULD NOT BE DONE.

8.6 SOFTWARE SWITCH REGISTER

IF THE DIAGNOSTIC IS RUN ON AN 11/04 OR OTHER CPU WITHOUT A SWITCH REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED TO ALLOW USER THE SAME SWITCH OPTIONS AS DESCRIBED PREVIOUSLY. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THIS SOFTWARE SWITCH REGISTER IS USED.

CONTROL:

TO OBTAIN CONTROL AT ANY ALLOWABLE TIME DURING EXECUTION OF THE DIAGNOSTIC THE OPERATOR TYPES A CTRL G ON THE CONSOLE TERMINAL KEYBOARD. AS SOON AS THE CTRL G IS RECOGNIZED, BY THE DIAGNOSTIC, THE FOLLOWING MESSAGE WILL BE DISPLAYED:

```
58
59                          SWR=XXXXXX NEW?
60
61          WHERE XXXXXX IS THE CURRENT CONTENTS OF THE SOFTWARE SWITCH
62          REGISTER IN OCTAL.  THE SOFTWARE CONTROL ROUTINE WILL THEN
63          AWAIT OPERATOR ACTION.  AT WHICH TIME THE OPERATOR IS REQUIRED
64          TO TYPE ONE OR MORE OF THE LEGAL CHARACTERS: 1) 0 - 7, 2)
65          LINE FEED(<LF>), 3) CARRIAGE RETURN(<CR>), OR 4) CONTROL-U
66          (CTRL U).  NO CHECK IS MADE FOR LEGALITY.  IF THE INPUT
67          CHARACTER IS NOT A <LF>, <CR>, OR CTRL U IT IS ASSUMED TO BE
68          AN OCTAL DIGIT.
69
70          TO CHANGE THE CONTENTS OF THE SSR THE OPERATOR SIMPLY TYPES
71          THE NEW DESIRED VALUE IN OCTAL - LEADING ZEROS NEED NOT BE
72          TYPED.  AND TERMINATES THE INPUT STRING WITH A <CR> OR <LF>
73          DEPENDING ON THE PROGRAM ACTION DESIRED AS DESCRIBED BELOW.
74          THE INPUT VALUE WILL BE TRUNCATED TO THE LAST 6 DIGITS TYPED.
75          AT LEAST ONE DIGIT MUST BE TYPED ON ANY GIVEN INPUT STRING
76          PRIOR TO THE TERMINATOR BEFORE A CHANGE TO THE SSR WILL OCCUR.
77
78          WHEN THE INPUT STRING IS TERMINATED WITH A <CR> THE DIAGNOSTIC
79          WILL CONTINUE EXECUTION FROM THE POINT AT WHICH IT WAS
80          INTERRUPTED.  IF A <CR> IS THE ONLY THING TYPED THE PROGRAM
81          WILL CONTINUE WITHOUT CHANGING THE SSR.  THE <LF> DIFFERS FROM
82          THE <CR> BY RESTARTING THE PROGRAM AS IF IT WERE RESTARTED AT
83          ADDRESS 200.
84
85          IF A CTRL U IS TYPED AT ANY POINT IN THE INPUT STRING PRIOR TO
86          THE TERMINATOR THE INPUT VALUE WILL BE DISREGARDED AND THE
87          PROMPT DISPLAYED (SWR = XXXXXX NEW?).
88
89          TO SET THE SSR FOR THE STARTING SWITCHES, FIRST LOAD THE
90          DIAGNOSTIC, THEN HIT CTRL G, THEN START THE DIAGNOSTIC.
91
92
93
94
95                  &
```

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1683


                        ;*AC-8544C-MC   CZDMC DO BASIC DMC11 CONTROLLER TEST
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                        ;*------------ --------  - ---------- --  - --- ----- - -- ----------

                        ;STARTING PROCEDURE
                        ;LOAD PROGRAM
                        ;LOAD ADDRESS 000200
                        ;SWR=0  AUTOSIZE DMC11
                        ;SW07=1  USE CURRENT DMC11 PARAMETERS
                        ;SW00=1  INPUT NEW DMC11 PARAMETERS
                        ;PRESS START
                        ;PROGRAM WILL TYPE "AC-8544C-MC   CZDMC-DO BASIC DMC11 CONTROLLER TEST"
                        ;PROGRAM WILL TYPE STATUS MAP
                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                        ;AND THEN RESUME TESTING
                        ;SUBSEQUENT RESTARTS WILL NOT TYPE PROGRAM TITLE



                        ;SWITCH REGISTER OPTIONS
                        ;-----------------------

100000                  SW15=100000             ;=1,HALT ON ERROR
040000                  SW14=40000              ;=1,LOOP ON CURRENT TEST
020000                  SW13=20000              ;=1,INHIBIT ERROR TYPEOUT
010000                  SW12=10000              ;=1,DELETE TYPEOUT/BELL ON ERROR.
004000                  SW11=4000               ;=1,INHIBIT ITERATIONS
002000                  SW10=2000               ;=1,ESCAPE TO NEXT TEST ON ERROR
001000                  SW09=1000               ;=1,LOOP WITH CURRENT DATA
000400                  SW08=400                ;=1,LOOP ON ERROR
000200                  SW07=200                ;=1,USE CURRENT DMC11 PARAMETERS,  ',AUTOSIZE DMC11
000100                  SW06=100                ;=1, HALT BEFORE CLOCKING MICRO-PROCESSOR INSTRUCTION
000040                  SW05=40
000020                  SW04=20
000010                  SW03=10                 ;RESELECT DMC11'S TO BE TESTED (ACTIVE)
000004                  SW02=4                  ;LOCK ON TEST SELECT
000002                  SW01=2                  ;RESTART PROGRAM AT SELECTED TEST
000001                  SW00=1                  ;INPUT DMC11 PARAMETERS
```

```
      0

                                ;REGISTER DEFINITIONS
                                ;-------- --  - -----

000000                          R0=%0           ;GENERAL REGISTER
000001                          R1=%1           ;GENERAL REGISTER
000002                          R2=%2           ;GENERAL REGISTER
000003                          R3=%3           ;GENERAL REGISTER
000004                          R4=%4           ;GENERAL REGISTER
000005                          R5=%5           ;GENERAL REGISTER
000006                          SP=%6           ;PROCESSOR STACK POINTER
000007                          PC=%7           ;PROGRAM COUNTER

                                ;LOCATION EQUIVALENCIES
                                ;--- - -- ------- -----

177776                          PS=177776       ;PROCESSOR STATUS WORD
001200                          STACK=1200      ;START OF PROCESSOR STACK

                                ;INSTRUCTION DEFINITIONS
                                ;---------- ------------

005746                          PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
005726                          POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
010046                          PUSHR0=10046    ;SAVE R0 ON STACK
012600                          POPR0=12600     ;RESTORE R0 FROM STACK
024646                          PUSH2SP=24646   ;DECREMENT STACK TWICE
022626                          POP2SP=22626    ;INCREMENT STACK TWICE

                                ;BIT DEFINITIONS
                                ;- ------------

100000                          BIT15=100000
040000                          BIT14=40000
020000                          BIT13=20000
010000                          BIT12=10000
004000                          BIT11=4000
002000                          BIT10=2000
001000                          BIT9=1000
000400                          BIT8=400
000200                          BIT7=200
000100                          BIT6=100
000040                          BIT5=40
000020                          BIT4=20
000010                          BIT3=10
000004                          BIT2=4
000002                          BIT1=2
000001                          BIT0=1
```

```
                        ;:**************************************************************************
                        ;-------- ----------  ------ -- ---- -- ---------- --- -- ---
                                ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
                                ;THE STANDARD "TRAP CATCHER" IS PLACED
                                ;BETWEEN ADDRESS 0 TO ADDRESS 776.
                                ;IT LOOKS LIKE "PC+2 HALT".
                        ;------------- --- --- ----- ------------ ------------  ---------
                        ;:**************************************************************************

        000000                  .=0
                        ;STANDARD INTERRUPT VECTORS
                        ; -  ----------    --------

        000024                  .=24
000024  005336                          .PFAIL                  ;POWER FAIL HANDLER
000026  000340                         340                     ;SERVICE AT LEVEL 7
000030  004750                         .HLT                    ;ERROR HANDLER
000032  000340                         340                     ;SERVICE AT LEVEL 7
000034  004716                         .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                         340                     ;SERVICE AT LEVEL 7
        000040                  .=40
000040  000000                         0                       ;SAVE FOR ACT-11 OR XXDP
000042  000000                         0                       ;RETURN ADDRESS IF UNDER ACT 11 OR XXDP
000044  000000                         0                       ;SAVE FOR ACT-11 OR XXDP
000046  003522                         $ENDAD                  ;FOR USE WITH ACT-11 OR XXDP
        000052                  .=52
000052  000000                         0                       ;ACT-11 PROGRAM CHARACTERISTICS

        000174                  .=174
000174  000000                 DISPREG:0                       ;SOFTWARE DISPLAY REGISTER
000176  000000                 SWREG:  0                       ;SOFTWARE SWITCH REGISTER

        000200                  .=200
000200  000137  002002                  JMP     .START          ;GO TO START OF PROGRAM


        001000                  .=1000
001000     377      012     101 MTITLE: .ASCII  <377><12>/AC-8544C-MC/<377>
001016     103      132     104         .ASCIZ  /CZDMC-D0 BASIC DMC11 CONTROLLER TEST/<377>

        001200                  .=1200

                        ;INDIRECT POINTERS TO SWITCH REGISTER AND LIGHT DISPLAY
                        ;-----------------------------------------------------

001200  177570                  DISPLAY:177570
001202  177570                  SWR:    177570
```

```
                                ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                                ;-----------  -----------  ---- -  ---    - --

001204  177560                  TKCSR:  177560              ;TELETYPE KEYBOARD CONTROL REGISTER
001206  177562                  TKDBR:  177562              ;TELETYPE KEYBOARD DATA BUFFER
001210  177564                  TPCSR:  177564              ;TELEPRINTER CONTROL REGISTER
001212  177566                  TPDBR:  177566              ;TELEPRINTER DATA BUFFER

                                ;PROGRAM CONTROL PARAMETERS
                                ;----------- - ---- ------

001214  000000                  RETURN: 0                   ;SCOPE ADDRESS FOR LOOP ON TEST
001216  000000                  NEXT:   0                   ;ADDRESS OF NEXT TEST TO BE EXECUTED
001220  000000                  LOCK:   0                   ;ADDRESS FOR LOCK ON CURRENT DATA
001222  000003                  ICOUNT: 3                   ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001224  000000                  LPCNT:  0                   ;NUMBER OF ITEREATIONS COMPLETED
001226  000000                  TSTNO:  0                   ;NUMBER OF TEST IN PROGRESS
001230  000000                  PASCNT: 0                   ;NUMBER OF PASSES COMPLETED
001232  000000                  ERRCNT: 0                   ;TOTAL NUMBER OF ERRORS
001234  000000                  LSTERR: 0                   ;PC OF LAST ERROR CALL

                                ;PROGRAM VARIABLES
                                ;-----------------

001236  000000                  STRTSW: 0                   ;SWITCHES AT START OF PROGRAM
001240  000000                  STAT:   0                   ;DM STATUS WORD STORAGE
001242  000000                  CLKX:   0
001244  000000                  MASKX:  0
001246  000000                  TEMP1:  0                   ;TEMPORARY STORAGE
001250  000000                  TEMP2:  0                   ;TEMPORARY STORAGE
001252  000000                  TEMP3:  0                   ;TEMPORARY STORAGE
001254  000000                  TEMP4:  0                   ;TEMPORARY STORAGE
001256  000000                  TEMP5:  0                   ;TEMPORARY STORAGE
001260  000000                  SAVR0:  0                   ;R0 STORAGE
001262  000000                  SAVR1:  0                   ;R1 STORAGE
001264  000000                  SAVR2:  0                   ;R2 STORAGE
001266  000000                  SAVR3:  0                   ;R3 STORAGE
001270  000000                  SAVR4:  0                   ;R4 STORAGE
001272  000000                  SAVR5:  0                   ;R5 STORAGE
001274  000000                  SAVSP:  0                   ;STACK POINTER STORAGE
001276  000000                  SAVPC:  0                   ;PROGRAM COUNTER STORAGE
001300  000000                  ZERO:   0
001302  000001                  ONE:    1
001304  000000                  MEMLIM: 0                   ;HIGHEST LOCATION FOR NPR'S
001306                          DMACTV: .BLKW 1             ;DMC11'S SELECTED ACTIVE.
001310                          DMNUM:  .BLKW 1             ;OCTAL NUMBER OF DMC11'S.
001312                          SAVACT: .BLKW 1             ;ORIGINAL ACTV  DEVICES
001314                          SAVNUM: .BLKW 1             ;WORKABLE NUMBER
001316  000000                  RUN:    0                   ;POINTER TO RUNNING DEVICE.
                                .EVEN
001320  001472                  CREAM:  DM.MAP-6            ;TABLE POINTER.
001322  001676                  MILK:   CNT.MAP-4           ;TABLE POINTER
```

```
                                ;PROGRAM CONTROL FLAGS
                                ;--  ----- ---- -----

001324     000                  INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001325     000                  ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001326     000                  LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
001327     000                  QV.FLG: .BYTE   0               ;QUICK VERIFY FLAG.
                                                                ;ON FIRST PASS OF EACH DMC11 ITERATIONS WILL BE SUPPRESSED.
                                .EVEN

                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

                                ;:*****************************************************************************
                                ;------------ --  --------- ---------- -----   --- ---- - - ---- -
001330                          .TRPTAB:
           104400               SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001330     003576                       .SCOPE
           104401               SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001332     003736                       .SCOP1
           104402               TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001334     003766                       .TYPE
           104403               INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001336     004050                       .INSTR
           104404               INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001340     004154                       .INSTER
           104405               PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001342     004174                       .PARAM
           104406               SAV05=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001344     004374                       .SAV05
           104407               RES05=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001346     004434                       .RES05
           104410               CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001350     004466                       .CONVRT
           104411               CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001352     004472                       .CNVRT
           104412               MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001354     005466                       .MSTCLR
           104413               DELAY=TRAP+13           ;CALL TO DELAY
001356     005436                       .DELAY
           104414               ROMCLK=TRAP+14          ;CALL TO CLOCK ROM ONCE
001360     005504                       .ROMCLK
           104415               DATACLK=TRAP+15         ;CALL TO CLK DATA
001362     005552                       .DATACLK
           104416               TIMER=TRAP+16           ;CALL TO DELAY A CLOCK TICK
001364     005616                       .TIMER

                                ;-----------------------------------------------------------------------------
                                ;:*****************************************************************************
```

```
                                ;DMC11 CONTROL INDICATORS FOR CURRENT DMC11 UNDER TEST
                                ;--------------  ---- -- -  ------ -------  ----

001366  000000                  STAT1:  0
001370  000000                  STAT2:  0
001372  000000                  STAT3:  0

                                ;DMC11 VECTOR AND REGISTER INDIRECT POINTERS
                                ;----------  ------------  --------------

001374  000000                  DMRVEC: 0               ;POINTER TO DMC11 RECEIVER INTERRUPT VECTOR
001376  000000                  DMRLVL: 0               ;POINTER TO DMC11 RECEIVER INTERRUPT SERVICE PS
001400  000000                  DMTVEC: 0               ;POINTER TO DMC11 TRANSMITTER INTERRUPT VECTOR
001402  000000                  DMTLVL: 0               ;POINTER TO DMC11 TRANSMITTER INTERRUPT SERVICE PS
001404  000000                  DMCSR:  0               ;POINTER TO DMC11 CONTROL STATUS REGISTER
001406  000000                  DMCSRH: 0               ;POINTER TO DMC11 CONTROL STATUS REGISTER HIGH BYTE.
001410  000000                  DMCTL:  0               ;POINTER TO DMC11 CONTOL OUT REGISTER
001412  000000                  DMP04:  0               ;POINTER TO DMC11 PORT REGISTER(SEL 4)
001414  000000                  DMP06:  0               ;POINTER TO DMC11 PORT REGISTER(SEL 6)

                                ;TEMP STORAGE
                                ;------------

001416  000000                  TEMP:   0
        001460                  .=.+40

                                ;DMC11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                                ;--------- ------ ----------------------

        001500                  .=1500
001500                          DM.MAP:
001500                          DMCR00: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 00
001502                          DMS100: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 00
001504                          DMS200: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 00
001506                          DMS300: .BLKW   1               ;3RD STATUS WORD

001510                          DMCR01: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 01
001512                          DMS101: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 01
001514                          DMS201: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 01
001516                          DMS301: .BLKW   1               ;3RD STATUS WORD

001520                          DMCR02: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 02
001522                          DMS102: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 02
001524                          DMS202: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 02
001526                          DMS302: .BLKW   1               ;3RD STATUS WORD

001530                          DMCR03: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 03
001532                          DMS103: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 03
001534                          DMS203: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 03
001536                          DMS303: .BLKW   1               ;3RD STATUS WORD

001540                          DMCR04: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 04
001542                          DMS104: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 04
001544                          DMS204: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 04
001546                          DMS304: .BLKW   1               ;3RD STATUS WORD

001550                          DMCR05: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 05
```

```
001552                          DMS105: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 05
001554                          DMS205: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 05
001556                          DMS305: .BLKW   1               ;3RD STATUS WORD

001560                          DMCR06. .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 06
001562                          DMS106: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 06
001564                          DMS206: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 06
001566                          DMS306: .BLKW   1               ;3RD STATUS WORD

001570                          DMCR07: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 07
001572                          DMS107: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 07
001574                          DMS207: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 07
001576                          DMS307: .BLKW   1               ;3RD STATUS WORD

001600                          DMCR10: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 10
001602                          DMS110: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 10
001604                          DMS210: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 10
001606                          DMS310: .BLKW   1               ;3RD STATUS WORD

001610                          DMCR11: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 11
001612                          DMS111: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 11
001614                          DMS211: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 11
001616                          DMS311: .BLKW   1               ;3RD STATUS WORD

001620                          DMCR12: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 12
001622                          DMS112: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 12
001624                          DMS212: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 12
001626                          DMS312: .BLKW   1               ;3RD STATUS WORD

001630                          DMCR13: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 13
001632                          DMS113: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 13
001634                          DMS213: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 13
001636                          DMS313: .BLKW   1               ;3RD STATUS WORD

001640                          DMCR14: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 14
001642                          DMS114: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 14
001644                          DMS214: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 14
001646                          DMS314: .BLKW   1               ;3RD STATUS WORD

001650                          DMCR15: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 15
001652                          DMS115: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 15
001654                          DMS215: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 15
001656                          DMS315: .BLKW   1               ;3RD STATUS WORD

001660                          DMCR16: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 16
001662                          DMS116: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 16
001664                          DMS216: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 16
001666                          DMS316: .BLKW   1               ;3RD STATUS WORD

001670                          DMCR17: .BLKW   1               ;CONTROL STATUS REGISTER FOR DMC11 NUMBER 17
001672                          DMS117: .BLKW   1               ;VECTOR FOR DMC11 NUMBER 17
001674                          DMS217: .BLKW   1               ;DDCMP LINE# FOR DMC11 NUMBER 17
001676                          DMS317: .BLKW   1               ;3RD STATUS WORD

001700  000000                  DM.END: 000000
```

```
                        ;DMC11 PASS COUNT AND ERROR COUNT TABLE
                        ;--------  -------  -      - ---   -----

001702                  CNT.MAP:
001702  000000          PACT00: 0               ;PASS COUNT FOR DMC11 NUMBER 00
001704  000000          ERCT00: 0               ;ERROR COUNT FOR DMC11 NUMBER 00

001706  000000          PACT01: 0               ;PASS COUNT FOR DMC11 NUMBER 01
001710  000000          ERCT01: 0               ;ERROR COUNT FOR DMC11 NUMBER 01

001712  000000          PACT02: 0               ;PASS COUNT FOR DMC11 NUMBER 02
001714  000000          ERCT02: 0               ;ERROR COUNT FOR DMC11 NUMBER 02

001716  000000          PACT03: 0               ;PASS COUNT FOR DMC11 NUMBER 03
001720  000000          ERCT03: 0               ;ERROR COUNT FOR DMC11 NUMBER 03

001722  000000          PACT04: 0               ;PASS COUNT FOR DMC11 NUMBER 04
001724  000000          ERCT04: 0               ;ERROR COUNT FOR DMC11 NUMBER 04

001726  000000          PACT05: 0               ;PASS COUNT FOR DMC11 NUMBER 05
001730  000000          ERCT05: 0               ;ERROR COUNT FOR DMC11 NUMBER 05

0C1732  000000          PACT06: 0               ;PASS COUNT FOR DMC11 NUMBER 06
001734  000000          ERCT06: 0               ;ERROR COUNT FOR DMC11 NUMBER 06

001736  000000          PACT07: 0               ;PASS COUNT FOR DMC11 NUMBER 07
001740  000000          ERCT07: 0               ;ERROR COUNT FOR DMC11 NUMBER 07

001742  000000          PACT10: 0               ;PASS COUNT FOR DMC11 NUMBER 10
001744  000000          ERCT10: 0               ;ERROR COUNT FOR DMC11 NUMBER 10

001746  000000          PACT11: 0               ;PASS COUNT FOR DMC11 NUMBER 11
001750  000000          ERCT11: 0               ;ERROR COUNT FOR DMC11 NUMBER 11

001752  000000          PACT12: 0               ;PASS COUNT FOR DMC11 NUMBER 12
001754  000000          ERCT12: 0               ;ERROR COUNT FOR DMC11 NUMBER 12

001756  000000          PACT13: 0               ;PASS COUNT FOR DMC11 NUMBER 13
001760  000000          ERCT13: 0               ;ERROR COUNT FOR DMC11 NUMBER 13

001762  000000          PACT14: 0               ;PASS COUNT FOR DMC11 NUMBER 14
001764  000000          ERCT14: 0               ;ERROR COUNT FOR DMC11 NUMBER 14

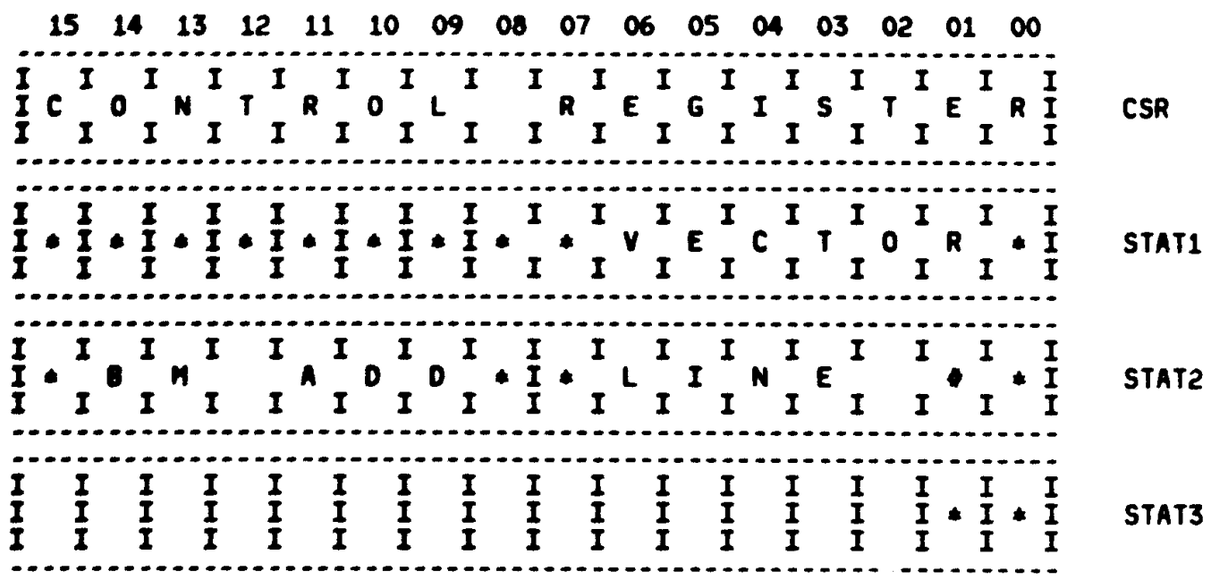
001766  000000          PACT15: 0               ;PASS COUNT FOR DMC11 NUMBER 15
001770  000000          ERCT15: 0               ;ERROR COUNT FOR DMC11 NUMBER 15

001772  000000          PACT16: 0               ;PASS COUNT FOR DMC11 NUMBER 16
001774  000000          ERCT16: 0               ;ERROR COUNT FOR DMC11 NUMBER 16

001776  000000          PACT17: 0               ;PASS COUNT FOR DMC11 NUMBER 17
002000  000000          ERCT17: 0               ;ERROR COUNT FOR DMC11 NUMBER 17
```

```
.REM    $
```

FORMAT OF STATUS TABLE



DEFINITION OF FORMAT

CSR: CONTAINS DMC11 CSR ADDRESS

STAT1: BITS 00-08 IS DMC11 VECTOR ADDRESS
BIT15=1 MICRO-PROCESSOR HAS CRAM
BIT15=0 MICRO-PROCESSOR HAS CROM
BIT14=1 ???? TURNAROUND CONNECTOR IS ON
BIT14=0 NO TURNAROUND CONNECTOR
BIT13=0 LINE UNIT IS AN M8201
BIT13=1 LINE UNIT IS AN M8202
BIT12=1 NO LINE UNIT
BITS 09-11 IS DMC11 BR PRIORITY LEVEL

STAT2: LOW BYTE IS SWITCH PAC#1 (DDCMP LINE NUMBER)
HIGH BYTE IS SWITCH PAC#2 (BM873 BOOT ADD)

STAT3: BIT0=1 DO FREE RUNNING TESTS ON KMC
(MUST BE SET TO A ONE MANUALLY [PROGRAM DZDMI ONLY])
KMC MUST HAVE MICRO-CODE WRITTEN FROM RUNNING
DZDMG TEST 2 FIRST
BIT1=1 DMC11-AL LOCAL HIGH SPEED MICRO-CODE
BIT1=0 DMC11-AR REMOTE LOW SPEED MICRO-CODE

```
$
```

```
                                        ;PROGRAM INITIALIZATION
                                        ;LOCK OUT INTERRUPTS
                                        ;SET UP PROCESSOR STACK
                                        ;SET UP POWER FAIL VECTOR
                                        ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
                                        ;TYPE TITLE MESSAGE

002002  012737  000340  177776  .START: MOV     #340,PS         ;LOCK OUT INTERRUPTS
002010  012706  001200                  MOV     #STACK,SP       ;SET UP STACK
002014  012737  005336  000024          MOV     #.PFAIL,@#24    ;SET UP POWER FAIL VECTOR
002022  013737  001310  001314          MOV     DMNUM,SAVNUM    ;SAVE NUMBER OF DEVICES IN SYSTEM.
002030  005037  010016                  CLR     SWFLG           ;CLEAR SOFT TYPEOUT FLAG
002034  105037  001325                  CLRB    ERRFLG          ;CLEAR ERROR FLAG
002040  105037  001327                  CLRB    QV.FLG          ;ZERO QUICK VERIFY FLAG
002044  012737  001470  001320          MOV     #DM.MAP-10,CREAM;GET MAP POINTER.
002052  012737  001676  001322          MOV     #CNT.MAP-4,MILK ;GET PASS COUNT MAP POINTER
002060  012737  100000  001316          MOV     #BIT15,RUN      ;POINT POINTER TO FIRST DEVICE.
002066  012700  001702                  MOV     #CNT.MAP,R0     ;PASS COUNT POINTER TO R0
002072  005020                  23$:    CLR     (R0)+           ;CLEAR TABLE
002074  022700  002002                  CMP     #CNT.MAP+100,R0 ;DONE YET?
002100  001374                          BNE     23$             ;KEEP GOING
002102  005037  001234                  CLR     LSTERR          ;CLEAR LAST ERROR POINTER
002106  012737  000001  001226          MOV     #1,TSTNO        ;SET UP FOR TEST 1
002114  012737  002002  001214          MOV     #.START,RETURN  ;SET UP FOR POWER FAIL BEFORE
                                                                ;TESTING STARTS
002122  013746  000006                  MOV     @#6,-(SP)       ;SAVE CURRENT VECTORS
002126  013746  000004                  MOV     @#4,-(SP)       ;
002132  012737  002166  000004          MOV     #6$,@#4         ;SET UP FOR TIMEOUT
002140  012737  177570  001202          MOV     #177570,SWR     ;SET SWR TO HARD SWR ADDRESS
002146  012737  177570  001200          MOV     #177570,DISPLAY ;SET DISPLAY TO HARD SWR ADDRESS
002154  022777  177777  177020          CMP     #-1,@SWR        ;REFERENCE HARDWARE SWITCH REGISTER
002162  001402                          BEQ     6$+2            ;IF = -1 USE SOFT SWR ANYWAY
002164  000407                          BR      7$              ;IF IT EXISTS AND NOT = -1 USE HARD SWR
002166  022626                  6$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
002170  012737  000176  001202          MOV     #SWREG,SWR      ;POINTER TO SOFT SWR
002176  012737  000174  001200          MOV     #DISPREG,DISPLAY;POINTER TO SOFT DISPLAY REG
002204  012637  000004          7$:     MOV     (SP)+,@#4       ;RESTORE VECTORS
002210  012637  000006                  MOV     (SP)+,@#6       ;
002214  105737  001324                  TSTB    INIFLG          ;HAS INITIALIZATION BEEN PERFORMED
002220  001006                          BNE     20$             ;BR IF YES
002222  022737  003522  000042          CMP     #$ENDAD,@#42    ;IF ACT-11 AUTOMATIC MODE, DON'T TYPE ID
002230  001402                          BEQ     20$
002232  104402  001000                  TYPE    ,MTITLE         ;TYPE TITLE MESSAGE
002236  004737  007606          20$:    JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
002242  017737  176734  001236          MOV     @SWR,STRTSW     ;STORE STARTING SWITCHES
002250  005737  000042                  TST     @#42            ;IS IT RUNNING IN AUTO MODE?
002254  001402                          BEQ     .+6             ;BR IF NO
002256  005037  001236                  CLR     STRTSW          ;IF YES, CLEAR SWITCHES
002262  032737  000001  001236          BIT     #SW00,STRTSW    ;IF SW00=1, QUESTIONS ARE ASKED.
002270  001012                          BNE     17$             ;BR IF SW00=1
002272  105737  001236                  TSTB    STRTSW          ;BIT7=1??
002276  100007                          BPL     17$             ;BR IF SW07=0
002300  005737  001306                  TST     DMACTV          ;ARE ANY DEVICES SELECTED?
002304  001006                          BNE     16$             ;BR IF YES
002306  104402  007154                  TYPE,   NOACT           ;NO DEVICES SELECTED.
002312  000000                          HALT                    ;STOP THE SHOW
```

```
002314  000776                          BR      .-2             ;DISQUALIFY CONTINUE SWITCH
002316  004737  010512          17$:    JSR     PC,AUTO.SIZE    ;GO DO THE AUTO SIZE
002322  105737  001324          16$:    TSTB    INIFLG          ;FIRST TIME?
002326  001410                          BEQ     21$             ;BR IF YES
002330  105737  001236                  TSTB    STRTSW          ;IF USING SAME PARAMETERS DONT TYPE MAP
002334  100431                          BMI     1$
002336  032737  000006  001236          BIT     #BIT1!BIT2,STRTSW;IS TEST NO. OR LOCK SELECTED
002344  001403                          BEQ     24$             ;IF NO THEN TYPE STATUS
002346  000424                          BR      1$              ;IF YES DO NOT TYPE STATUS
002350  005137  001324          21$:    COM     INIFLG          ;SET FLAG
002354  104402  006224          24$:    TYPE    ,XHEAD          ;TYPE HEADER
00236C  012704  001500                  MOV     #DM.MAP,R4      ;SET POINTER
002364  010437  001246          5$:     MOV     R4,TEMP1        ;SET ADDRESS
002370  012437  001250                  MOV     (R4)+,TEMP2     ;SET CSR
002374  001411                          BEQ     1$              ;ALL DONE IF ZERO
002376  012437  001252                  MOV     (R4)+,TEMP3     ;SET STAT1
002402  012437  001254                  MOV     (R4)+,TEMP4     ;SET STAT2
002406  012437  001256                  MOV     (R4)+,TEMP5     ;SET STAT3
002412  104410                          CONVRT                  ;TYPE OUT STATUS MAP
002414  007454                          XSTATQ                  ;
002416  000762                          BR      5$
002420  012700  001500          1$:     MOV     #DM.MAP,R0      ;R0 POINTS TO STATUS TABLE

                                ;;**************************************************************************
                                ;;*AUTO SIZE TEST
                                ;;*THIS TEST VERIFYS THAT THE DMC11S AND/OR KMC11S ARE AT THE CORRECT FLOATING
                                ;;*ADDRESSES FOR YOUR SYSTEM. IF THIS TEST FAILS, IT IS NOT A HARDWARE ERROR.
                                ;;*CHECK THE ADDRESSES OF ALL FLOATING DEVICES (DJ,DH,DQ,DU,DUP,LK,DMC,DZ,KMC).
                                ;;*IF THERE ARE NO OTHER FLOATING DEVICES BEFORE THE DMC11, THE FIRST
                                ;;*DMC11 ADDRESS IS 760070, KMC11 IS 760110. NO DEVICE SHOULD EVER BE AT
                                ;;*ADDRESS 760000. THIS TEST MAY REQUIRE 2 OR MORE ATTEMPTS TO GET THE
                                ;;*RIGHT ADDRESSES. AFTER YOU HAVE CHANGED THE ADDRESS TO WHAT IT TOLD
                                ;;*YOU THE FIRST TIME, IT MAY COME BACK AND TELL YOU A DIFFERENT ADDRESS
                                ;;*THE NEXT TIME YOU RUN IT. PLEASE HAVE PATIENCE, THE FINAL ADDRESS
                                ;;*WILL BE CORRECT (AS LONG AS ALL DEVICES IN FRONT OF THE DMC'S ARE
                                ;;*CORRECT).
                                ;;**************************************************************************

002424  013746  000004                  MOV     @#4,-(SP)       ;SAVE LOC 4
002430  013746  000006                  MOV     @#6,-(SP)       ;SAVE LOC 6
002434  005037  000006                  CLR     @#6             ;CLEAR VEC+2
002440  005037  001252                  CLR     TEMP3           ;CLEAR FLAG
002444  005005                          CLR     R5              ;R5=0=DMC, R5=-1=KMC
002446  011037  001404          AUSTRT: MOV     (R0),DMCSR      ;GET NEXT DMC CSR
002452  001564                          BEQ     AUDONE          ;BR IF DONE
002454  005705                          TST     R5              ;DMC OR KMC?
002456  001005                          BNE     1$              ;BR IF KMC
002460  032760  100000  000002          BIT     #BIT15,2(R0)    ;CHECK FOR DMC CSR
002466  001061                          BNE     SKIP            ;SKIP IF NOT DMC
002470  000404                          BR      2$              ;ITS A DMC SO CONTINUE
002472  032760  100000  000002  1$:     BIT     #BIT15,2(R0)    ;CHECK FOR KMC CSR
002500  001454                          BEQ     SKIP            ;SKIP IF NOT KMC
002502  012737  002674  000004  2$:     MOV     #NODEV,@#4      ;SET UP FOR TIMEOUT
002510  005705                          TST     R5              ;DMC OR KMC?
002512  001003                          BNE     3$              ;BR IF KMC
002514  012703  000006                  MOV     #6,R3           ;R3 IS COUNT OF DEVICES BEFORE DMC
002520  000402                          BR      4$              ;GO ON
```

```
002522  012703  000010          3$:     MOV     #10,R3          ;R3 IS COUNT OF DEVICES BEFORE KMC
002526  012702  003010          4$:     MOV     #DEVTAB,R2      ;R2 IS DEVICE TABLE PONTER
002532  012701  160010                  MOV     #160010,R1      ;START WITH ADDRESS 160010
002536  005711                  FLOAT:  TST     (R1)            ;CHECK ADDRESS IN R1
002540  111204                          MOVB    (R2),R4         ;IF NO TIMEOUT, GET NEXT ADDRESS
002542  060401                          ADD     R4,R1           ;IN R1
002544  005201                          INC     R1              ;
002546  040401                          BIC     R4,R1           ;
002550  005703                          TST     R3              ;ANY MORE DEVICES TO CHECK FOR?
002552  001371                          BNE     FLOAT           ;BR IF YES
002554  012737  002700  000004          MOV     #ERR,@#4        ;OK ONLY DMC'S ARE LEFT, SET UP FOR TIMEOUT
002562  010137  003022                  MOV     R1,XLOC         ;SAVE FIRST DMC/KMC ADDRESS
002566  005705                  FY:     TST     R5              ;DMC OR KMC?
002570  001005                          BNE     1$              ;BR IF KMC
002572  032760  100000  000002          BIT     #BIT15,2(R0)    ;CHECK FOR DMC CSR
002600  001014                          BNE     SKIP            ;SKIP IF NOT DMC
002602  000404                          BR      2$              ;ITS A DMC SO CONTINUE
002604  032760  100000  000002  1$:     BIT     #BIT15,2(R0)    ;CHECK FOR KMC CSR
002612  001407                          BEQ     SKIP            ;SKIP IF NOT KMC
002614  005711                  2$:     TST     (R1)            ;CHECK DMC ADDRESS
002616  020137  001404                  CMP     R1,DMCSR        ;DOES IT MATCH
002622  001411                          BEQ     OK              ;BR IF YES
002624  062701  000010                  ADD     #10,R1          ;GET NEXT DMC ADDRESS
002630  000756                          BR      FY              ;DO IT AGAIN
002632  062700  000010          SKIP:   ADD     #10,R0          ;SKIP TO NEXT CSR IN TABLE
002636  011037  001404                  MOV     (R0),DMCSR      ;GET NEXT CSR
002642  001470                          BEQ     AUDONE          ;BR IF DONE
002644  000750                          BR      FY              ;ELSE CONTINUE
002646  062700  000010          OK:     ADD     #10,R0          ;SKIP TO NEXT DMC CSR
002652  062737  000010  003022          ADD     #10,XLOC        ;UPDATE EXPECTED DMC/KMC ADDRESS
002660  011037  001404                  MOV     (R0),DMCSR      ;GET NEXT DMC/KMC CSR
002664  001457                          BEQ     AUDONE          ;BR IF DONE
002666  013701  003022                  MOV     XLOC,R1         ;GET EXPECTED DMC/KMC ADDRESS
002672  000735                          BR      FY              ;CONTINUE
002674  122243                  NODEV:  CMPB    (R2)+,-(R3)     ;ON TIMEOUT, INC R2, DEC R3
002676  000002                          RTI                     ;RETURN
002700  005737  001252          ERR:    TST     TEMP3           ;CHECK FLAG IF = 0 TYPE HEADER
002704  001014                          BNE     1$              ;SKIP HEADER
002706  104402                          TYPE                    ;TYPEOUT HEADER MESSAGE
002710  007223                          CONERR                  ;CONFIGURATION ERROR!!!!
002712  012737  002700  001276          MOV     #ERR,SAVPC      ;SAVE PC FOR TYPEOUT
002720  104411                          CNVRT                   ;TYPE OUT ERROR PC
002722  002770                          ERRPC                   ;
002724  104402                          TYPE                    ;TYPE REST OF HEADER
002726  007277                          CNERR                   ;
002730  012737  177777  001252          MOV     #-1,TEMP3       ;SET FLAG SO IT ONLY GETS TYPED ONCE
002736  010137  001262          1$:     MOV     R1,SAVR1        ;SAVE R1 FOR TYPEOUT
002742  104410                          CONVRT
002744  002776                          CONTAB                  ;TYPE CSR VALUES
002746  005705                          TST     R5              ;DMC OR KMC ?
002750  001003                          BNE     3$              ;BR IF KMC
002752  104402                          TYPE
002754  007320                          DMCM
002756  000402                          BR      4$              ;CONTINUE
002760  104402                  3$:     TYPE
002762  007330                          KMCM
002764  022626                  4$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
```

```
002766  000727                          BR      OK              ;BR TO GET OUT
002770  000001                  ERRPC:  1
002772     006      002                 .BYTE   6,2
002774  001276                          SAVPC
002776  000002                  CONTAB: 2
003000     006      004                 .BYTE   6,4
003002  003022                          XLOC
003004     006      002                 .BYTE   6,2
003006  001404                          DMCSR
003010     007                  DEVTAB: .BYTE   7               ;DJ
003011     017                          .BYTE   17              ;DH
003012     007                          .BYTE   7               ;DQ
003013     007                          .BYTE   7               ;DU
003014     007                          .BYTE   7               ;DUP
003015     007                          .BYTE   7               ;LK
003016     007                          .BYTE   7               ;DMC
003017     007                          .BYTE   7               ;DZ
003020     007                          .BYTE   7               ;KMC
                           .EVEN
003022  000000                  XLOC:   0
003024  005705                  AUDONE: TST     R5              ;DMC?
003026  001005                          BNE     1$              ;BR IF KMC AND ALL DONE
003030  012705  177777                  MOV     #-1,R5          ;SET R5 TO -1 (KMC)
003034  012700  001500                  MOV     #DM.MAP,R0      ;RESET R0 TO START OF TABLE
003040  000602                          BR      AUSTRT          ;GO DO KMC'S
003042  012637  000006          1$:     MOV     (SP)+,@#6       ;RESTORE LOC 6
003046  012637  000004                  MOV     (SP)+,@#4       ;RESTORE LOC 4
003052  032737  000010  001236          BIT     #SW03,STRTSW    ;SELECT SPECIFIC DEVICES??
003060  001422                          BEQ     3$              ;BR IF NO.
003062  104402  006144                  TYPE    ,MNEW           ;TYPE THE MESSAGE.
003066  005000                          CLR     R0              ;ZERO DATA LIGHTS
003070  000000                          HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
003072  027737  176104  001312          CMP     @SWR,SAVACT     ;IS THE NUMBER VALID?
003100  101404                          BLOS    2$              ;BR IF NUMBER IS OK.
003102  104402  006005                  TYPE    ,MERR3          ;TELL USER OF INVALID NUMBER.
003106  000000                          HALT                    ;STOP EVERY THING.
003110  000776                          BR      .-2             ;RESTART THE PROGRAM AGAIN.
003112  017737  176064  001306  2$:     MOV     @SWR,DMACTV     ;GET NEW DEVICE PATTERN
003120  013700  001306                  MOV     DMACTV,R0       ;SHOW THE USER WHAT HE SELECTED.
003124  000000                          HALT                    ;CONTINUE DYNAMIC SWITCHES.
003126  012700  000300          3$:     MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
003132  012701  000302                  MOV     #302,R1         ;VECTOR AREA. 300-776
003136  010120                  4$:     MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
003140  005021                          CLR     (R1)+           ;IN VECTOR AREA.
003142  022021                          CMP     (R0)+,(R1)+     ;POP POINTERS
003144  022700  001000                  CMP     #1000,R0        ;ALL DONE??
003150  001372                          BNE     4$              ;BR IF NO.

                           ;TEST START AND RESTART
                           ;----------------------

003152  012706  001200          .BEGIN: MOV     #STACK,SP       ;SET UP STACK
003156  013746  000006                  MOV     @#6,-(SP)       ;SAVE LOC 6
003162  013746  000004                  MOV     @#4,-(SP)       ;SAVE LOC 4
003166  005000                          CLR     R0              ;START AT 0
003170  012737  003234  000004          MOV     #2$,@#4         ;SET UP FOR TIME OUT
003176  005037  000006                  CLR     @#6             ;TO AUTOSIZE MEMORY
```

```
CZDMC   MACRO V04.00  27-JUN-85 13:16:37 PAGE 25 4
PROGRAM INITIALIZATION AND START UP.

003202  005720                    6$:     TST     (R0)+           ;CHECK ADDRESS IN R0
003204  022700  157776                    CMP     #157776,R0      ;IS IT AT LEAST 28K
003210  001374                            BNE     6$              ;BR IF NO
003212  162700  007776                    SUB     #7776,R0        ;SAVE 2K FOR MONITORS
003216  010037  001304              7$:   MOV     R0,MEMLIM       ;STORE MEMORY LIMIT
003222  012637  000004                    MOV     (SP)+,@#4       ;RESTORE LOC 4
003226  012637  000006                    MOV     (SP)+,@#6       ;RESTORE LOC 6
003232  000413                            BR      10$             ;CONTINUE
003234  022626                    2$:     CMP     (SP)+,(SP)+     ;ADJUST STACK
003236  162700  000004                    SUB     #4,R0           ;GET LAST GOOD ADDRESS
003242  162700  007776                    SUB     #7776,R0        ;SAVE 2K FOR MONITORS
003246  022700  030000                    CMP     #30000,R0       ;IS IT 8K?
003252  001361                            BNE     7$              ;BR IF NO
003254  012700  037400                    MOV     #37400,R0       ;IF 8K DON'T SAVE 2K
003260  000756                            BR      7$              ;
003262  012737  000340  177776  10$:     MOV     #340,PS         ;LOCK OUT INTERRUPTS
003270  032737  000004  001236            BIT     #BIT2,STRTSW    ;CHECK FOR LOCK ON TEST
003276  001411                            BEQ     1$              ;BR IF NO LOCK DESIRED.
003300  104402  006043                    TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
003304  012737  000240  003612            MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
003312  012737  000240  003614            MOV     #NOP,TTST+2     ;SET UP TO LOCK
003320  000406                            BR      3$              ;CONTINUE ALONG.
003322  013737  003730  003612  1$:       MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
003330  013737  003732  003614            MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
003336  012737  010060  001214  3$:       MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
003344  032737  000002  001236  4$:       BIT     #SW01,STRTSW    ;IS TEST NO. SELECTED?
003352  001002                            BNE     5$              ;BR IF YES
003354  104402  005755                    TYPE    ,MR             ;TYPE R
003360  000177  175630            5$:     JMP     @RETURN         ;START TESTING
```

END OF PASS ROUTINE

```
                                                ;END OF PASS
                                                ;TYPE NAME OF TEST
                                                ;UPDATE PASS COUNT
                                                ;CHECK FOR EXIT TO ACT-11
                                                ;RESTART TEST

003364  000005                        .EOP:   RESET                   ;MAKE THE  WORLD CLEAN AGAIN.
003366  005037  001234                        CLR     LSTERR          ;CLEAR LAST ERROR PC
003372  105037  001325                        CLRB    ERRFLG          ;CLEAR ERROR FLAG
003376  005237  001230                        INC     PASCNT          ;UPDATE PASS COUNT
003402  013777  001230  175570                MOV     PASCNT,@DISPLAY ;DISPLAY PASS COUNT
003410  104402  005733                        TYPE    ,MEPASS         ;TYPE END PASS
003414  104402  006072                        TYPE    ,MCSRX          ;TYPE CSR
003420  104411  003546                        CNVRT   ,XCSR           ;SHOW IT
003424  104402  006100                        TYPE    ,MVECX          ;TYPE VECTOR
003430  104411  003554                        CNVRT   ,XVEC           ;SHOW IT
003434  104402  006106                        TYPE    ,MPASSX         ;TYPE PASSES
003440  104411  003562                        CNVRT   ,XPASS          ;SHOW IT
003444  104402  006117                        TYPE    ,MERRX          ;TYPE ERRORS
003450  104411  003570                        CNVRT   ,XERR           ;SHOW IT
003454  013700  001322                        MOV     MILK,R0         ;GET POINTER TO PASS COUNT
003460  013720  001230                        MOV     PASCNT,(R0)+    ;STORE PASS COUNT FOR THIS DMC11
003464  013720  001232                        MOV     ERRCNT,(R0)+    ;STORE ERROR COUNT FOR THIS DMC11
003470  005337  001314                        DEC     SAVNUM          ;ARE ALL DEVICES TESTED?
003474  001017                              BNE     RESTRT          ;BR IF NO.
003476  112737  000377  001327              MOVB    #377,QV.FLG     ;SET THE QUICK VERIFY FLAG.
003504  013737  001310  001314              MOV     DMNUM,SAVNUM    ;RESTORE THE COUNT
003512  013701  000042                      MOV     @#42,R1         ;CHECK FOR ACT-11 OR DDP
003516  001406                              BEQ     RESTRT          ;IF NOT, CONTINUE TESTING
003520  000005                              RESET                   ;STOP THE SHOW--CLEAR THE WORLD
003522                              $ENDAD:
003522  004711                              JSR     PC,(R1)
003524  000240                              NOP
003526  000240                              NOP
003530  000240                              NOP
003532  000240                              NOP
003534  012737  010060  001214      RESTRT: MOV     #CYCLE,RETURN
003542  000137  010060                      JMP     CYCLE
003546  000001                      XCSR:   1
003550     006     002                      .BYTE   6,2
003552  001404                              DMCSR
003554  000001                      XVEC:   1
003556     004     002                      .BYTE   4,2
003560  001374                              DMRVEC
003562  000001                      XPASS:  1
003564     006     002                      .BYTE   6,2
003566  001230                              PASCNT
003570  000001                      XERR:   1
003572     006     002                      .BYTE   6,2
003574  001232                              ERRCNT

                                                ;SCOPE LOOP AND INTERATION HANDLER
                                                ;-- ----------------------------

003576  004737  007606              .SCOPE: JSR     PC,CKSWR        ;CKECK FOR SOFT SWR
003602  010016                              MOV     R0,(SP)         ;SAVE R0 ON THE STACK
003604  032777  040000  175370              BIT     #BIT14,@SWR     ;'LOOP ON THIS TEST"?
```

```
003612  001407                  TTST:   BEQ     1$              ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240)
003614  000437                          BR      3$              ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
003616  005737  003734                  TST     DONE            ;WAS TKCSR DONE SET?
003622  001434                          BEQ     3$              ;BR IF NO (LOCKED ON TEST)
003624  005037  003734                  CLR     DONE            ;YES, CLEAR FLAG
003630  000415                          BR      2$              ;GO TO NEXT TEST
003632  032777  004000  175342  1$:     BIT     #SW11,@SWR      ;DELETE ITERATION?  (QUICK PASS)
003640  001011                          BNE     2$              ;BR IF YES
003642  105737  001327                  TSTB    QV.FLG          ;HAVE PASSES BEECOMPLETED?
003646  001406                          BEQ     2$              ;BR IF QUICK PASS.
003650  005237  001224                  INC     LPCNT           ,UPDATE ITERATION COUNTER
003654  023737  001224  001222          CMP     LPCNT,ICOUNT    ;ARE ALL ITERATIONS DONE??
003662  101414                          BLOS    3$              ;BR IF NOT YET
003664  105037  001325          2$:     CLRB    ERRFLG          ;PREPARE FOR NEW TEST
003670  005037  001224                  CLR     LPCNT           ;START ICOUNTER AT 0
003674  005037  001220                  CLR     LOCK
003700  012737  000020  001222          MOV     #20,ICOUNT      ;RESET ITERATIONS
003706  013737  001216  001214          MOV     NEXT,RETURN     ;GET NEXT TEST
003714  011600                  3$:     MOV     (SP),R0         ;POP R0 OFF OF THE STACK
003716  022626                          POP2SP                  ;FAKE AN "RTI"
003720  013701  001404                  MOV     DMCSR,R1        ;R1 CONTAINS BASE DMC ADDRESS
003724  000177  175264                  JMP     @RETURN         ;GO DO THE TEST
003730  001407                  BRW:    1407
003732  000437                  BRX:    437
003734  000000                  DONE:   0

                                        ;CHECK FOR FREEZE ON CURRENT DATA
                                        ;-------------------------------

003736  004737  007606          .SCOP1: JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
003742  032777  001000  175232          BIT     #SW09,@SWR      ;IS SW09=1(SET)?
003750  001405                          BEQ     1$              ;BR IF NOT SET.
003752  005737  001220                  TST     LOCK
003756  001402                          BEQ     1$
003760  013716  001220                  MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
003764  000002                  1$:     RTI                     ;GO BACK.

                                        ;TELETYPE OUTPUT ROUTINE
                                        ;----------------------

003766  010546                  .TYPE:  MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
003770  017605  000002                  MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
003774  062766  000002  000002          ADD     #2,2(SP)        ;POP OVER ADDRESS.
004002  005737  010016          4$:     TST     SWFLG           ;SOFT SWR MESSAGE?
004006  001004                          BNE     1$              ;IF YES TYPE IT OUT REGARDLESS OF SW12
004010  032777  010000  175164          BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
004016  001012                          BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
004020  105715                  1$:     TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
004022  100002                          BPL     2$              ;BR IF NUMBER IS PLUS
004024  104402  005672                  TYPE    ,MCRLF          ;TYPE A CR/LF!
004030  105777  175154          2$:     TSTB    @TPCSR          ;TTY READY?
004034  100375                          BPL     2$              ;BR IF NO.
004036  112577  175150                  MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
004042  001357                          BNE     4$              ;IF NOT ZERO KEEP PRINTING!
004044  012605                  3$:     MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
004046  000002                          RTI                     ;GO HOME
                                        ;---------------- - ------
```

```
004050  010346                  .INSTR: MOV     R3,-(SP)        ;SAVE R3 ON STACK
004052  010446                          MOV     R4, (SP)        ;SAVE R4 ON STACK
004054  017637  000004  004072          MOV     @4(SP),.MSG
004062  062766  000002  000004          ADD     #2,4(SP)
004070  104402                  .INST1: TYPE
004072  000000                  .MSG:   0
004074  012704  007502                  MOV     #INBUF,R4
004100  012703  000007                  MOV     #7,R3
004104  105777  175074          1$:     TSTB    @TKCSR
004110  100375                          BPL     1$
004112  117714  175070                  MOVB    @TKDBR,(R4)
004116  142714  000200                  BICB    #200,(R4)
004122  122427  000015                  CMPB    (R4)+,#15
004126  001417                          BEQ     INSTR2
004130  105777  175054          2$:     TSTB    @TPCSR
004134  100375                          BPL     2$
004136  017777  175044  175046          MOV     @TKDBR,@TPDBR
004144  005303                          DEC     R3
004146  001356                          BNE     1$
004150  012604                          MOV     (SP)+,R4
004152  012603                          MOV     (SP)+,R3
004154  104402  005666          .INSTE: TYPE    ,MQM
004160  010346                          MOV     R3,-(SP)
004162  010446                          MOV     R4,-(SP)
004164  000741                          BR      .INST1
004166  012604                  INSTR2: MOV     (SP)+,R4        ;RESTORE R4
004170  012603                          MOV     (SP)+,R3        ;RESTORE R3
004172  000002                          RTI

                                        ;CONVERT ASCII STRING TO OCTAL
                                        ;----------------------------

004174  010546                  .PARAM: MOV     R5,-(SP)
004176  010446                          MOV     R4,-(SP)
004200  016605  000004                  MOV     4(SP),R5
004204  012537  004364                  MOV     (R5)+,LOLIM
004210  012537  004366                  MOV     (R5)+,HILIM
004214  012537  004370                  MOV     (R5)+,DEVADR
004220  112537  004372                  MOVB    (R5)+,LOBITS
004224  112537  004373                  MOVB    (R5)+,ADRCNT
004230  010566  000004                  MOV     R5,4(SP)
004234  005005                  PARAM1: CLR     R5
004236  012704  007502                  MOV     #INBUF,R4
004242  122714  000015                  CMPB    #15,(R4)
004246  001420                          BEQ     PARERR
004250  121427  000060          1$:     CMPB    (R4),#60
004254  002415                          BLT     PARERR
004256  121427  000067                  CMPB    (R4),#67
004262  003012                          BGT     PARERR
004264  142714  000060                  BICB    #60,(R4)
004270  152405                          BISB    (R4)+,R5
004272  122714  000015                  CMPB    #15,(R4)
004276  001406                          BEQ     LIMITS
004300  006305                          ASL     R5
004302  006305                          ASL     R5
004304  006305                          ASL     R5
```

```
004306  000760                          BR      1$
004310  104404                  PARERR: INSTER
004312  000750                          BR      PARAM1

                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
                                        ;---------------------  ------  ------

004314  020537  004366          LIMITS: CMP     R5,HILIM
004320  101373                          BHI     PARERR
004322  020537  004364                  CMP     R5,LOLIM
004326  103770                          BLO     PARERR
004330  133705  004372                  BITB    LOBITS,R5
004334  001365                          BNE     PARERR

                                        ;STORE NUMBER AT SPECIFIED ADDRESS

004336  013704  004370                  MOV     DEVADR,R4
004342  010524                  1$:     MOV     R5,(R4)+
004344  062705  000002                  ADD     #2,R5
004350  105337  004373                  DECB    ADRCNT
004354  001372                          BNE     1$
004356  012604                          MOV     (SP)+,R4
004360  012605                          MOV     (SP)+,R5
004362  000002                          RTI
004364  000000                  LOLIM:  0
004366  000000                  HILIM:  0
004370  000000                  DEVADR: 0
004372  000000                  LOBITS: 0
        004373                  ADRCNT=LOBITS+1

                                        ;SAVE PC OF TEST THAT FAILED AND R0-R5
                                        ;-------------------------------------

004374  016637  000004  001276  .SAV05: MOV     4(SP),SAVPC     ;SAVE R7 (PC)

                                        ;SAVE R0-R5

004402  010537  001272          SV05:   MOV     R5,SAVR5        ;SAVE R5
004406  010437  001270                  MOV     R4,SAVR4        ;SAVE R4
004412  010337  001266                  MOV     R3,SAVR3        ;SAVE R3
004416  010237  001264                  MOV     R2,SAVR2        ;SAVE R2
004422  010137  001262                  MOV     R1,SAVR1        ;SAVE R1
004426  010037  001260                  MOV     R0,SAVR0        ;SAVE R0
004432  000002                          RTI                     ;LEAVE.

                                        ;RESTORE R0-R5

004434  013700  001260          .RES05: MOV     SAVR0,R0        ;RESTORE R0
004440  013701  001262                  MOV     SAVR1,R1        ;RESTORE R1
004444  013702  001264                  MOV     SAVR2,R2        ;RESTORE R2
004450  013703  001266                  MOV     SAVR3,R3        ;RESTORE R3
004454  013704  001270                  MOV     SAVR4,R4        ;RESTORE R4
004460  013705  001272                  MOV     SAVR5,R5        ;RESTORE R5
004464  000002                          RTI                     ;LEAVE

                                        ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
                                        ;---------------- -----------------------------------
```

```
004466  104402  005672          .CONVR: TYPE    ,MCRLF
004472  010046                  .CNVRT: MOV     R0,-(SP)
004474  010146                          MOV     R1,-(SP)
004476  010346                          MOV     R3,-(SP)
004500  010446                          MOV     R4,-(SP)
004502  010546                          MOV     R5,-(SP)
004504  017601  000012                  MOV     @12(SP),R1
004510  062766  000002  000012          ADD     #2,12(SP)
004516  012137  004710                  MOV     (R1)+,WRDCNT
004522  112137  004712          1$:     MOVB    (R1)+,CHRCNT
004526  112137  004713                  MOVB    (R1)+,SPACNT
004532  013137  004714                  MOV     @(R1)+,BINWRD
004536  122737  000003  004712          CMPB    #3,CHRCNT
004544  001003                          BNE     2$
004546  042737  177400  004714          BIC     #177400,BINWRD
004554  013704  004714          2$:     MOV     BINWRD,R4
004560  113705  004712                  MOVB    CHRCNT,R5
004564  012700  001416                  MOV     #TEMP,R0
004570  010403                  3$:     MOV     R4,R3
004572  042703  177770                  BIC     #177770,R3
004576  062703  000060                  ADD     #060,R3
004602  110320                          MOVB    R3,(R0)+
004604  000241                          CLC
004606  006004                          ROR     R4
004610  000241                          CLC
004612  006004                          ROR     R4
004614  000241                          CLC
004616  006004                          ROR     R4
004620  005305                          DEC     R5
004622  001362                          BNE     3$
004624  012703  007544                  MOV     #MDATA,R3
004630  114023                  4$:     MOVB    -(R0),(R3)+
004632  105337  004712                  DECB    CHRCNT
004636  001374                          BNE     4$
004640  105737  004713                  TSTB    SPACNT
004644  001405                          BEQ     6$
004646  112723  000040          5$:     MOVB    #040,(R3)+
004652  105337  004713                  DECB    SPACNT
004656  001373                          BNE     5$
004660  105013                  6$:     CLRB    (R3)
004662  104402  007544                  TYPE    ,MDATA
004666  005337  004710                  DEC     WRDCNT
004672  001313                          BNE     1$
004674  012605                          MOV     (SP)+,R5
004676  012604                          MOV     (SP)+,R4
004700  012603                          MOV     (SP)+,R3
004702  012601                          MOV     (SP)+,R1
004704  012600                          MOV     (SP)+,R0
004706  000002                          RTI
004710  000000                  WRDCNT: 0
004712  000000                  CHRCNT: 0
        004713                  SPACNT=CHRCNT+1
004714  000000                  BINWRD: 0

                                        ;TRAP DISPATCH SERVICE
```

```
                                        ;ARGUMENT OF TRAP IS EXTRACTED
                                        ;AND USED AS OFFSET TO OBTAIN POINTER
                                        ;TO SELECTED SUBROUTINE

004716  011646                .TRPSR: MOV     (SP),-(SP)      ;GET PC OF RETURN
004720  162716  000002                SUB     #2,(SP)         ;=PC OF TRAP
004724  017616  000000                MOV     @(SP),(SP)      ;GET TRP
004730  006316                TRPOK:  ASL     (SP)            ;MULTIPLY TRAP ARG BY 2
004732  042716  177001                BIC     #177001,(SP)    ;CLEAR UNWANTED BITS
004736  062716  001330                ADD     #.TRPTAB,(SP)   ;POINTER TO SUBROUTINE ADDRESS
004742  017616  000000                MOV     @(SP),(SP)      ;SUBROUTINE ADDRESS
004746  000136                        JMP     @(SP)+          ;GO TO SUBROUTINE

                                        ;ERROR HANDLER
                                        ;-------------

004750  004737  007606        .HLT:   JSR     PC,CKSWR        ;CHECK FOR SOFT SWR
004754  032777  010000  174220        BIT     #SW12,@SWR      ;BELL ON ERROR?
004762  001406                        BEQ     XBX             ;BR IF NO BELL
004764  105777  174220                TSTB    @TPCSR          ;TTY READY.
004770  100003                        BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
004772  112777  000207  174212        MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
005000  032777  020000  174174  XBX:   BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
005006  001105                        BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
005010  021637  001234                CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
005014  001404                        BEQ     1$              ;BR IF YES
005016  011637  001234                MOV     (SP),LSTERR     ;RECORD BEING HERE
005022  105037  001325                CLRB    ERRFLG          ;PREPARE HEADER
005026  104406                1$:     SAV05                   ;SAVE ALL PROC REGISTERS
005030  011605                        MOV     (SP),R5         ;GET THE PC OF ERROR
005032  162705  000002                SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
005036  011504                        MOV     (R5),R4         ;GET HLT INSTRUCTION
005040  006304                        ASL     R4              ;MULT BY TWO
005042  061504                        ADD     (R5),R4         ;DOUBLE IT
005044  006304                        ASL     R4              ;MULT AGAIN
005046  042704  177001                BIC     #177001,R4      ;CLEAR JUNK
005052  062704  036362                ADD     #.ERRTAB,R4     ;GET POINTER
005056  012437  005172                MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
005062  012437  005204                MOV     (R4)+,DATAHD    ;GET DATA HEADRER
005066  011437  005216                MOV     (R4),DATABP     ;GET DATA TABLE
005072  105737  001325                TSTB    ERRFLG          ;TYPE HEADREER
005076  001403                        BEQ     TYPMSG          ;BR IF YES
005100  005737  005216                TST     DATABP          ;DOES DATA TABLE EXIST?
005104  001040                        BNE     TYPDAT          ;BR IF YES.
005106  104402  005672        TYPMSG: TYPE    ,MCRLF
005112  104402  005672                TYPE    ,MCRLF
005116  005737  001220                TST     LOCK
005122  001402                        BEQ     1$
005124  104402  006142                TYPE    ,MASTEK
005130  104402  006130        1$:     TYPE    ,MTSTN
005134  104411  005330                CNVRT   ,XTSTN          ;SHOW IT
005140  104402  006217                TYPE    ,MERRPC         ;TYPE PC.
005144  104411  005322                CNVRT   ,ERTABO         ;SHOW IT
005150  104402  005672                TYPE    ,MCRLF          ;GIVE A CR/LF
005154  112737  177777  001325        MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
005162  005737  005172                TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
005166  001402                        BEQ     WRKO.FM         ;BR IF NO.
```

```
005170  104402                          TYPE                            ;TYPE
005172  000000                  ERRMSG: 0                               ;    ERROR MESSAGE
005174                          WRKO.FM:                                ;
005174  005737  005204                  TST     DATAHD                  ;DATA HEADER?
005200  001402                          BEQ     TYPDAT                  ;BR IF NO
005202  104402                          TYPE                            ;TYPE
005204  000000                  DATAHD: 0                               ;    DATA HEADER
005206  005737  005216          TYPDAT: TST     DATABP                  ;DATA TABLE?
005212  001402                          BEQ     RESREG                  ;BR IF NO.
005214  104410                          CONVRT                          ;SHOW
005216  000000                  DATABP: 0                               ;    DATA TABLE
005220  104407                  RESREG: RES05                           ;RESTORE PROC REGISTERS
005222  022737  003522  000042  HALTS:  CMP     @#$ENDAD,@#42           ;IF ACT-11 AUTOMATIC MODE, HALT!!
005230  001403                          BEQ     1$
005232  005777  173744                  TST     @SWR                    ;HALT ON ERROR?
005236  100005                          BPL     EXITER                  ;BR IF NO HALT ON ERROR
005240  010046                  1$:     PUSHRO                          ;SAVE RO
005242  016600  000002                  MOV     2(SP),RO                ;SHOW ERROR PC IN DATA LIGHTS
005246  000000                          HALT                            ;HALT
005250  012600                          POPRO                           ;GET RO
005252  005237  001232          EXITER: INC     ERRCNT                  ;UPDATE ERROR COUNT
005256  032777  000400  173716          BIT     #SW08,@SWR              ;GOTO TOP OF TEST?
005264  001007                          BNE     1$                      ;BR IF YES
005266  032777  002000  173706          BIT     #SW10,@SWR              ;GOTO NEXT TEST?
005274  001411                          BEQ     2$                      ;BR IF NO
005276  013737  001216  001214          MOV     NEXT,RETURN             ;SET FOR NEXT TEST
005304  012706  001200          1$:     MOV     #STACK,SP               ;RESET SP
005310  013701  001404                  MOV     DMCSR,R1                ;SET UP R1
005314  000177  173674                  JMP     @RETURN                 ;GOTO SPECIFIED TEST
005320  000002                  2$:     RTI                             ;RETURN
005322  000001                  ERTABO: 1
005324     006     002                  .BYTE   6,2
005326  001276                          SAVPC
005330  000001                  XTSTN:  1
005332     003     002                  .BYTE   3,2
005334  001226                          TSTNO
                                        ;ENTER HERE ON POWER FAILURE
                                        ;-------------------------


005336                          .PFAIL:
005336  012737  005350  000024          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
005344  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
005346  000777                          BR      .

                                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

005350                          RESTAR:
005350  012737  005336  000024          MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
005356  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
005362  013701  001404                  MOV     DMCSR,R1        ;RESTORE R1
005366  005037  001416                  CLR     TEMP            ;READY FOR TIMMER
005372  005237  001416                  INC     TEMP            ;PLUS ONE TO THE TIMER!
005376  001375                          BNE     .-4             ;BR IF MORE TO GO
005400  104402  005675                  TYPE    ,MPFAIL         ;TYPE THE MESSAGE
005404  104411  005430                  CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
005410  105037  001325                  CLRB    ERRFLG          ;START CLEAN
```

```
005414  005037  001234                  CLR     LSTERR          ;""""""""""""
005420  005011                          CLR     (R1)            ;CLEAR MAINT BITS
005422  104412                          MSTCLR                  ;START CLEAN UP OF DEVICE
005424  000177  173564                  JMP     @RETURN         ;START DOING THAT TEST AGAIN.
005430  000001                PFTAB:    1
005432     003     002          .BYTE   3,2
005434  001226                          TSTNO

005436                          .DELAY:
005436  012777  000020  173746          MOV     #20,@DMP04
005444  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005446  121111                          121111                  ;POKE CLOCK DELAY BIT
005450                          1$:
005450  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005452  121224                          121224                  ;PORT4_IBUS*11
005454  032777  000020  173730          BIT     #BIT4,@DMP04    ;IS CLOCK BIT SET?
005462  001772                          BEQ     1$              ;BR IF NO
005464  000002                          RTI

005466                          .MSTCLR:
005466  152777  000100  173712          BISB    #BIT6,@DMCSRH   ;SET MASTER CLEAR
005474  142777  000300  173704          BICB    #BIT6!BIT7,@DMCSRH  ;CLEAR MASTER CLEAR AND RUN
005502  000002                          RTI                     ;RETURN

005504                          .ROMCLK:
005504  152777  000002  173674          BISB    #BIT1,@DMCSRH   ;SET ROMI
005512  013677  173676                  MOV     @(SP)+,@DMP06   ;LOAD INSTRUCTION IN SEL6
005516  062746  000002                  ADD     #2,-(SP)        ;ADJUST STACK
005522  032777  000100  173452          BIT     #SW06,@SWR      ;HALT IF SW06 =1
005530  001401                          BEQ     1$              ;BR IF SW06 =0
005532  000000                          HALT                    ;HALT BEFORE CLOCKING INSTRUCTION
005534  152777  000003  173644  1$:     BISB    #BIT1!BIT0,@DMCSRH ;CLOCK INSTRUCTION
005542  142777  000007  173636          BICB    #BIT2!BIT1!BIT0,@DMCSRH  ;CLEAR ROMO, ROMI, STEP
005550  000002                          RTI

005552                          .DATACLK:
005552  013637  001416                  MOV     @(SP)+,TEMP     ;PUT TICK COUNT IN TEMP
005556  062746  000002                  ADD     #2,-(SP)        ;ADJUST STACK
005562  152777  000020  173616  1$:     BISB    #BIT4,@DMCSRH   ;SET STEP LU
005570  027777  173610  173606          CMP     @DMCSR,@DMCSR   ;WASTE TIME
005576  142777  000020  173602          BICB    #BIT4,@DMCSRH   ;CLEAR STEP LU
005604  005337  001416                  DEC     TEMP            ;DEC TICK COUNT
005610  001364                          BNE     1$              ;BR IF NOT DONE
005612  000002                          RTI                     ;RETURN
005614                          3$:     .BLKW 1

005616                          .TIMER:
005616  013637  001416                  MOV     @(SP)+,TEMP     ;MOVE COUNT TO TEMP
005622  062746  000002                  ADD     #2,-(SP)        ;ADJUST STACK
005626                          1$:
005626  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005630  021364                          021364                  ;PORT4_IBUS* REG11
005632  032777  000002  173552          BIT     #2,@DMP04       ;IS PGM CLOCK BIT CLEAR?
005640  001772                          BEQ     1$              ;BR IF YES
005642                          2$:
005642  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
005644  021364                          021364                  ;PORT4_IBUS* REG11
```

```
005646  032777  000002  173536          BIT     #2,@DMP04       ;IS PGM CLOCK BIT SET?
005654  001372                          BNE     2$              ;BR IF YES
005656  005337  001416                  DEC     TEMP            ;DEC COUNT
005662  001361                          BNE     1$              ;BR IF NOT DONE
005664  000002                          RTI                     ;RETURN

005666    040     040     077  MQM:     .ASCIZ  /  ?/
005672    015     012     000  MCRLF:   .ASCIZ   <15><12>
005675    377     120     127  MPFAIL:  .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
005733    377     105     116  MEPASS:  .ASCIZ  <377>/END PASS CZDMC  /
005755    377     122     000  MR:      .ASCIZ  <377>/R/
005760    377     116     117  MERR2:   .ASCIZ  <377>/NO DEVICES PRESENT./
006005    377     111     116  MERR3:   .ASCIZ  <377>/INSUFFICIENT DATA!/
006031    377     124     105  MTSTPC:  .ASCIZ  <377>/TEST PC-/
006043    377     114     117  MLOCK:   .ASCIZ  <377>/LOCK ON SELECTED TEST/
006072    103     123     122  MCSRX:   .ASCIZ   /CSR: /
006100    126     105     103  MVECX:   .ASCIZ  /VEC: /
006106    120     101     123  MPASSX:  .ASCIZ  /PASSES: /
006117    105     122     122  MERRX:   .ASCIZ  /ERRORS: /
006130    124     105     123  MTSTN:   .ASCIZ  /TEST NO: /
006142    052     000          MASTEK:  .ASCIZ  /*/
006144    377     123     105  MNEW:    .ASCIZ  <377>/SET SWITCH REG TO DMC11'S DESIRED ACTIVE./
006217    120     103     072  MERRPC:  .ASCIZ  /PC: /
0C6224    212     040     040  XHEAD:   .ASCII  <212>/            MAP OF DMC11 STATUS/
006263    377     040     040          .ASCII  <377>/            ------------------/
006322    212     040     040          .ASCII  <212>/  PC      CSR     STAT1    STAT2    STAT3/
006374    377     055     055          .ASCIZ  <377>/------   ------   ------   ------   ------/
006450    377     110     117  NUM:     .ASCIZ  <377>/HOW MANY DMC11'S TO BE TESTED?/
006510    377     103     123  CSR:     .ASCIZ  <377>/CSR ADDRESS?/
006526    377     126     105  VEC:     .ASCIZ  <377>/VECTOR ADDRESS?/
006547    377     102     122  PRIO:    .ASCIZ  <377>/BR PRIORITY LEVEL? (4,5,6,7)?/
006606    377     111     106  CRAM:    .ASCIZ  <377>/IF DMC HAS CRAM (M8204) TYPE "Y", IF CROM (M8200) TYPE "N" ?/
006704    377     127     110  MODU:    .ASCIZ  <377>/WHICH LINE UNIT? IF NONE TYPE "N", IF M8201 TYPE "1", IF M8202 TYPE "2
"?/
007016    377     123     127  LINE:    .ASCIZ  <377>/SWITCH PAC#1 (DDCMP LINE #)?/
007054    377     123     127  BM:      .ASCIZ  <377>/SWITCH PAC#2 (BM873 BOOT ADD)?/
007114    377     111     123  CONN:    .ASCIZ  <377>/IS THE LOOP BACK CONNECTOR ON?/
007154    377     116     117  NOACT:   .ASCIZ  <377>/NO DEVICES ARE SELECTED/
007205    377     012     123  SWMES:   .ASCIZ  <377><12>/SWR= /
007215    116     105     127  SWMES1:  .ASCIZ  /NEW? /
007223    377     377     104  CONERR:  .ASCIZ  <377><377>/DMC11 FOUND AT NON-STANDARD ADDRESS  PC: /
007277    377     105     130  CNERR:   .ASCIZ  <377>/EXPECTED  FOUND/
007320    040     050     104  DMCM:    .ASCIZ  / (DMC) /
007330    040     050     113  KMCM:    .ASCIZ  / (KMC) /
007340    377     104     115  SPEED:   .ASCIZ  <377>/DMC11-AR(REMOTE,LOW SPEED) OR DMC11-AL(LOCAL,HIGH SPEED) TYPE "R" OR "
L" ?/

                                         .EVEN
007454  000005                   XSTATQ: 5
007456    006     003                    .BYTE   6,3
007460  001246                           TEMP1
007462    006     003                    .BYTE   6,3
007464  001250                           TEMP2
007466    006     003                    .BYTE   6,3
007470  001252                           TEMP3
007472    006     003                    .BYTE   6,3
007474  001254                           TEMP4
007476    006     002                    .BYTE   6,2
007500  001256                           TEMP5
                                 .EVEN
```

```
                                        ;BUFFERS FOR INPUT OUTPUT

007502  000000                  INBUF:  0
        007544                  .=.+40
007544  000000                  MDATA:  0
        007606                  .=.+40


                                        ;ROUTINE USED TO CHANGE SOFTWARE SWITCH
                                        ;REGISTER USING THE CONSOLE TERMINAL
                                        ;----- ----------- ------------------

007606  022737  000176  001202  CKSWR:  CMP     #SWREG,SWR      ;IS THE SOFT SWR BEING USED?
007614  001077                          BNE     CKSWR5          ;BR IF NO
007616  105777  171362                  TSTB    @TKCSR          ;IS DONE SET?
007622  100003                          BPL     2$              ;GO ON IF NOT SET
007624  012737  177777  003734          MOV     #-1,DONE        ;IF DONE SET, SET FLAG
007632  022777  000007  171346  2$:     CMP     #7,@TKDBR       ;WAS CTRL G TYPED? (7 BIT ASCII)
007640  001404                          BEQ     1$              ;BR IF YES
007642  022777  000207  171336          CMP     #207,@TKDBR     ;WAS CTRL G TYPED? (8 BIT ASCII)
007650  001061                          BNE     CKSWR5          ;BR IF NO
007652  010246                  1$:     MOV     R2,-(SP)        ;STORE R2
007654  010346                          MOV     R3,-(SP)        ;STORE R3
007656  010446                          MOV     R4,-(SP)        ;STORE R4
007660  012737  177777  010016          MOV     #-1,SWFLG       ;SET SOFT TYPE OUT FLAG
007666  005002                  CKSWR1: CLR     R2              ;CLEAR NEW SWR CONTENTS
007670  012704  177777                  MOV     #-1,R4          ;SET FLAG TO ALL ONES
007674  104402  007205                  TYPE    ,SWMES          ;TYPE "SWR= "
007700  104411                  CKSWR2: CNVRT                   ;TYPE OUT PRESENT CONTENTS
007702  010052                          SOFTSW                  ;OF SOFT SWITCH REGISTER
007704  104402  007215          CKSWR3: TYPE    ,SWMES1         ;TYPE "NEW? "
007710  004737  010020          CKSWR4: JSR     PC,INCHAR       ;GET RESPONSE
007714  022703  000015                  CMP     #15,R3          ;WAS IT A CR?
007720  001424                          BEQ     5$              ;BR IF YES
007722  022703  000012                  CMP     #12,R3          ;WAS IT A LF?
007726  001416                          BEQ     4$              ;BR IF YES
007730  022703  000025                  CMP     #25,R3          ;WAS IT CTRL U?
007734  001754                          BEQ     CKSWR1          ;BR IF YES(START OVER)
007736  022703  000007                  CMP     #7,R3           ;IF CNTL G GET NEXT CHAR
007742  001762                          BEQ     CKSWR4
007744  005004                          CLR     R4              ;IT MUST BE A DIGIT SO CLR FLAG
007746  042703  177770                  BIC     #177770,R3      ;ONLY 0-7 ARE LEGAL SO MASK OFF BITS
007752  006302                          ASL     R2              ;SHIFT R2 3 TIMES
007754  006302                          ASL     R2
007756  006302                          ASL     R2
007760  050302                          BIS     R3,R2           ;ADD LAST DIGIT
007762  000752                          BR      CKSWR4          ;GET NEXT CHARACTER
007764  012766  002002  000006  4$:     MOV     #.START,6(SP)   ;LF WAS TYPED SO GO TO START
007772  005704                  5$:     TST     R4              ;IS FLAG CLEAR?
007774  001002                          BNE     6$              ;IF NOT DON'T CHANGE SOFT SWR
007776  010277  171200                  MOV     R2,@SWR         ;IF YES THEN WRITE NEW CONTENTS TO SOFT SWR
010002  005037  010016          6$:     CLR     SWFLG           ;CLEAR TYPEOUT FLAG
010006  012604                          MOV     (SP)+,R4        ;RESTORE R4
010010  012603                          MOV     (SP)+,R3        ;RESTORE R3
010012  012602                          MOV     (SP)+,R2        ;RESTORE R2
010014  000207                  CKSWR5: RTS     PC              ;RETURN
```

```
010016  000000                  SWFLG:  0

010020  105777  171160          INCHAR: TSTB    @TKCSR
010024  100375                          BPL     .-4
010026  017703  171154                  MOV     @TKDBR,R3
010032  105777  171152                  TSTB    @TPCSR
010036  100375                          BPL     .-4
010040  010377  171146                  MOV     R3,@TPDBR
010044  042703  000200                  BIC     #BIT7,R3
010050  000207                          RTS     PC

010052  000001                  SOFTSW: 1
010054     006     002                  .BYTE   6,2
010056  000176                          SWREG
```

```
                                        ;
                                        ;ROUTINE USED TO "CYCLE" THROUGH UP TO 16 DMC11'S
                                        ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
                                        ;AND RUNS THE SPECIFIED DMC11'S.   THIS ROUTINE *MUST*
                                        ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
                                        ;SETUP NECESSARY.
                                        ;
010060  005737  001306          CYCLE:  TST     DMACTV          ;ARE ANY DMC11'S TO BE TESTED?
010064  001004                          BNE     1$              ;BR IF OK.
010066  104402  007154                  TYPE    ,NOACT          ;NO DMC11'S SELECTED!!
010072  000000                          HALT                    ;STOP THE SHOW.
010074  000776                          BR      .-2             ;DISQUALIFY CONT. SW.
010076  000241                  1$:     CLC                     ;CLEAR PROC. CARRY BIT.
010100  006137  001316                  ROL     RUN             ;UPDATE POINTER
010104  005537  001316                  ADC     RUN             ;CATCH CARRY FROM RUN
010110  062737  000004  001322          ADD     #4,MILK         ;UPDATE POINTER
010116  062737  000010  001320          ADD     #10,CREAM       ;UPDATE ADDRESS POINTER.
010124  022737  001700  001320          CMP     #DM.MAP+200,CREAM
010132  001006                          BNE     2$              ;KEEP GOING; NOT ALL TESTED FOR.
010134  012737  001500  001320          MOV     #DM.MAP,CREAM   ;RESET ADDRESS POINTER.
010142  012737  001702  001322          MOV     #CNT.MAP,MILK   ;RESET PASS COUNT POINTER
010150  033737  001316  001306  2$:     BIT     RUN,DMACTV      ;IS THIS ONE ACTIVE?
010156  001747                          BEQ     1$              ;BR IF NO
010160  013700  001320                  MOV     CREAM,R0        ;GET ADDRESS POINTER
010164  013702  001322                  MOV     MILK,R2         ;GET PASS COUNT POINTER
010170  012037  001404                  MOV     (R0)+,DMCSR     ;LOAD SYSTEM CTRL. REG
010174  011037  001374                  MOV     (R0),DMRVEC     ;LOAD VECTOR
010200  042737  177000  001374          BIC     #177000,DMRVEC  ;CLEAR UNWANTED BITS
010206  012037  001366                  MOV     (R0)+,STAT1     ;LOAD STAT1
010212  012037  001370                  MOV     (R0)+,STAT2     ;LOAD STAT2
010216  012037  001372                  MOV     (R0)+,STAT3     ;LOAD STAT3
010222  012237  001230                  MOV     (R2)+,PASCNT    ;LOAD PASS COUNT
010226  012237  001232                  MOV     (R2)+,ERRCNT    ;LOAD ERROR COUNT
010232  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
010236  013737  001404  001406          MOV     DMCSR,DMCSRH
010244  005237  001406                  INC     DMCSRH
010250  013737  001406  001410          MOV     DMCSRH,DMCTL
010256  005237  001410                  INC     DMCTL
010262  013737  001410  001412          MOV     DMCTL,DMP04
010270  060037  001412                  ADD     R0,DMP04
010274  013737  001412  001414          MOV     DMP04,DMP06
010302  060037  001414                  ADD     R0,DMP06

010306  013737  001374  001376          MOV     DMRVEC,DMRLVL   ;PTY LVL
010314  060037  001376                  ADD     R0,DMRLVL       ;
010320  013737  001376  001400          MOV     DMRLVL,DMTVEC   ;TX VEC
010326  060037  001400                  ADD     R0,DMTVEC       ;
010332  013737  001400  001402          MOV     DMTVEC,DMTLVL   ;TX LVL
010340  060037  001402                  ADD     R0,DMTLVL

010344  032737  000002  001236          BIT     #SW01,STRTSW    ;IS TEST NO. SELECTED
010352  001450                          BEQ     7$              ;BR IF NO
010354                          4$:
010354  005737  000042                  TST     @#42            ;RUNNING IN AUTO MODE?
010360  001045                          BNE     7$              ;BR IF YES
```

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010362  104402  005672                  TYPE    ,MCRLF
010366  104403                          INSTR                   ;GET TEST NO.
010370  006130                          MTSTN
010372  104405                          PARAM
010374  000001                          1
010376  001000                          1000
010400  001226                          TSTNO
010402     000                  .BYTE   0
010403     001                  .BYTE   1
010404  012700  012320                  MOV     @TST1,R0
010410  022710                  5$:     CMP     (PC)+,(R0)      ;CMP FIRST WORD TO 12737
010412  012737                          MOV     (PC)+,@(PC)+
010414  001020                          BNE     6$              ;BR IF NOT SAME
010416  023760  001226  000002          CMP     TSTNO,2(R0)     ;DOES TSTNO MATCH?
010424  001014                          BNE     6$              ;BR IF NO
010426  022760  001226  000004          CMP     @TSTNO,4(R0)    ;IS LAST WORD OK?
010434  001010                          BNE     6$              ;BR IF NO
010436  010037  001214                  MOV     R0,RETURN       ;IT IS A LEGAL TEST SO DO IT
010442  104402  005755                  TYPE    ,MR
010446  042737  000002  001236          BIC     @SW01,STRTSW
010454  000412                          BR      8$
010456  005720                  6$:     TST     (R0)+           ;POP R0
010460  020027  033776                  CMP     R0,@TLAST+10    ;AT END YET?
010464  001351                          BNE     5$              ;BR IF NO
010466  104402  005666                  TYPE    ,MQM            ;YES ILLEGAL TEST NO.
010472  000730                          BR      4$              ;TRY AGAIN

010474  012737  012320  001214  7$:     MOV     @TST1,RETURN    ;PREPARE RETURN ADDRESS
010502  013701  001404          8$:     MOV     DMCSR,R1        ;R1 = BASE DMC11 ADDRESS
010506  000177  170502                  JMP     @RETURN         ;GO START TESTING.


                                        ;ROUTINE USED TO "AUTO SIZE" THE DMC11
                                        ;CSR AND VECTOR.
                                        ;NOTE:  THE CSR MAY BE ANY WHERE IN THE FLOATING
                                        ;       ADDRESS RANGE (160000:164000)
                                        ;       AND THE VECTOR MAY BE ANY WHERE IN THE
                                        ;       FLOATING VECTOR RANGE (300:770)
                                        ;

010512                          AUTO.SIZE:
010512  000005                          RESET                   ;INSURE A BUS INIT.
010514  012702  001500          CSRMAP: MOV     #DM.MAP,R2      ;LOAD MAP POINTER.
010520  005022                  1$:     CLR     (R2)+           ;ZERO ENTIRE MAP
010522  022702  001700                  CMP     #DM.END,R2      ;ALL DONE?
010526  001374                          BNE     1$              ;BR IF NO
010530  005037  001310                  CLR     DMNUM           ;SET OCTAL NUMBER OF DMC11'S TO 0
010534  012702  001500                  MOV     #DM.MAP,R2      ;R2 POINTS TO DMC MAP
010540  005037  001306                  CLR     DMACTV          ;CLEAR ACTIVE
010544  032737  000001  001236          BIT     #SW00,STRTSW    ;QUESTIONS?
010552  001002                          BNE     .+6             ;BR IF YES
010554  000137  011252                  JMP     7$              ;IF NO SKIP QUESTIONS
010560  012737  000001  001256          MOV     #1,TEMP5        ;START WITH 1
010566  104403                          INSTR
010570  006450                          NUM
010572  104405                          PARAM
010574  000001                          1
```

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010576  000020                          16.
010600  001252                          TEMP3
010602     000                          .BYTE   0
010603     001                          .BYTE   1
010604  013737  001252  001310          MOV     TEMP3,DMNUM     ;DMNUM = HOW MANY
010612  104402  005672          12$:    TYPE    .MCRLF
010616  104410                          CONVRT                  ;TYPE WHICH DMC IS BEING DONE
010620  012002                          WHICH                   ;TEMP5 IS WHICH DMC
010622  005237  001256                  INC     TEMP5
010626  104403                          INSTR
010630  006510                          CSR
010632  104405                          PARAM
010634  160000                          160000
010636  164000                          164000
010640  001254                          TEMP4
010642     000                          .BYTE   0
010643     001                          .BYTE   1
010644  013722  001254                  MOV     TEMP4,(R2)+     ;STORE CSR IN MAP
010650  104403                          INSTR
010652  006526                          VEC
010654  104405                          PARAM
010656  000000                          0
010660  000776                          776
010662  001254                          TEMP4
010664     000                          .BYTE   0
010665     001                          .BYTE   1
010666  013712  001254                  MOV     TEMP4,(R2)      ;STORE VECTOR IN MAP
010672  104402                  10$:    TYPE
010674  006547                          PRIO                    ;ASK WHAT BR LEVEL
010676  004737  012266                  JSR     PC,INTTY        ;GET RESPONSE
010702  022703  000024                  CMP     #24,R3          ;
010706  101014                          BHI     50$             ;BR IF LESS THAN 4
010710  022703  000027                  CMP     #27,R3          ;
010714  103411                          BLO     50$             ;BR IF GREATER THAN 7
010716  012704  000011                  MOV     #11,R4          ;R4 = NUMBER OF SHIFTS
010722  006303                          ASL     R3              ;SHIFT R3 LEFT
010724  005304                          DEC     R4              ;DEC SHIFT COUNT
010726  001375                          BNE     .-4             ;BR IF NOT DONE
010730  042703  170777                  BIC     #170777,R3      ;BIC UNWANTED BITS
010734  050312                          BIS     R3,(R2)         ;PUT BR LEVEL IN STATUS MAP
010736  000403                          BR      8$              ;CONTINUE
010740  104402                  50$:    TYPE
010742  005666                          MQM                     ;RESPONSE IS OUT OF LIMITS
010744  000752                          BR      10$             ;TRY AGAIN
010746  104402                  8$:     TYPE
010750  006606                          CRAM                    ;DOES DMC HAVE CRAM?
010752  004737  012266                  JSR     PC,INTTY        ;GET REPLY
010756  022703  000131                  CMP     #131,R3
010762  001427                          BEQ     9$              ;YES
010764  022703  000116                  CMP     #116,R3         ;NO
010770  001403                          BEQ     40$             ;NOT A Y OR N
010772  104402                          TYPE
010774  005666                          MQM                     ;TYPE "?"
010776  000763                          BR      8$              ;ASK AGAIN
011000  104402                  40$:    TYPE
011002  007340                          SPEED                   ;DMC11-AR OR DMC11-AL?
011004  004737  012266                  JSR     PC,INTTY        ;GET RESPONSE
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011010  022703  000122                CMP     #122,R3         ;IS IT R
011014  001414                        BEQ     16$             ;BR IF REMOTE
011016  022703  000114                CMP     #114,R3         ;IS IT L
011022  001403                        BEQ     41$             ;BR IF LOCAL
011024  104402                        TYPE
011026  005666                        MQM
011030  000763                        BR      40$             ;TRY AGAIN
011032  052762  000002  000004 41$:   BIS     #BIT1,4(R2)     ;SET BIT1 IN STAT3
011040  000402                        BR      16$             ;CONTINUE
011042  052712  100000          9$:   BIS     #BIT15,(R2)     ;SET BIT 15 IF CRAM
011046  104402                16$:   TYPE
011050  006704                        MODU                    ;ASK WHICH LINE UNIT
011052  004737  012266                JSR     PC,INTTY        ;GET REPLY
011056  022703  000021                CMP     #21,R3          ;"1"
011062  001417                        BEQ     30$
011064  022703  000022                CMP     #22,R3          ;"2"
011070  001412                        BEQ     31$
011072  022703  000116                CMP     #116,R3         ;"N"
011076  001403                        BEQ     32$
011100  104402                        TYPE
011102  005666                        MQM                     ;IF NOT A 1,2 OR N TYPE "?"
011104  000760                        BR      16$             ;TRY AGIAN
011106  052722  010000          32$:  BIS     #BIT12,(R2)+    ;SET BIT 12 IN STAT2 IF NO LU
011112  022222                        CMP     (R2)+,(R2)+     ;POP OVER STAT2 AND STAT3
011114  000447                        BR      33$
011116  052712  020000          31$:  BIS     #BIT13,(R2)     ;SET BIT 13 IN STAT2 IF M8202
011122  104402                30$:   TYPE
011124  007114                        CONN                    ;ASK IF LOOP-BACK IS ON
011126  004737  012266                JSR     PC,INTTY        ;GET REPLY
011132  022703  000131                CMP     #131,R3         ;Y
011136  001406                        BEQ     17$
011140  022703  000116                CMP     #116,R3         ;N
011144  001406                        BEQ     18$
011146  104402                        TYPE
011150  005666                        MQM                     ;IF NOT Y OR N TYPE "?"
011152  000763                        BR      30$             ;TRY AGAIN
011154  052722  040000          17$:  BIS     #BIT14,(R2)+    ;TURNAROUND IS CONNECTED
011160  000402                        BR      19$
011162  042722  040000          18$:  BIC     #BIT14,(R2)+    ;NO TURNAROUND
011166                          19$:
011166  104403                        INSTR
011170  007016                        LINE
011172  104405                        PARAM
011174  000000                        0
011176  000377                        377
011200  001254                        TEMP4
011202     000                        .BYTE   0
011203     001                        .BYTE   1
011204  113722  001254                MOVB    TEMP4,(R2)+     ;STORE SWITCH PAC IN MAP
011210  104403                        INSTR
011212  007054                        BM
011214  104405                        PARAM
011216  000000                        0
011220  000377                        377
011222  001254                        TEMP4
011224     000                        .BYTE   0
011225     001                        .BYTE   1
```

```
011226  113722  001254                  MOVB    TEMP4,(R2)+     ;STORE SWITCH PAC IN MAP
011232  005722                          TST     (R2)+           ;POP OVER STAT3
011234  005337  001252          33$:    DEC     TEMP3           ;DEC DMC COUNT
011240  001402                          BEQ     34$             ;BR IF DONE
011242  000137  010612                  JMP     12$             ;JUMP IF NOT
011246  000137  011702          34$:    JMP     13$             ;CONTINUE
011252  012701  160000          7$:     MOV     #160000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
011256  012737  011774  000004          MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
011264  005011                  2$:     CLR     (R1)            ;CLEAR SEL0
011266  005711                          TST     (R1)            ;IF DMC11 DMCSR S/B 0
011270  001172                          BNE     3$              ;IF NO DEV ; TRAP TO 4. IF NO BIT 8 THEN NO DMC11
011272  005061  000006                  CLR     6(R1)           ;CLEAR SEL6
011276  005761  000006                  TST     6(R1)           ;IF DMC11 THEN DMRIC S/B =0!
011302  001165                          BNE     3$              ;BR IF NOT DMC11
011304  012711  002000                  MOV     #BIT10,(R1)     ;SET ROMO
011310  005061  000004                  CLR     4(R1)           ;CLEAR SEL4
011314  012761  125252  000006          MOV     #125252,6(R1)   ;WRITE THIS TO SEL6
011322  052711  020000                  BIS     #BIT13,(R1)     ;WRITE IT!
011326  022761  125252  000004          CMP     #125252,4(R1)   ;WAS IT WRITTEN?
011334  001004                          BNE     21$             ;IF NO IT IS NOT CRAM
011336  052762  100000  000002          BIS     #BIT15,2(R2)    ;SET BIT15 IF CRAM
011344  000431                          BR      22$
011346  012711  001000          21$:    MOV     #BIT9,(R1)      ;SET ROMI
011352  012761  100430  000006          MOV     #100430,6(R1)   ;PUT INSTRUCTION IN SEL6
011360  012711  001400                  MOV     #BIT9!BIT8,(R1) ;CLOCK INSTRUCTION (MICRO PROC PC TO 0)
011364  012711  002000                  MOV     #BIT10,(R1)     ;SET ROMO
011370  022761  016472  000006          CMP     #016472,6(R1)   ;IS IT LOCAL CROM?
011376  001411                          BEQ     23$             ;BR IF YES
011400  022761  016461  000006          CMP     #016461,6(R1)   ;IS IT REMOTE CROM?
011406  001410                          BEQ     22$             ;BR IF YES
011410  022761  177777  000006          CMP     #-1,6(R1)       ;NO CROM?
011416  001404                          BEQ     22$             ;BR IF YES
011420  000516                          BR      3$              ;NOT A DMC
011422  052762  000002  000006  23$:    BIS     #BIT1,6(R2)     ;SET BIT 1 IN STAT3
                        ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DMC11 CSR ADDRESS.
011430  010122                  22$:    MOV     R1,(R2)+        ;STORE CSR IN CORE TABLE.
011432  012711  001000          15$:    MOV     #BIT9,(R1)      ;CLEAR LINE UNIT LOOP
011436  005061  000004                  CLR     4(R1)           ;CLEAR PORT4
011442  012761  122113  000006          MOV     #122113,6(R1)   ;LOAD INSTRUCTION (CLR DTR)
011450  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION
011454  012761  021264  000006          MOV     #021264,6(R1)   ;LOAD INSTRUCTION
011462  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION
011466  122761  000377  000004          CMPB    #377,4(R1)      ;IS IT ALL ONES?
011474  001003                          BNE     .+10            ;BR IF NO
011476  052712  010000                  BIS     #BIT12,(R2)     ;IF YES, NO LINE UNIT, SET STATUS BIT
011502  000436                          BR      20$
011504  032761  000002  000004          BIT     #BIT1,4(R1)     ;IS SWITCH A ONE?
011512  001403                          BEQ     .+10            ;BR IF M8201
011514  052712  060000                  BIS     #BIT13!BIT14,(R2) ;M8202 ASSUME CONNECTOR
011520  000427                          BR      20$             ;CONNECTOR ON)
011522  032761  000010  000004          BIT     #BIT3,4(R1)     ;IS MRDY SET
011530  001023                          BNE     20$             ;BR IF M8201 NO CONNECTOR (ON LINE)
011532  012761  000100  000004          MOV     #BIT6,4(R1)     ;LOAD PORT4
011540  012761  122113  000006          MOV     #122113,6(R1)   ;LOAD INSTRUCTION
011546  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION(SET DTR)
011552  012761  021264  000006          MOV     #021264,6(R1)   ;LOAD INSTRUCTION
011560  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK INSTRUCTION(READ MODEM REG)
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011564  032761  000010  000004          BIT     @BIT3,4(R1)     ;IS MRDY SET NOW?
011572  001402                          BEQ     20$             ;BR IF NO CONNECTOR
011574  052712  040000                  BIS     @BIT14,(R2)     ;SET STATUS BIT FOR CONNECTOR
011600  005722                  20$:    TST     (R2)+           ;POP POINTER
011602  012761  021324  000006          MOV     @021324,6(R1)   ;PUT INSTRUCTION IN PORT6
011610  012711  001400                  MOV     @BIT9!BIT8,(R1) ;PORT4_LU 15
011614  156122  000004                  BISB    4(R1),(R2)+     ;STORE DDCMP LINE # IN TABLE
011620  012761  021344  000006          MOV     @021344,6(R1)   ;PORT6_INSTRUCTION
011626  012711  001400                  MOV     @BIT8!BIT9,(R1) ;CLOCK INSTR.
011632  156122  000004                  BISB    4(R1),(R2)+     ;STORE BM873 ADD IN TABLE
011636  005722                          TST     (R2)+           ;POP OVER STAT3
011640  005011                          CLR     (R1)            ;CLEAR ROMI
011642  005237  001310                  INC     DMNUM           ;UPDATE DEVICE COUNTER
011646  022737  000020  001310          CMP     @20,DMNUM       ;ARE MAX. NO. OF DEV FOUND?
011654  001412                          BEQ     13$             ;YES DON'T LOOK FOR ANY MORE.
011656  005011                  3$:     CLR     (R1)            ;CLEAR BIT 10
011660  005061  000006                  CLR     6(R1)           ;CLEAR SEL 6
011664  062701  000010          14$:    ADD     @10,R1          ;UPDATE CSR POINTER ADDRESS
011670  022701  164000                  CMP     @164000,R1
011674  001402                          BEQ     13$             ;BR IF DONE
011676  000137  011264                  JMP     2$              ;JUMP IF NOT
011702  005037  001306          13$:    CLR     DMACTV
011706  005737  001310                  TST     DMNUM           ;WERE ANY DMC11'S FOUND AT ALL?
011712  001423                          BEQ     5$              ;ERROR AUTO SIZER FOUND NO DMC11'S IN THIS SYS.
011714  013701  001310                  MOV     DMNUM,R1
011720  010137  001314                  MOV     R1,SAVNUM       ;SAVE NUMBER OF DEVICES
011724  000241                  4$:     CLC
011726  006137  001306                  ROL     DMACTV          ;GENERATE ACTIVE REGISTER OF DEVICES.
011732  005237  001306                  INC     DMACTV          ;SET THE BIT
011736  005301                          DEC     R1
011740  001371                          BNE     4$              ;BR IF MORE TO GENERATE
011742  012737  000006  000004          MOV     @6,@@4          ;RESTORE TRAP VECTOR
011750  013737  001306  001312          MOV     DMACTV,SAVACT   ;SAVE ACTIVE REGISTER
011756  000137  012010                  JMP     VECMAP          ;GO FIND THE VECTOR NOW.
011762  104402  005760          5$:     TYPE    ,MERR2          ;NOTIFY OPR THAT NO DMC11'S FOUND.
011766  005000                          CLR     R0              ;MAKE DATA LIGHTS ZERO
011770  000000                          HALT                    ;STOP THE SHOW
011772  000776                          BR      .-2             ;DISABLE CONT. SW.
011774  012716  011664          6$:     MOV     @14$,(SP)       ;ENTERED BY NON-EXISTANT TIME-OUT.
012000  000002                          RTI                     ;RETURN TO MAINSTREAM

012002  000001                  WHICH:  1
012004     002     002                  .BYTE   2,2
012006  001256                          TEMP5

012010  032737  000001  001236  VECMAP: BIT     @SW00,STRTSW
012016  001114                          BNE     5$
012020  012737  000340  000022          MOV     @340,@@22       ;SET IOT TRAP PRIO TO 7
012026  012737  012202  000020          MOV     @4$,@@20        ;SET IOT TRAP VECTOR
012034  012702  001500                  MOV     @DM.MAP,R2      ;SET SOFTWARE POINTER
012040  012700  000300                  MOV     @300,R0         ;FLOATING VECTORS START HERE.
012044  012701  000302                  MOV     @302,R1         ;PC OF IOT INSTR.
012050  010120                  1$:     MOV     R1,(R0)+        ;START FILLING VECTOR AREA
012052  012721  000004                  MOV     @4,(R1)+        ;WITH .+2; IOT
012056  022021                          CMP     (R0)+,(R1)+     ;ADD 2 TO R0 +R1
012060  020127  001000                  CMP     R1,@1000
012064  101771                          BLOS    1$              ;BR IF MORE TO FILL
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012066  013737  001306  001246          MOV     DMACTV,TEMP1        ;STORE TEMPORALLY
012074  006037  001246          2$:     ROR     TEMP1               ;BRING OUT A BIT
012100  103063                          BCC     5$                  ;BR IF ALL DONE
012102  012704  000012                  MOV     #12,R4              ;R4 IS INDEX REGISTER
012106  016437  012252  177776          MOV     BRLVL(R4),PS        ;SET PS TO 7
012114  011201                          MOV     (R2),R1
012116  012761  000200  000004          MOV     #200,4(R1)
012124  012711  001000                  MOV     @BIT9,(R1)          ;SET ROMI
012130  012761  121111  000006          MOV     #121111,6(R1)       ;PUT INSTRUCTION IN PORT6
012136  012711  001400                  MOV     @BIT9!BIT8,(R1)     ;FORCE AN INTERRUPT
012142  105200                  7$:     INCB    R0                  ;STALL
012144  001376                          BNE     .-2                 ;FOR TIME TO INTERUPT
012146  162704  000002                  SUB     #2,R4               ;GET NEXT LOWEST PS LEVEL
012152  001404                          BEQ     6$                  ;BR IF R4 = 0
012154  016437  012252  177776          MOV     BRLVL(R4),PS        ;MOVE NEXT LOWER LEVEL IN PS
012162  000767                          BR      7$                  ;BR TO DELAY
012164  052762  005300  000002  6$:     BIS     #5300,2(R2)         ;NO INTERUPT ASSUME 300 AT LEVEL 5 AND FIX DMC11 LATER
012172  005011                  3$:     CLR     (R1)                ;CLEAR ROMI
012174  062702  000010                  ADD     #10,R2              ;POP SOFTWARE POINTER
012200  000735                          BR      2$                  ;KEEP GOING
012202  051662  000002          4$:     BIS     (SP),2(R2)          ;GET VECTOR ADDRESS
012206  042762  000007  000002          BIC     #7,2(R2)            ;CLEAR JUNK
012214  016405  012254                  MOV     BRLVL+2(R4),R5      ;GET BR LEVEL OF DMC11
012220  006305                          ASL     R5                  ;SHIFT LEVEL 4 PLACES
012222  006305                          ASL     R5                  ;TO THE LEFT FOR THE
012224  006305                          ASL     R5                  ;STATUS TABLE
012226  006305                          ASL     R5
012230  042705  170777                  BIC     #170777,R5          ;CLEAR UNWANTED BITS
012234  050562  000002                  BIS     R5,2(R2)            ;PUT BR LEVEL IN STATUS TABLE
012240  022626                          CMP     (SP)+,(SP)+         ;POP IOT JUNK OFF STACK
012242  012716  012172                  MOV     #3$,(SP)            ;SET FOR RETURN
012246  000002                          RTI
012250  000207                  5$:     RTS     PC                  ;ALL DONE WITH "AUTO SIZING"

012252  000000          BRLVL:  0       ;LEVEL 0
012254  000000                  0       ;LEVEL 0
012256  000200                  200     ;LEVEL 4
012260  000240                  240     ;LEVEL 5
012262  000300                  300     ;LEVEL 6
012264  000340                  340     ;LEVEL 7


012266  105777  166712  INTTY:  TSTB    @TKCSR              ;WAIT FOR DONE
012272  100375                  BPL     .-4
012274  017703  166706          MOV     @TKDBR,R3           ;PUT CHAR IN R3
012300  105777  166704          TSTB    @TPCSR              ;WAIT UNTIL PRINTER IS READY
012304  100375                  BPL     .-4
012306  010377  166700          MOV     R3,@TPDBR           ;ECHO CHAR
012312  042703  000240          BIC     #BIT7!BIT5,R3       ;MASK OFF LOWER CASE
012316  000207                  RTS     PC                  ;RETURN
```

7

```
                        ;***************************** TEST 1 *****************************
                        ;*VERIFY THAT REFERENCING UNIBUS DEVICE REGISTERS
                        ;*DOES NOT CAUSE A TIME OUT TRAP
                        ;;*************************************************************
```

```
                                        ;  TEST 1
                                        ;------------
012320  012737  000001  001226  TST1:   MOV     #1,TSTNO
012326  012737  012426  001216          MOV     #TST2,NEXT
012334  012737  012366  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
012342  013701  001404                  MOV     DMCSR,R1        ;R1 CONTAINS BASE DMC11 ADDRESS
012346  012700  000004                  MOV     #4,R0           ;4 REGISTERS TO BE TESTED
012352  012737  012420  000004          MOV     #2$,4           ;SET UP TIMEOUT TRAP
012360  012737  000340  000006          MOV     #340,6          ;LEVEL 7
012366  005711                  1$:     TST     (R1)            ;REFERENCE DEVICE REGISTER
012370  000240                          NOP
012372  104401                          SCOP1                   ;SW09=1?
012374  062701  000002                  ADD     #2,R1           ;NEXT REGISTER
012400  005300                          DEC     R0              ;DEC REGISTER COUNT
012402  001371                          BNE     1$              ;BR IF NOT LAST REGISTER
012404  012737  000006  000004          MOV     #6,4            ;RESTORE LOC 4
012412  005037  000006                  CLR     6               ;RESTORE LOC 6
012416  104400                          SCOPE                   ;SCOPE THIS TEST
012420  011602                  2$:     MOV     (SP),R2         ;GET PC OF TRAP
012422  104001                          EMT     1               ;TIME-OUT ERROR
012424  000002                          RTI
8

                                        ;*************************** TEST 2 ****************************
                                        ;*VERIFY THAT RUN CAN BE CLEARED
                                        ;:***********************************************************************

                                        ;  TEST 2
                                        ;-------------
012426  012737  000002  001226  TST2:   MOV     #2,TSTNO
012434  012737  012456  001216          MOV     #TST3,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
012442  005011                          CLR     (R1)            ;CLEAR DMCSR
012444  005005                          CLR     R5              ;CLEAR "EXPECTED"
012446  011104                          MOV     (R1),R4         ;PUT DMCSR IN "FOUND"
012450  001401                          BEQ     1$              ;BR IF CLEARED
012452  104002                          EMT     2               ;ERROR DMCSR NOT CLEARED
012454  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
9

                                        ;*************************** TEST 3 ****************************
                                        ;*UNIBUS REGISTER WORD DUAL ADDRESSING TEST
                                        ;*LOAD ALL REGISTERS WITH INCREMENTING PATTERN
                                        ;*READ BACK ALL REGISTERS TO VERIFY CORRECT ADDRESSING
                                        ;:***********************************************************************

                                        ;  TEST 3
                                        ;-------------
012456  012737  000003  001226  TST3:   MOV     #3,TSTNO
012464  012737  012606  001216          MOV     #TST4,NEXT
012472  012737  012506  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
012500  104412                          MSTCLR                  ;MASTER CLEAR DMC11
012502  012700  000001                  MOV     #1,R0           ;START PATTERN AT 1
012506  005011                  1$:     CLR     (R1)            ;CLEAR REGISTER
```

```
012510  010005                          MOV     R0,R5           ;PUT DATA IN "EXPECTED"
012512  010011                          MOV     R0,(R1)         ;WRITE DMC REGISTER WITH PATTERN
012514  011104                          MOV     (R1),R4         ;READ DMC REGISTER INTO "FOUND"
012516  020504                          CMP     R5,R4           ;IS DATA CORRECT
012520  001401                          BEQ     2$              ;BR IF YES
012522  104002                          EMT     2               ;DATA ERROR
012524  104401                  2$:     SCOP1                   ;SW09=1?
012526  005721                          TST     (R1)+           ;NEXT REGISTER
012530  005200                          INC     R0              ;INCREMENT DATA PATTERN
012532  022700  000005                  CMP     #5,R0           ;LAST REGISTER?
012536  001363                          BNE     1$              ;BR IF NO
012540  013701  001404                  MOV     DMCSR,R1        ;BASE DMC11  ADDRESS TO R1
012544  012700  000001                  MOV     #1,R0           ;RESTART PATTERN AT 1
012550  012737  012556  001220          MOV     #3$,LOCK        ;NEW SCOP1
012556  010005                  3$:     MOV     R0,R5           ;PUT DATA IN "EXPECTED"
012560  011104                          MOV     (R1),R4         ;READ DMC REGISTER INTO "FOUND"
012562  020504                          CMP     R5,R4           ;IS DATA CORRECT
012564  001401                          BEQ     4$              ;BR IF YES
012566  104002                          EMT     2               ;DUAL ADDRESSING ERROR
012570  104401                  4$:     SCOP1                   ;SW09=1?
012572  005721                          TST     (R1)+           ;NEXT REGISTER
012574  005200                          INC     R0              ;INCREMENT PATTERN
012576  022700  000005                  CMP     #5,R0           ;LAST REGISTER?
012602  001365                          BNE     3$              ;BR IF NO
012604  104400                          SCOPE                   ;SCOPE THIS TEST
    12

                                        ;*************************** TEST 4 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT0, VERIFY BIT0 WAS SET
                                        ;*CLEAR BIT0, VERIFY BIT0 WAS CLEARED
                                        ;;***********************************************************************

                                        ;  TEST 4
                                        ;--------------
012606  012737  000004  001226  TST4:   MOV     #4,TSTNO
012614  012737  012704  001216          MOV     #TST5,NEXT
012622  012737  012632  001220          MOV     #1$,LOCK
012630  104412                          MSTCLR                  ;MASTER CLEAR DMC11
012632  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
012636  012705  000001                  MOV     #BIT0,R5        ;PUT DATA IN "EXPECTED"
012642  010511                          MOV     R5,(R1)         ;WRITE BIT 0
012644  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
012646  020504                          CMP     R5,R4           ;IS DATA CORRECT
012650  001401                          BEQ     2$              ;BR IF YES
012652  104002                          EMT     2               ;DATA ERROR
012654  104401                  2$:     SCOP1                   ;SW09 UP?
012656  012737  012664  001220          MOV     #3$,LOCK        ;NEW SCOP1
012664  042711  000001          3$:     BIC     #BIT0,(R1)      ;CLEAR BIT 0
012670  005005                          CLR     R5              ;CLEAR "EXPECTED"
012672  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
012674  001402                          BEQ     4$              ;BR IF ZERO
012676  104002                          EMT     2               ;DATA ERROR BIT0 NOT CLEARED
012700  104401                          SCOP1                   ;SW09 UP?
012702  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
```

```
                                        ;*************************** TEST 5 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT1, VERIFY BIT1 WAS SET
                                        ;*CLEAR BIT1, VERIFY BIT1 WAS CLEARED
                                        ;;***********************************************************************

                                        ;  TEST 5
                                        ;------ -------
012704  012737  000005  001226  TST5:   MOV     #5,TSTNO
012712  012737  013002  001216          MOV     #TST6,NEXT
012720  012737  012730  001220          MOV     #1$,LOCK
012726  104412                         MSTCLR                  ;MASTER CLEAR DMC11
012730  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
012734  012705  000002                  MOV     #BIT1,R5        ;PUT DATA IN "EXPECTED"
012740  010511                         MOV     R5,(R1)         ;WRITE BIT 1
012742  011104                         MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
012744  020504                         CMP     R5,R4           ;IS DATA CORRECT
012746  001401                         BEQ     2$              ;BR IF YES
012750  104002                         EMT     2               ;DATA ERROR
012752  104401                  2$:    SCOP1                   ;SW09 UP?
012754  012737  012762  001220          MOV     #3$,LOCK        ;NEW SCOP1
012762  042711  000002          3$:     BIC     #BIT1,(R1)      ;CLEAR BIT 1
012766  005005                         CLR     R5              ;CLEAR "EXPECTED"
012770  011104                         MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
012772  001402                         BEQ     4$              ;BR IF ZERO
012774  104002                         EMT     2               ;DATA ERROR BIT1 NOT CLEARED
012776  104401                         SCOP1                   ;SW09 UP?
013000  104400                  4$:    SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 6 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT2, VERIFY BIT2 WAS SET
                                        ;*CLEAR BIT2, VERIFY BIT2 WAS CLEARED
                                        ;;***********************************************************************

                                        ;  TEST 6
                                        ;--------------
013002  012737  000006  001226  TST6:   MOV     #6,TSTNO
013010  012737  013100  001216          MOV     #TST7,NEXT
013016  012737  013026  001220          MOV     #1$,LOCK
013024  104412                         MSTCLR                  ;MASTER CLEAR DMC11
013026  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013032  012705  000004                  MOV     #BIT2,R5        ;PUT DATA IN "EXPECTED"
013036  010511                         MOV     R5,(R1)         ;WRITE BIT 2
013040  011104                         MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013042  020504                         CMP     R5,R4           ;IS DATA CORRECT
013044  001401                         BEQ     2$              ;BR IF YES
013046  104002                         EMT     2               ;DATA ERROR
013050  104401                  2$:    SCOP1                   ;SW09 UP?
013052  012737  013060  001220          MOV     #3$,LOCK        ;NEW SCOP1
013060  042711  000004          3$:     BIC     #BIT2,(R1)      ;CLEAR BIT 2
013064  005005                         CLR     R5              ;CLEAR "EXPECTED"
013066  011104                         MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013070  001402                         BEQ     4$              ;BR IF ZERO
013072  104002                         EMT     2               ;DATA ERROR BIT2 NOT CLEARED
013074  104401                         SCOP1                   ;SW09 UP?
```

```
013076  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 7 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT5, VERIFY BIT5 WAS SET
                                        ;*CLEAR BIT5, VERIFY BIT5 WAS CLEARED
                                        ;;**************************************************************

                                        ;  TEST 7
                                        ;--------------
013100  012737  000007  001226  TST7:   MOV     #7,TSTNO
013106  012737  013176  001216          MOV     #TST10,NEXT
013114  012737  013124  001220          MOV     #1$,LOCK
013122  104412                         MSTCLR                  ;MASTER CLEAR DMC11
013124  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013130  012705  000040                  MOV     #BIT5,R5        ;PUT DATA IN "EXPECTED"
013134  010511                          MOV     R5,(R1)         ;WRITE BIT 5
013136  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013140  020504                          CMP     R5,R4           ;IS DATA CORRECT
013142  001401                          BEQ     2$              ;BR IF YES
013144  104002                          EMT     2               ;DATA ERROR
013146  104401                  2$:     SCOP1                   ;SW09 UP?
013150  012737  013156  001220          MOV     #3$,LOCK        ;NEW SCOP1
013156  042711  000040          3$:     BIC     #BIT5,(R1)      ;CLEAR BIT 5
013162  005005                          CLR     R5              ;CLEAR "EXPECTED"
013164  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013166  001402                          BEQ     4$              ;BR IF ZERO
013170  104002                          EMT     2               ;DATA ERROR BIT5 NOT CLEARED
013172  104401                          SCOP1                   ;SW09 UP?
013174  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 10 ***************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT6, VERIFY BIT6 WAS SET
                                        ;*CLEAR BIT6, VERIFY BIT6 WAS CLEARED
                                        ;;**************************************************************

                                        ;  TEST 10
                                        ;--------------
013176  012737  000010  001226  TST10:  MOV     #10,TSTNO
013204  012737  013274  001216          MOV     #TST11,NEXT
013212  012737  013222  001220          MOV     #1$,LOCK
013220  104412                         MSTCLR                  ;MASTER CLEAR DMC11
013222  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013226  012705  000100                  MOV     #BIT6,R5        ;PUT DATA IN "EXPECTED"
013232  010511                          MOV     R5,(R1)         ;WRITE BIT 6
013234  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013236  020504                          CMP     R5,R4           ;IS DATA CORRECT
013240  001401                          BEQ     2$              ;BR IF YES
013242  104002                          EMT     2               ;DATA ERROR
013244  104401                  2$:     SCOP1                   ;SW09 UP?
013246  012737  013254  001220          MOV     #3$,LOCK        ;NEW SCOP1
013254  042711  000100          3$:     BIC     #BIT6,(R1)      ;CLEAR BIT 6
013260  005005                          CLR     R5              ;CLEAR "EXPECTED"
013262  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
```

```
013264  001402                          BEQ     4$              ;BR IF ZERO
013266  104002                          EMT     2               ;DATA ERROR BIT6 NOT CLEARED
013270  104401                          SCOP1                   ;SW09 UP?
013272  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 11 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT7, VERIFY BIT7 WAS SET
                                        ;*CLEAR BIT7, VERIFY BIT7 WAS CLEARED
                                        ;:************************************************************************

                                        ;  TEST 11
                                        ;--------------
013274  012737  000011  001226  TST11:  MOV     #11,TSTNO
013302  012737  013372  001216          MOV     #TST12,NEXT
013310  012737  013320  001220          MOV     #1$,LOCK
013316  104412                          MSTCLR                  ;MASTER CLEAR DMC11
013320  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013324  012705  000200                  MOV     #BIT7,R5        ;PUT DATA IN "EXPECTED"
013330  010511                          MOV     R5,(R1)         ;WRITE BIT 7
013332  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013334  020504                          CMP     R5,R4           ;IS DATA CORRECT
013336  001401                          BEQ     2$              ;BR IF YES
013340  104002                          EMT     2               ;DATA ERROR
013342  104401                  2$:     SCOP1                   ;SW09 UP?
013344  012737  013352  001220          MOV     #3$,LOCK        ;NEW SCOP1
013352  042711  000200          3$:     BIC     #BIT7,(R1)      ;CLEAR BIT 7
013356  005005                          CLR     R5              ;CLEAR "EXPECTED"
013360  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013362  001402                          BEQ     4$              ;BR IF ZERO
013364  104002                          EMT     2               ;DATA ERROR BIT7 NOT CLEARED
013366  104401                          SCOP1                   ;SW09 UP?
013370  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 12 ****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT9, VERIFY BIT9 WAS SET
                                        ;*CLEAR BIT9, VERIFY BIT9 WAS CLEARED
                                        ;:************************************************************************

                                        ;  TEST 12
                                        ;--------------
013372  012737  000012  001226  TST12:  MOV     #12,TSTNO
013400  012737  013470  001216          MOV     #TST13,NEXT
013406  012737  013416  001220          MOV     #1$,LOCK
013414  104412                          MSTCLR                  ;MASTER CLEAR DMC11
013416  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013422  012705  001000                  MOV     #BIT9,R5        ;PUT DATA IN "EXPECTED"
013426  010511                          MOV     R5,(R1)         ;WRITE BIT 9
013430  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013432  020504                          CMP     R5,R4           ;IS DATA CORRECT
013434  001401                          BEQ     2$              ;BR IF YES
013436  104002                          EMT     2               ;DATA ERROR
013440  104401                  2$:     SCOP1                   ;SW09 UP?
013442  012737  013450  001220          MOV     #3$,LOCK        ;NEW SCOP1
```

```
013450  042711  001000          3$:     BIC     #BIT9,(R1)      ;CLEAR BIT 9
013454  005005                          CLR     R5              ;CLEAR "EXPECTED"
013456  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013460  001402                          BEQ     4$              ;BR IF ZERO
013462  104002                          EMT     2               ;DATA ERROR BIT9 NOT CLEARED
013464  104401                          SCOP1                   ;SW09 UP?
013466  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;***************************** TEST 13 *****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT11, VERIFY BIT11 WAS SET
                                        ;*CLEAR BIT11, VERIFY BIT11 WAS CLEARED
                                        ;:*************************************************************************

                                        ;  TEST 13
                                        ;--------------
013470  012737  000013  001226  TST13:  MOV     #13,TSTNO
013476  012737  013566  001216          MOV     #TST14,NEXT
013504  012737  013514  001220          MOV     #1$,LOCK
013512  104412                          MSTCLR                  ;MASTER CLEAR DMC11
013514  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013520  012705  004000                  MOV     #BIT11,R5       ;PUT DATA IN "EXPECTED"
013524  010511                          MOV     R5,(R1)         ;WRITE BIT 11
013526  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013530  020504                          CMP     R5,R4           ;IS DATA CORRECT
013532  001401                          BEQ     2$              ;BR IF YES
013534  104002                          EMT     2               ;DATA ERROR
013536  104401                  2$:     SCOP1                   ;SW09 UP?
013540  012737  013546  001220          MOV     #3$,LOCK        ;NEW SCOP1
013546  042711  004000          3$:     BIC     #BIT11,(R1)     ;CLEAR BIT 11
013552  005005                          CLR     R5              ;CLEAR "EXPECTED"
013554  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013556  001402                          BEQ     4$              ;BR IF ZERO
013560  104002                          EMT     2               ;DATA ERROR BIT11 NOT CLEARED
013562  104401                          SCOP1                   ;SW09 UP?
013564  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;***************************** TEST 14 *****************************
                                        ;*CONTROL STATUS REGISTER WRITE/READ TEST
                                        ;*SET BIT12, VERIFY BIT12 WAS SET
                                        ;*CLEAR BIT12, VERIFY BIT12 WAS CLEARED
                                        ;:*************************************************************************

                                        ;  TEST 14
                                        ;--------------
013566  012737  000014  001226  TST14:  MOV     #14,TSTNO
013574  012737  013664  001216          MOV     #TST15,NEXT
013602  012737  013612  001220          MOV     #1$,LOCK
013610  104412                          MSTCLR                  ;MASTER CLEAR DMC11
013612  013701  001404          1$:     MOV     DMCSR,R1        ;PUT REGISTER ADDRESS IN R1
013616  012705  010000                  MOV     #BIT12,R5       ;PUT DATA IN "EXPECTED"
013622  010511                          MOV     R5,(R1)         ;WRITE BIT 12
013624  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013626  020504                          CMP     R5,R4           ;IS DATA CORRECT
013630  001401                          BEQ     2$              ;BR IF YES
```

```
013632  104002                          EMT     2               ;DATA ERROR
013634  104401                  2$:     SCOP1                   ;SW09 UP?
013636  012737  013644  001220          MOV     #3$,LOCK        ;NEW SCOP1
013644  042711  010000          3$:     BIC     #BIT12,(R1)     ;CLEAR BIT 12
013650  005005                          CLR     R5              ;CLEAR "EXPECTED"
013652  011104                          MOV     (R1),R4         ;READ CONTROL STATUS REGISTER
013654  001402                          BEQ     4$              ;BR IF ZERO
013656  104002                          EMT     2               ;DATA ERROR BIT12 NOT CLEARED
013660  104401                          SCOP1                   ;SW09 UP?
013662  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
    15

                                        ;*************************** TEST 15 ****************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT0, VERIFY BIT0 WAS SET
                                        ;*CLEAR BIT0, VERIFY BIT0 WAS CLEARED
                                        ;:************************************************************

                                        ;  TEST 15
                                        ;--------------
013664  012737  000015  001226  TST15:  MOV     #15,TSTNO
013672  012737  013762  001216          MOV     #TST16,NEXT
013700  012737  013710  001220          MOV     #1$,LOCK
013706  104412                          MSTCLR                  ;MASTER CLEAR DMC11
013710  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
013714  012705  000001                  MOV     #BIT0,R5        ;PUT DATA IN "EXPECTED"
013720  010511                          MOV     R5,(R1)         ;WRITE BIT 0
013722  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
013724  020504                          CMP     R5,R4           ;IS DATA CORRECT
013726  001401                          BEQ     2$              ;BR IF YES
013730  104002                          EMT     2               ;DATA ERROR
013732  104401                  2$:     SCOP1                   ;SW09 UP?
013734  012737  013742  001220          MOV     #3$,LOCK        ;NEW SCOP1
013742  042711  000001          3$:     BIC     #BIT0,(R1)      ;CLEAR BIT 0
013746  005005                          CLR     R5              ;CLEAR "EXPECTED"
013750  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
013752  001402                          BEQ     4$              ;BR IF ZERO
013754  104002                          EMT     2               ;DATA ERROR BIT0 NOT CLEARED
013756  104401                          SCOP1                   ;SW09 UP?
013760  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 16 ****************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT1, VERIFY BIT1 WAS SET
                                        ;*CLEAR BIT1, VERIFY BIT1 WAS CLEARED
                                        ;:************************************************************

                                        ;  TEST 16
                                        ;--------------
013762  012737  000016  001226  TST16:  MOV     #16,TSTNO
013770  012737  014060  001216          MOV     #TST17,NEXT
013776  012737  014006  001220          MOV     #1$,LOCK
014004  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014006  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
014012  012705  000002                  MOV     #BIT1,R5        ;PUT DATA IN "EXPECTED"
014016  010511                          MOV     R5,(R1)         ;WRITE BIT 1
```

```
014020  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014022  020504                          CMP     R5,R4           ;IS DATA CORRECT
014024  001401                          BEQ     2$              ;BR IF YES
014026  104002                          EMT     2               ;DATA ERROR
014030  104401                  2$:     SCOP1                   ;SW09 UP?
014032  012737  014040  001220          MOV     #3$,LOCK        ;NEW SCOP1
014040  042711  000002          3$:     BIC     #BIT1,(R1)      ;CLEAR BIT 1
014044  005005                          CLR     R5              ;CLEAR "EXPECTED"
014046  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014050  001402                          BEQ     4$              ;BR IF ZERO
014052  104002                          EMT     2               ;DATA ERROR BIT1 NOT CLEARED
014054  104401                          SCOP1                   ;SW09 UP?
014056  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 17 ***************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT2, VERIFY BIT2 WAS SET
                                        ;*CLEAR BIT2, VERIFY BIT2 WAS CLEARED
                                        ;:***********************************************************************

                                        ;  TEST 17
                                        ;--------------
014060  012737  000017  001226  TST17:  MOV     #17,TSTNO
014066  012737  014156  001216          MOV     #TST20,NEXT
014074  012737  014104  001220          MOV     #1$,LOCK
014102  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014104  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
014110  012705  000004                  MOV     #BIT2,R5        ;PUT DATA IN "EXPECTED"
014114  010511                          MOV     R5,(R1)         ;WRITE BIT 2
014116  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014120  020504                          CMP     R5,R4           ;IS DATA CORRECT
014122  001401                          BEQ     2$              ;BR IF YES
014124  104002                          EMT     2               ;DATA ERROR
014126  104401                  2$:     SCOP1                   ;SW09 UP?
014130  012737  014136  001220          MOV     #3$,LOCK        ;NEW SCOP1
014136  042711  000004          3$:     BIC     #BIT2,(R1)      ;CLEAR BIT 2
014142  005005                          CLR     R5              ;CLEAR "EXPECTED"
014144  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014146  001402                          BEQ     4$              ;BR IF ZERO
014150  104002                          EMT     2               ;DATA ERROR BIT2 NOT CLEARED
014152  104401                          SCOP1                   ;SW09 UP?
014154  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 20 ***************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT6, VERIFY BIT6 WAS SET
                                        ;*CLEAR BIT6, VERIFY BIT6 WAS CLEARED
                                        ;:***********************************************************************

                                        ;  TEST 20
                                        ;--------------
014156  012737  000020  001226  TST20:  MOV     #20,TSTNO
014164  012737  014254  001216          MOV     #TST21,NEXT
014172  012737  014202  001220          MOV     #1$,LOCK
014200  104412                          MSTCLR                  ;MASTER CLEAR DMC11
```

```
014202  013701  001410          1$:     MOV     DMCTL,P1        ;PUT REGISTER ADDRESS IN R1
014206  012705  000100                  MOV     #BIT6,R5        ;PUT DATA IN "EXPECTED"
014212  010511                          MOV     R5,(R1)         ;WRITE BIT 6
014214  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014216  020504                          CMP     R5,R4           ;IS DATA CORRECT
014220  001401                          BEQ     2$              ;BR IF YES
014222  104002                          EMT     2               ;DATA ERROR
014224  104401                  2$:     SCOP1                   ;SW09 UP?
014226  012737  014234  001220          MOV     #3$,LOCK        ;NEW SCOP1
014234  042711  000100          3$:     BIC     #BIT6,(R1)      ;CLEAR BIT 6
014240  005005                          CLR     R5              ;CLEAR "EXPECTED'
014242  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014244  001402                          BEQ     4$              ;BR IF ZERO
014246  104002                          EMT     2               ;DATA ERROR BIT6 NOT CLEARED
014250  104401                          SCOP1                   ;SW09 UP?
014252  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;****************************** TEST 21 ******************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT7, VERIFY BIT7 WAS SET
                                        ;*CLEAR BIT7, VERIFY BIT7 WAS CLEARED
                                        ;:*************************************************************************

                                        ;  TEST 21
                                        ;--------------
014254  012737  000021  001226  TST21:  MOV     #21,TSTNO
014262  012737  014352  001216          MOV     #TST22,NEXT
014270  012737  014300  001220          MOV     #1$,LOCK
014276  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014300  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
014304  012705  000200                  MOV     #BIT7,R5        ;PUT DATA IN "EXPECTED"
014310  010511                          MOV     R5,(R1)         ;WRITE BIT 7
014312  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014314  020504                          CMP     R5,R4           ;IS DATA CORRECT
014316  001401                          BEQ     2$              ;BR IF YES
014320  104002                          EMT     2               ;DATA ERROR
014322  104401                  2$:     SCOP1                   ;SW09 UP?
014324  012737  014332  001220          MOV     #3$,LOCK        ;NEW SCOP1
014332  042711  000200          3$:     BIC     #BIT7,(R1)      ;CLEAR BIT 7
014336  005005                          CLR     R5              ;CLEAR "EXPECTED"
014340  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014342  001402                          BEQ     4$              ;BR IF ZERO
014344  104002                          EMT     2               ;DATA ERROR BIT7 NOT CLEARED
014346  104401                          SCOP1                   ;SW09 UP?
014350  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                        ;****************************** TEST 22 ******************************
                                        ;*CONTROL OUT REGISTER WRITE/READ TEST
                                        ;*SET BIT12, VERIFY BIT12 WAS SET
                                        ;*CLEAR BIT12, VERIFY BIT12 WAS CLEARED
                                        ;:*************************************************************************

                                        ;  TEST 22
                                        ;--------------
014352  012737  000022  001226  TST22:  MOV     #22,TSTNO
```

```
014360  012737  014450  001216          MOV     #TST23,NEXT
014366  012737  014376  001220          MOV     #1$,LOCK
014374  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014376  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
014402  012705  010000                  MOV     #BIT12,R5       ;PUT DATA IN "EXPECTED"
014406  010511                          MOV     R5,(R1)         ;WRITE BIT 12
014410  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014412  020504                          CMP     R5,R4           ;IS DATA CORRECT
014414  001401                          BEQ     2$              ;BR IF YES
014416  104002                          EMT     2               ;DATA ERROR
014420  104401                  2$:     SCOP1                   ;SW09 UP?
014422  012737  014430  001220          MOV     #3$,LOCK        ;NEW SCOP1
014430  042711  010000          3$:     BIC     #BIT12,(R1)     ;CLEAR BIT 12
014434  005005                          CLR     R5              ;CLEAR "EXPECTED"
014436  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014440  001402                          BEQ     4$              ;BR IF ZERO
014442  104002                          EMT     2               ;DATA ERROR BIT12 NOT CLEARED
014444  104401                          SCOP1                   ;SW09 UP?
014446  104400                  4$:     SCOPE                   ;SCOPE THIS TEST


                                ;*************************** TEST 23 ***************************
                                ;*CONTROL OUT REGISTER WRITE/READ TEST
                                ;*SET BIT13, VERIFY BIT13 WAS SET
                                ;*CLEAR BIT13, VERIFY BIT13 WAS CLEARED
                                ;:***************************************************************

                                ;  TEST 23
                                ;--------------
014450  012737  000023  001226  TST23:  MOV     #23,TSTNO
014456  012737  014546  001216          MOV     #TST24,NEXT
014464  012737  014474  001220          MOV     #1$,LOCK
014472  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014474  013701  001410          1$:     MOV     DMCTL,R1        ;PUT REGISTER ADDRESS IN R1
014500  012705  020000                  MOV     #BIT13,R5       ;PUT DATA IN "EXPECTED"
014504  010511                          MOV     R5,(R1)         ;WRITE BIT 13
014506  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014510  020504                          CMP     R5,R4           ;IS DATA CORRECT
014512  001401                          BEQ     2$              ;BR IF YES
014514  104002                          EMT     2               ;DATA ERROR
014516  104401                  2$:     SCOP1                   ;SW09 UP?
014520  012737  014526  001220          MOV     #3$,LOCK        ;NEW SCOP1
014526  042711  020000          3$:     BIC     #BIT13,(R1)     ;CLEAR BIT 13
014532  005005                          CLR     R5              ;CLEAR "EXPECTED"
014534  011104                          MOV     (R1),R4         ;READ CONTROL OUT REGISTER
014536  001402                          BEQ     4$              ;BR IF ZERO
014540  104002                          EMT     2               ;DATA ERROR BIT13 NOT CLEARED
014542  104401                          SCOP1                   ;SW09 UP?
014544  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
16

                                ;*************************** TEST 24 ***************************
                                ;*PORT4 REGISTER WRITE/READ TEST
                                ;*FLOAT A ONE THROUGH PORT4 REGISTER
                                ;*FLOAT A ZERO THROUGH PORT4 REGISTER
                                ;:***************************************************************
```

```
                                        ;  TEST 24
                                        ;--   ----   -
014546  012737  000024  001226  TST24:  MOV     #24,TSTNO
014554  012737  014672  001216          MOV     #TST25,NEXT
014562  012737  014602  001220          MOV     #64$,LOCK
014570  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014572  013701  001412                  MOV     DMP04,R1                ;PUT REGISTER ADDRESS IN R1
014576  012700  000001                  MOV     #1,R0           ;START WITH BIT0
014602                          64$:
014602  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
014604  010511                          MOV     R5,(R1)         ;WRITE PORT4 REGISTER
014606  011104                          MOV     (R1),R4         ;READ PORT4 REGISTER
014610  020504                          CMP     R5,R4           ;COMPARE EXPECTED AND FOUND
014612  001401                          BEQ     65$             ;BR IF OK
014614  104002                          EMT     2               ;WRITE/READ ERROR
014616  104401                  65$:    SCOP1                   ;LOOP TO 64$ IF SW09=1
014620  000241                          CLC                     ;CLEAR CARRY
014622  006100                          ROL     R0              ;SHIFT TO NEXT BIT
014624  001366                          BNE     64$             ;BR IF NOT DONE YET?
014626  012737  014640  001220          MOV     #66$,LOCK       ;NEW SCOP1
014634  012700  000001                  MOV     #1,R0           ;START WITH BIT0
014640                          66$:
014640  005100                          COM     R0              ;CHANGE TO A FLOATING ZERO
014642  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
014644  010511                          MOV     R5,(R1)         ;WRITE PORT4 REGISTER
014646  011104                          MOV     (R1),R4         ;READ PORT4 REGISTER
014650  020504                          CMP     R5,R4           ;COMPARE EXPECTED AND FOUND
014652  001401                          BEQ     67$             ;BR IF OK
014654  104002                          EMT     2               ;WRITE/READ ERROR
014656  104401                  67$:    SCOP1                   ;LOOP TO 66$ IF SW09=1
014660  005100                          COM     R0              ;CHANGE BACK TO A FLOATING ONE
014662  000241                          CLC                     ;CLEAR CARRY
014664  006100                          ROL     R0              ;SHIFT TO NEXT BIT
014666  001364                          BNE     66$             ;BR IF NOT DONE YET?
014670  104400                          SCOPE                   ;SCOPE THIS TEST
17

                                        ;***************************** TEST 25 *****************************
                                        ;*PORT6 REGISTER WRITE/READ TEST
                                        ;*FLOAT A ONE THROUGH PORT6 REGISTER
                                        ;*FLOAT A ZERO THROUGH PORT6 REGISTER
                                        ;:*************************************************************

                                        ;  TEST 25
                                        ;--------------
014672  012737  000025  001226  TST25:  MOV     #25,TSTNO
014700  012737  015016  001216          MOV     #TST26,NEXT
014706  012737  014726  001220          MOV     #64$,LOCK
014714  104412                          MSTCLR                  ;MASTER CLEAR DMC11
014716  013701  001414                  MOV     DMP06,R1                ;PUT REGISTER ADDRESS IN R1
014722  012700  000001                  MOV     #1,R0           ;START WITH BIT0
014726                          64$:
014726  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
014730  010511                          MOV     R5,(R1)         ;WRITE PORT6 REGISTER
014732  011104                          MOV     (R1),R4         ;READ PORT6 REGISTER
014734  020504                          CMP     R5,R4           ;COMPARE EXPECTED AND FOUND
014736  001401                          BEQ     65$             ;BR IF OK
```

```
014740  104002                          EMT     2               ;WRITE/READ ERROR
014742  104401                  65$:    SCOP1                   ;LOOP TO 64$ IF SW09=1
014744  000241                          CLC                     ;CLEAR CARRY
014746  006100                          ROL     R0              ;SHIFT TO NEXT BIT
014750  001366                          BNE     64$             ;BR IF NOT DONE YET?
014752  012737  014764  001220          MOV     #66$,LOCK       ;NEW SCOP1
014760  012700  000001                  MOV     #1,R0           ;START WITH BIT0
014764                          66$:
014764  005100                          COM     R0              ;CHANGE TO A FLOATING ZERO
014766  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
014770  010511                          MOV     R5,(R1)         ;WRITE PORT6 REGISTER
014772  011104                          MOV     (R1),R4         ;READ PORT6 REGISTER
014774  020504                          CMP     R5,R4           ;COMPARE EXPECTED AND FOUND
014776  001401                          BEQ     67$             ;BR IF OK
015000  104002                          EMT     2               ;WRITE/READ ERROR
015002  104401                  67$:    SCOP1                   ;LOOP TO 66$ IF SW09=1
015004  005100                          COM     R0              ;CHANGE BACK TO A FLOATING ONE
015006  000241                          CLC                     ;CLEAR CARRY
015010  006100                          ROL     R0              ;SHIFT TO NEXT BIT
015012  001364                          BNE     66$             ;BR IF NOT DONE YET?
015014  104400                          SCOPE                   ;SCOPE THIS TEST
    18

                                ;*************************** TEST 26 ***************************
                                ;*UNIBUS REGISTER BYTE DUAL ADDRESSING TEST
                                ;*LOAD ALL REGISTERS WITH INCREMENTING PATTERN
                                ;*READ BACK ALL REGISTERS TO VERIFY CORRECT ADDRESSING
                                ;;***********************************************************

                                ;  TEST 26
                                ;--------------
015016  012737  000026  001226  TST26:  MOV     #26,TSTNO
015024  012737  015146  001216          MOV     #TST27,NEXT
015032  012737  015046  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015040  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015042  012700  000001                  MOV     #1,R0           ;START PATTERN AT 1
015046  105011                  1$:     CLRB    (R1)            ;CLEAR REGISTER
015050  110005                          MOVB    R0,R5           ;PUT DATA IN "EXPECTED"
015052  110011                          MOVB    R0,(R1)         ;WRITE DMC REGISTER WITH PATTERN
015054  111104                          MOVB    (R1),R4         ;READ DMC REGISTER INTO "FOUND"
015056  020504                          CMP     R5,R4           ;IS DATA CORRECT
015060  001401                          BEQ     2$              ;BR IF YES
015062  104002                          EMT     2               ;DATA ERROR
015064  104401                  2$:     SCOP1                   ;SW09=1?
015066  105721                          TSTB    (R1)+           ;NEXT REGISTER
015070  005200                          INC     R0              ;INCREMENT DATA PATTERN
015072  022700  000011                  CMP     #11,R0          ;LAST REGISTER?
015076  001363                          BNE     1$              ;BR IF NO
015100  013701  001404                  MOV     DMCSR,R1        ;BASE DMC11  ADDRESS TO R1
015104  012700  000001                  MOV     #1,R0           ;RESTART PATTERN AT 1
015110  012737  015116  001220          MOV     #3$,LOCK        ;NEW SCOP1
015116  110005                  3$:     MOVB    R0,R5           ;PUT DATA IN "EXPECTED"
015120  111104                          MOVB    (R1),R4         ;READ DMC REGISTER INTO "FOUND"
015122  020504                          CMP     R5,R4           ;IS DATA CORRECT
015124  001401                          BEQ     4$              ;BR IF YES
015126  104002                          EMT     2               ;DUAL ADDRESSING ERROR
```

```
015130  104401                  4$:     SCOP1                   ;SW09=1?
015132  105721                          TSTB    (R1)+           ;NEXT REGISTER
015134  005200                          INC     R0              ;INCREMENT PATTERN
015136  022700  000011                  CMP     #11,R0          ;LAST REGISTER?
015142  001365                          BNE     3$              ;BR IF NO
015144  104400                          SCOPE                   ;SCOPE THIS TEST
    19

                                        ;*************************** TEST 27 ****************************
                                        ;*MAINTENANCE INSTRUCTION REGISTER TEST
                                        ;*VERIFY THAT THE MAINT IR CAN BE WRITTEN TO ALL ZEROS'
                                        ;*AND ALL ONES'. VERIFY THAT IT IS CLEARED ON A BUS RESET.
                                        ;:************************************************************

                                        ;  TEST 27
                                        ;--------------
015146  012737  000027  001226  TST27:  MOV     #27,TSTNO
015154  012737  015306  001216          MOV     #TST30,NEXT
015162  012737  015200  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015170  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015172  012711  003000                  MOV     #BIT9!BIT10,(R1) ;SEL6 IS NOW THE IR
015176  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
015200  010561  000006          1$:     MOV     R5,6(R1)        ;CLEAR THE IR
015204  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015210  020504                          CMP     R5,R4           ;IS IT CLEARED?
015212  001401                          BEQ     2$              ;BR IF YES
015214  104023                          EMT     23              ;ERROR IR IS NOT CLEAR
015216  104401                  2$:     SCOP1                   ;LOOP TO 1$ IF SW09=1
015220  012737  015232  001220          MOV     #3$,LOCK        ;NEW SCOP1
015226  012705  177777                  MOV     #-1,R5          ;PUT "EXPECTED" IN R5
015232  010561  000006          3$:     MOV     R5,6(R1)        ;WRITE ALL ONES TO THE IR
015236  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015242  020504                          CMP     R5,R4           ;IS IT ALL ONES?
015244  001401                          BEQ     4$              ;BR IF YES
015246  104023                          EMT     23              ;ERROR IR IS NOT = ALL ONES
015250  104401                  4$:     SCOP1                   ;LOOP TO 3$ IF SW09=1
015252  012737  015262  001220          MOV     #5$,LOCK        ;NEW SCOP1
015260  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
015262  000005                  5$:     RESET                   ;BUS RESET
015264  012711  003000                  MOV     #BIT9!BIT10,(R1) ;SEL6 IS IR
015270  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015274  020504                          CMP     R5,R4           ;IS IT CLEARED?
015276  001401                          BEQ     6$              ;BR IF YES
015300  104023                          EMT     23              ;ERROR, IR IS NOT CLEARED
015302  104401                  6$:     SCOP1                   ;LOOP TO 5$ IF SW09=1
015304  104400                          SCOPE                   ;SCOPE THIS TEST
    20

                                        ;*************************** TEST 30 ****************************
                                        ;*MAINTENANCE INSTRUCTION REGISTER TEST
                                        ;*VERIFY THAT THE MAINT IR CAN BE WRITTEN TO ALL ZEROS'
                                        ;*AND ALL ONES'. VERIFY THAT IT IS CLEARED ON A MASTER RESET.
                                        ;:************************************************************

                                        ;  TEST 30
                                        ;--------------
```

```
015306  012737  000030  001226  TST30:  MOV     #30,TSTNO
015314  012737  015450  001216          MOV     #TST31,NEXT
015322  012737  015340  001220          MOV     #1$,LOCK
                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015330  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015332  012711  003000                  MOV     #BIT9!BIT10,(R1) ;SEL6 IS NOW THE IR
015336  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
015340  010561  000006          1$:     MOV     R5,6(R1)        ;CLEAR THE IR
015344  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015350  020504                          CMP     R5,R4           ;IS IT CLEARED?
015352  001401                          BEQ     2$              ;BR IF YES
015354  104023                          EMT     23              ;ERROR IR IS NOT CLEAR
015356  104401          2$:     SCOP1                           ;LOOP TO 1$ IF SW09=1
015360  012737  015372  001220          MOV     #3$,LOCK        ;NEW SCOP1
015366  012705  177777                  MOV     #-1,R5          ;PUT "EXPECTED" IN R5
015372  010561  000006          3$:     MOV     R5,6(R1)        ;WRITE ALL ONES TO THE IR
015376  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015402  020504                          CMP     R5,R4           ;IS IT ALL ONES?
015404  001401                          BEQ     4$              ;BR IF YES
015406  104023                          EMT     23              ;ERROR IR IS NOT = ALL ONES
015410  104401          4$:     SCOP1                           ;LOOP TO 3$ IF SW09=1
015412  012737  015422  001220          MOV     #5$,LOCK        ;NEW SCOP1
015420  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
015422  052711  040000          5$:     BIS     #BIT14,(R1)     ;MASTER CLEAR
015426  012711  003000                  MOV     #BIT9!BIT10,(R1) ;SEL6 IS IR
015432  016104  000006                  MOV     6(R1),R4        ;READ THE IR
015436  020504                          CMP     R5,R4           ;IS IT CLEARED?
015440  001401                          BEQ     6$              ;BR IF YES
015442  104023                          EMT     23              ;ERROR, IR IS NOT CLEARED
015444  104401          6$:     SCOP1                           ;LOOP TO 5$ IF SW09=1
015446  104400                  SCOPE                           ;SCOPE THIS TEST
   24

                                ;***************************** TEST 31 *****************************
                                ;*MICRO PROCESSOR TEST
                                ;*LOAD DMP06 WITH A MICRO-PROCESSOR INSTRUCTION, CLOCK IT
                                ;*VERIFY INSTRUCTION EXECUTED PROPERLY
                                ;*INSTRUCTION SHOULD MOVE IBUS*4 TO IBUS*5, IBUS*4 IS ALL 1'S
                                ;*AND IBUS*5 IS ALL 0'S. RESULT SHOULD BE ALL 1'S IN SEL4
                                ;:***************************************************************

                                ;  TEST 31
                                ;--------------
015450  012737  000031  001226  TST31:  MOV     #31,TSTNO
015456  012737  015534  001216          MOV     #TST32,NEXT
                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015464  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015466  012761  000377  000004          MOV     #377,4(R1)      ;PORT4 HI-BYTE=0'S LO-BYTE=1'S
015474  012711  001000                  MOV     #BIT9,(R1)      ;SET ROMI
015500  012761  121105  000006          MOV     #121105,6(R1)   ;INSTRUCTION TO PORT6
015506  052711  001400                  BIS     #BIT8!BIT9,(R1) ;CLK INTSRUCTION, MOVE IBUS*4 TO IBUS*5
015512  000240                          NOP                     ;
015514  012705  177777                  MOV     #-1,R5          ;PUT "EXPECTED" IN R5
015520  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" INTO R4
015524  020504                          CMP     R5,R4           ;IS DATA CORRECT
015526  001401                          BEQ     1$              ;BR IF YES
015530  104003                          EMT     3               ;ERROR
```

```
015532  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
     25

                                        ;*************************** TEST 32 ****************************
                                        ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS* REGISTER 0
                                        ;*FLOAT A 0 THROUGH IBUS* REGISTER 0
                                        ;;************************************************************************

                                        ;  TEST 32
                                        ;---- ---------
015534  012737  000032  001226  TST32:  MOV     #32,TSTNO
015542  012737  015734  001216          MOV     #TST33,NEXT
015550  012737  015570  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
015556  104412                          MSTCLR                  ;MASTER CLEAR DMC11
015560  012702  000000                  MOV     #0,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
015564  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
015570                          64$:
015570  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
015574  042761  000030  000004          BIC     #30,4(R1)       ;CLEAR UNWANTED BITS
015602  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
015604  121100                          121100!0                ;MOV DATA TO IBUS* REGISTER 0
015606  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
015610  121005                          121005!<0*20>           ;READ FROM IBUS* REGISTER 0
015612  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
015614  042705  000030                  BIC     #30,R5          ;CLEAR UNWANTED BITS
015620  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
015624  120504                          CMPB    R5,R4           ;DATA CORRECT?
015626  001401                          BEQ     65$             ;BR IF YES
015630  104004                          EMT     4               ;ERROR
015632  104401                  65$:    SCOP1                   ;SW09=1?
015634  000241                          CLC                     ;CLEAR CARRY
015636  106100                          ROLB    R0              ;SHIFT BIT IN R0
015640  001353                          BNE     64$             ;IF R0=0 THEN DONE
015642  012737  015656  001220          MOV     #67$,LOCK       ;NEW SCOP1
015650  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
015654  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
015656                          67$:
015656  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
015662  042761  000030  000004          BIC     #30,4(R1)       ;CLEAR UNWANTED BITS
015670  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
015672  121100                          121100!0                ;MOV DATA TO IBUS* REGISTER 0
015674  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
015676  121005                          121005!<0*20>           ;READ FROM IBUS* REGISTER 0
015700  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
015702  042705  000030                  BIC     #30,R5          ;CLEAR UNWANTED BITS
015706  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
015712  120504                          CMPB    R5,R4           ;DATA CORRECT?
015714  001401                          BEQ     68$             ;BR IF YES
015716  104004                          EMT     4               ;ERROR
015720  104401                  68$:    SCOP1                   ;SW09=1?
015722  005100                          COM     R0              ;CHANGE TO FLOATING 1
015724  000241                          CLC                     ;CLEAR CARRY
015726  106100                          ROLB    R0              ;SHIFT BIT IN R0
015730  001351                          BNE     69$             ;IF R0=0 THEN DONE
015732  104400                          SCOPE                   ;SCOPE THIS TEST
```

```
     26

                                        ;*************************** TEST 33 ***************************
                                        ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS* REGISTER 2
                                        ;*FLOAT A 0 THROUGH IBUS* REGISTER 2
                                        ;:***********************************************************************

                                        ;  TEST 33
                                        ;--------------
 015734  012737  000033  001226  TST33: MOV     #33,TSTNO
 015742  012737  016134  001216         MOV     #TST34,NEXT
 015750  012737  015770  001220         MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 015756  104412                         MSTCLR                 ;MASTER CLEAR DMC11
 015760  012702  000002                 MOV     #2,R2          ;SAVE REGISTER ADDRESS FOR TYPEOUT
 015764  012700  000001                 MOV     #1,R0          ;START WITH BIT 0
 015770                          64$:
 015770  010061  000004                 MOV     R0,4(R1)       ;PUT PATTERN INTO PORT4
 015774  042761  000070  000004         BIC     #70,4(R1)      ;CLEAR UNWANTED BITS
 016002  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 016004  121102                         121100!2               ;MOV DATA TO IBUS* REGISTER 2
 016006  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 016010  121045                         121005!<2*20>          ;READ FROM IBUS* REGISTER 2
 016012  010005                         MOV     R0,R5          ;PUT EXPECTED IN R5
 016014  042705  000070                 BIC     #70,R5         ;CLEAR UNWANTED BITS
 016020  116104  000005                 MOVB    5(R1),R4       ;PUT "FOUND" INTO R4
 016024  120504                         CMPB    R5,R4          ;DATA CORRECT?
 016026  001401                         BEQ     65$            ;BR IF YES
 016030  104004                         EMT     4              ;ERROR
 016032  104401                  65$:   SCOP1                  ;SW09=1?
 016034  000241                         CLC                    ;CLEAR CARRY
 016036  106100                         ROLB    R0             ;SHIFT BIT IN R0
 016040  001353                         BNE     64$            ;IF R0=0 THEN DONE
 016042  012737  016056  001220         MOV     #67$,LOCK      ;NEW SCOP1
 016050  012700  000001                 MOV     #1,R0          ;START WITH BIT 0
 016054  005100                  69$:   COM     R0             ;CHANGE TO FLOATING ZERO
 016056                          67$:
 016056  010061  000004                 MOV     R0,4(R1)       ;PUT PATTERN INTO PORT4
 016062  042761  000070  000004         BIC     #70,4(R1)      ;CLEAR UNWANTED BITS
 016070  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 016072  121102                         121100!2               ;MOV DATA TO IBUS* REGISTER 2
 016074  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 016076  121045                         121005!<2*20>          ;READ FROM IBUS* REGISTER 2
 016100  010005                         MOV     R0,R5          ;PUT EXPECTED IN R5
 016102  042705  000070                 BIC     #70,R5         ;CLEAR UNWANTED BITS
 016106  116104  000005                 MOVB    5(R1),R4       ;PUT "FOUND" INTO R4
 016112  120504                         CMPB    R5,R4          ;DATA CORRECT?
 016114  001401                         BEQ     68$            ;BR IF YES
 016116  104004                         EMT     4              ;ERROR
 016120  104401                  68$:   SCOP1                  ;SW09=1?
 016122  005100                         COM     R0             ;CHANGE TO FLOATING 1
 016124  000241                         CLC                    ;CLEAR CARRY
 016126  106100                         ROLB    R0             ;SHIFT BIT IN R0
 016130  001351                         BNE     69$            ;IF R0=0 THEN DONE
 016132  104400                         SCOPE                  ;SCOPE THIS TEST
     27
```

```
                                        ;*************************** TEST 34 ***************************
                                        ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS* REGISTER 4
                                        ;*FLOAT A 0 THROUGH IBUS* REGISTER 4
                                        ;:***************************************************************

                                        ;  TEST 34
                                        ;------- ------
016134  012737  000034  001226  TST34:  MOV     #34,TSTNO
016142  012737  016310  001216          MOV     #TST35,NEXT
016150  012737  016170  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
016156  104412                          MSTCLR                  ;MASTER CLEAR DMC11
016160  012702  000004                  MOV     #4,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
016164  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
016170                          64$:
016170  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016174  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016176  121104                          121100!4                ;MOV DATA TO IBUS* REGISTER 4
016200  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016202  121105                          121005!<4*20>           ;READ FROM IBUS* REGISTER 4
016204  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
016206  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016212  120504                          CMPB    R5,R4           ;DATA CORRECT?
016214  001401                          BEQ     65$             ;BR IF YES
016216  104004                          EMT     4               ;ERROR
016220  104401                  65$:    SCOP1                   ;SW09=1?
016222  000241                          CLC                     ;CLEAR CARRY
016224  106100                          ROLB    R0              ;SHIFT BIT IN R0
016226  001360                          BNE     64$             ;IF R0=0 THEN DONE
016230  012737  016244  001220          MOV     #67$,LOCK       ;NEW SCOP1
016236  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
016242  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
016244                          67$:
016244  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016250  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016252  121104                          121100!4                ;MOV DATA TO IBUS* REGISTER 4
016254  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016256  121105                          121005!<4*20>           ;READ FROM IBUS* REGISTER 4
016260  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
016262  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016266  120504                          CMPB    R5,R4           ;DATA CORRECT?
016270  001401                          BEQ     68$             ;BR IF YES
016272  104004                          EMT     4               ;ERROR
016274  104401                  68$:    SCOP1                   ;SW09=1?
016276  005100                          COM     R0              ;CHANGE TO FLOATING 1
016300  000241                          CLC                     ;CLEAR CARRY
016302  106100                          ROLB    R0              ;SHIFT BIT IN R0
016304  001356                          BNE     69$             ;IF R0=0 THEN DONE
016306  104400                          SCOPE                   ;SCOPE THIS TEST
28

                                        ;*************************** TEST 35 ***************************
                                        ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS* REGISTER 5
                                        ;*FLOAT A 0 THROUGH IBUS* REGISTER 5
```

```
                                        ;::*****************************************************************
                                        ;  TEST 35
                                        ;--------------
016310  012737  000035  001226  TST35:  MOV     #35,TSTNO
016316  012737  016464  001216          MOV     #TST36,NEXT
016324  012737  016344  001220          MOV     #64$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
016332  104412                          MSTCLR          ;MASTER CLEAR DMC11
016334  012702  000005                  MOV     #5,R2   ;SAVE REGISTER ADDRESS FOR TYPEOUT
016340  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
016344                          64$:
016344  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016350  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016352  121105                          121100!5        ;MOV DATA TO IBUS* REGISTER 5
016354  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016356  121125                          121005!<5*20>   ;READ FROM IBUS* REGISTER 5
016360  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
016362  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016366  120504                          CMPB    R5,R4   ;DATA CORRECT?
016370  001401                          BEQ     65$     ;BR IF YES
016372  104004                          EMT     4       ;ERROR
016374  104401                  65$:    SCOP1           ;SW09=1?
016376  000241                          CLC             ;CLEAR CARRY
016400  106100                          ROLB    R0      ;SHIFT BIT IN R0
016402  001360                          BNE     64$     ;IF R0=0 THEN DONE
016404  012737  016420  001220          MOV     #67$,LOCK       ;NEW SCOP1
016412  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
016416  005100                  69$:    COM     R0      ;CHANGE TO FLOATING ZERO
016420                          67$:
016420  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016424  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016426  121105                          121100!5        ;MOV DATA TO IBUS* REGISTER 5
016430  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016432  121125                          121005!<5*20>   ;READ FROM IBUS* REGISTER 5
016434  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
016436  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016442  120504                          CMPB    R5,R4   ;DATA CORRECT?
016444  001401                          BEQ     68$     ;BR IF YES
016446  104004                          EMT     4       ;ERROR
016450  104401                  68$:    SCOP1           ;SW09=1?
016452  005100                          COM     R0      ;CHANGE TO FLOATING 1
016454  000241                          CLC             ;CLEAR CARRY
016456  106100                          ROLB    R0      ;SHIFT BIT IN R0
016460  001356                          BNE     69$     ;IF R0=0 THEN DONE
016462  104400                          SCOPE           ;SCOPE THIS TEST
29

                                        ;*************************** TEST 36 ***************************
                                        ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS* REGISTER 10
                                        ;*FLOAT A 0 THROUGH IBUS* REGISTER 10
                                        ;*THE NPR RQ BIT (BIT 0) IS MASKED DURING THIS TEST
                                        ;::*****************************************************************

                                        ;  TEST 36
                                        ;--------------
```

```
016464  012737  000036  001226  TST36:  MOV     #36,TSTNO
016472  012737  016664  001216          MOV     #TST37,NEXT
016500  012737  016520  001220          MOV     #64$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
016506  104412                          MSTCLR          ;MASTER CLEAR DMC11
016510  012702  000010                  MOV     #10,R2  ;SAVE REGISTER ADDRESS FOR TYPEOUT
016514  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
016520                          64$:
016520  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016524  042761  000141  000004          BIC     #141,4(R1)      ;CLEAR UNWANTED BITS
016532  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016534  121110                          121100!10       ;MOV DATA TO IBUS* REGISTER 10
016536  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016540  121205                          121005!<10*20>  ;READ FROM IBUS* REGISTER 10
016542  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
016544  042705  000141                  BIC     #141,R5 ;CLEAR UNWANTED BITS
016550  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016554  120504                          CMPB    R5,R4   ;DATA CORRECT?
016556  001401                          BEQ     65$     ;BR IF YES
016560  104004                          EMT     4       ;ERROR
016562  104401                  65$:    SCOP1           ;SW09=1?
016564  000241                          CLC             ;CLEAR CARRY
016566  106100                          ROLB    R0      ;SHIFT BIT IN R0
016570  001353                          BNE     64$     ;IF R0=0 THEN DONE
016572  012737  016606  001220          MOV     #67$,LOCK       ;NEW SCOP1
016600  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
016604  005100                  69$:    COM     R0      ;CHANGE TO FLOATING ZERO
016606                          67$:
016606  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016612  042761  000141  000004          BIC     #141,4(R1)      ;CLEAR UNWANTED BITS
016620  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016622  121110                          121100!10       ;MOV DATA TO IBUS* REGISTER 10
016624  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016626  121205                          121005!<10*20>  ;READ FROM IBUS* REGISTER 10
016630  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
016632  042705  000141                  BIC     #141,R5 ;CLEAR UNWANTED BITS
016636  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016642  120504                          CMPB    R5,R4   ;DATA CORRECT?
016644  001401                          BEQ     68$     ;BR IF YES
016646  104004                          EMT     4       ;ERROR
016650  104401                  68$:    SCOP1           ;SW09=1?
016652  005100                          COM     R0      ;CHANGE TO FLOATING 1
016654  000241                          CLC             ;CLEAR CARRY
016656  106100                          ROLB    R0      ;SHIFT BIT IN R0
016660  001351                          BNE     69$     ;IF R0=0 THEN DONE
016662  104400                          SCOPE           ;SCOPE THIS TEST
30

                                ;*************************** TEST 37 ****************************
                                ;*MICRO PROCESSOR IBUS* REGISTER WRITE/READ TEST
                                ;*FLOAT A 1 THROUGH IBUS* REGISTER 11
                                ;*FLOAT A 0 THROUGH IBUS* REGISTER 11
                                ;*THE BR RQ BIT, PGM CLOCK BIT, FORCE POWER FAIL BIT
                                ;*(BITS 7,4,1) ARE ALL MASKED DURING THIS TEST
                                ;;************************************************************

                                ;  TEST 37
```

```
                                        ;--------------
016664  012737  000037  001226  TST37:  MOV     #37,TSTNO
016672  012737  017104  001216          MOV     #TST40,NEXT
016700  012737  016720  001220          MOV     #64$,LOCK

                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
016706  104412                          MSTCLR          ;MASTER CLEAR DMC11
016710  012702  000011                  MOV     #11,R2  ;SAVE REGISTER ADDRESS FOR TYPEOUT
016714  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
016720                          64$:
016720  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
016724  042761  000262  000004          BIC     #262,4(R1)      ;CLEAR UNWANTED BITS
016732  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016734  121111                          121100!11       ;MOV DATA TO IBUS* REGISTER 11
016736  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
016740  121225                          121005!<11*20>  ;READ FROM IBUS* REGISTER 11
016742  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
016744  042705  000262                  BIC     #262,R5 ;CLEAR UNWANTED BITS
016750  052705  000020                  BIS     #20,R5  ;ADD THESE BITS
016754  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
016760  052704  000020                  BIS     #20,R4  ;ADD THIS BIT
016764  120504                          CMPB    R5,R4   ;DATA CORRECT?
016766  001401                          BEQ     65$     ;BR IF YES
016770  104004                          EMT     4       ;ERROR
016772  104401                  65$:    SCOP1           ;SW09=1?
016774  000241                          CLC             ;CLEAR CARRY
016776  106100                          ROLB    R0      ;SHIFT BIT IN R0
017000  001347                          BNE     64$     ;IF R0=0 THEN DONE
017002  012737  017016  001220          MOV     #67$,LOCK       ;NEW SCOP1
017010  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
017014  005100                  69$:    COM     R0      ;CHANGE TO FLOATING ZERO
017016                          67$:
017016  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017022  042761  000262  000004          BIC     #262,4(R1)      ;CLEAR UNWANTED BITS
017030  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017032  121111                          121100!11       ;MOV DATA TO IBUS* REGISTER 11
017034  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017036  121225                          121005!<11*20>  ;READ FROM IBUS* REGISTER 11
017040  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
017042  042705  000262                  BIC     #262,R5 ;CLEAR UNWANTED BITS
017046  052705  000020                  BIS     #20,R5  ;ADD THESE BITS
017052  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017056  052704  000020                  BIS     #20,R4  ;ADD THIS BIT
017062  120504                          CMPB    R5,R4   ;DATA CORRECT?
017064  001401                          BEQ     68$     ;BR IF YES
017066  104004                          EMT     4       ;ERROR
017070  104401                  68$:    SCOP1           ;SW09=1?
017072  005100                          COM     R0      ;CHANGE TO FLOATING 1
017074  000241                          CLC             ;CLEAR CARRY
017076  106100                          ROLB    R0      ;SHIFT BIT IN R0
017100  001345                          BNE     69$     ;IF R0=0 THEN DONE
017102  104400                          SCOPE           ;SCOPE THIS TEST
36

                                        ;*************************** TEST 40 ****************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 0
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 0
```

```
                                        ;:**********************************************************************

                                        ;  TEST 40
                                        ;-----  ------
017104  012737  000040  001226  TST40:  MOV     #40,TSTNO
017112  012737  017260  001216          MOV     #TST41,NEXT
017120  012737  017140  001220          MOV     #64$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
017126  104412                          MSTCLR          ;MASTER CLEAR DMC11
017130  012702  000000                  MOV     #0,R2   ;SAVE REGISTER ADDRESS FOR TYPEOUT
017134  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
017140                          6$ :
017140  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017144  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017146  122100                          122100!0        ;MOV DATA TO IBUS REGISTER 0
017150  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017152  021005                          21005!<0*20>    ;READ FROM IBUS REGISTER 0
017154  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
017156  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017162  120504                          CMPB    R5,R4   ;DATA CORRECT?
017164  001401                          BEQ     65$     ;BR IF YES
017166  104005                          EMT     5       ;ERROR
017170  104401                  65$:    SCOP1           ;SW09=1?
017172  000241                          CLC             ;CLEAR CARRY
017174  106100                          ROLB    R0      ;SHIFT BIT IN R0
017176  001360                          BNE     64$     ;IF R0=0 THEN DONE
017200  012737  017214  001220          MOV     #67$,LOCK       ;NEW SCOP1
017206  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
017212  005100                  69$:    COM     R0      ;CHANGE TO FLOATING ZERO
017214                          67$:
017214  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017220  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017222  122100                          122100!0        ;MOV DATA TO IBUS REGISTER 0
017224  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017226  021005                          21005!<0*20>    ;READ FROM IBUS REGISTER 0
017230  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
017232  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017236  120504                          CMPB    R5,R4   ;DATA CORRECT?
017240  001401                          BEQ     68$     ;BR IF YES
017242  104005                          EMT     5       ;ERROR
017244  104401                  68$:    SCOP1           ;SW09=1?
017246  005100                          COM     R0      ;CHANGE TO FLOATING 1
017250  000241                          CLC             ;CLEAR CARRY
017252  106100                          ROLB    R0      ;SHIFT BIT IN R0
017254  001356                          BNE     69$     ;IF R0=0 THEN DONE
017256  104400                          SCOPE           ;SCOPE THIS TEST


                                        ;************************** TEST 41 **************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 1
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 1
                                        ;:**********************************************************************

                                        ;  TEST 41
                                        ;-------------
017260  012737  000041  001226  TST41:  MOV     #41,TSTNO
```

```
017266  012737  017434  001216          MOV     #TST42,NEXT
017274  012737  017314  001220          MOV     #64$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
017302  104412                          MSTCLR          ;MASTER CLEAR DMC11
017304  012702  000001                  MOV     #1,R2   ;SAVE REGISTER ADDRESS FOR TYPEOUT
017310  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
017314                          64$:
017314  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017320  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017322  122101                          122100!1        ;MOV DATA TO IBUS REGISTER 1
017324  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017326  021025                          21005!<1*20>    ;READ FROM IBUS REGISTER 1
017330  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
017332  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017336  120504                          CMPB    R5,R4   ;DATA CORRECT?
017340  001401                          BEQ     65$     ;BR IF YES
017342  104005                          EMT     5       ;ERROR
017344  104401                  65$:    SCOP1           ;SW09=1?
017346  000241                          CLC             ;CLEAR CARRY
017350  106100                          ROLB    R0      ;SHIFT BIT IN R0
017352  001360                          BNE     64$     ;IF R0=0 THEN DONE
017354  012737  017370  001220          MOV     #67$,LOCK       ;NEW SCOP1
017362  012700  000001                  MOV     #1,R0   ;START WITH BIT 0
017366  005100                  69$:    COM     R0      ;CHANGE TO FLOATING ZERO
017370                          67$:
017370  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017374  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017376  122101                          122100!1        ;MOV DATA TO IBUS REGISTER 1
017400  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017402  021025                          21005!<1*20>    ;READ FROM IBUS REGISTER 1
017404  010005                          MOV     R0,R5   ;PUT EXPECTED IN R5
017406  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017412  120504                          CMPB    R5,R4   ;DATA CORRECT?
017414  001401                          BEQ     68$     ;BR IF YES
017416  104005                          EMT     5       ;ERROR
017420  104401                  68$:    SCOP1           ;SW09=1?
017422  005100                          COM     R0      ;CHANGE TO FLOATING 1
017424  000241                          CLC             ;CLEAR CARRY
017426  106100                          ROLB    R0      ;SHIFT BIT IN R0
017430  001356                          BNE     69$     ;IF R0=0 THEN DONE
017432  104400                          SCOPE           ;SCOPE THIS TEST


                                        ;*************************** TEST 42 ****************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 2
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 2
                                        ;:************************************************************************

                                        ;  TEST 42
                                        ; - ----------
017434  012737  000042  001226  TST42:  MOV     #42,TSTNO
017442  012737  017610  001216          MOV     #TST43,NEXT
017450  012737  017470  001220          MOV     #64$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
017456  104412                          MSTCLR          ;MASTER CLEAR DMC11
017460  012702  000002                  MOV     #2,R2   ;SAVE REGISTER ADDRESS FOR TYPEOUT
```

```
017464  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
017470                          64$:
017470  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017474  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017476  122102                          122100!2                ;MOV DATA TO IBUS REGISTER 2
017500  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017502  021045                          21005!<2*20>            ;READ FROM IBUS REGISTER 2
017504  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
017506  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017512  120504                          CMPB    R5,R4           ;DATA CORRECT?
017514  001401                          BEQ     65$             ;BR IF YES
017516  104005                          EMT     5               ;ERROR
017520  104401                  65$:    SCOP1                   ;SW09=1?
017522  000241                          CLC                     ;CLEAR CARRY
017524  106100                          ROLB    R0              ;SHIFT BIT IN R0
017526  001360                          BNE     64$             ;IF R0=0 THEN DONE
017530  012737  017544  001220          MOV     #67$,LOCK       ;NEW SCOP1
017536  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
017542  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
017544                          67$:
017544  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017550  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017552  122102                          122100!2                ;MOV DATA TO IBUS REGISTER 2
017554  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017556  021045                          21005!<2*20>            ;READ FROM IBUS REGISTER 2
017560  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
017562  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017566  120504                          CMPB    R5,R4           ;DATA CORRECT?
017570  001401                          BEQ     68$             ;BR IF YES
017572  104005                          EMT     5               ;ERROR
017574  104401                  68$:    SCOP1                   ;SW09=1?
017576  005100                          COM     R0              ;CHANGE TO FLOATING 1
017600  000241                          CLC                     ;CLEAR CARRY
017602  106100                          ROLB    R0              ;SHIFT BIT IN R0
017604  001356                          BNE     69$             ;IF R0=0 THEN DONE
017606  104400                          SCOPE                   ;SCOPE THIS TEST


                                ;***************************** TEST 43 *****************************
                                ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                ;*FLOAT A 1 THROUGH IBUS REGISTER 3
                                ;*FLOAT A 0 THROUGH IBUS REGISTER 3
                                ;;*************************************************************

                                ;  TEST 43
                                ;--------------
017610  012737  000043  001226  TST43:  MOV     #43,TSTNO
017616  012737  017764  001216          MOV     #TST44,NEXT
017624  012737  017644  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
017632  104412                          MSTCLR                  ;MASTER CLEAR DMC11
017634  012702  000003                  MOV     #3,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
017640  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
017644                          64$:
017644  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017650  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017652  122103                          122100!3                ;MOV DATA TO IBUS REGISTER 3
```

```
017654  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017656  021065                          21005!<3*20>            ;READ FROM IBUS REGISTER 3
017660  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
017662  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017666  120504                          CMPB    R5,R4           ;DATA CORRECT?
017670  001401                          BEQ     65$             ;BR IF YES
017672  104005                          EMT     5               ;ERROR
017674  104401                  65$:    SCOP1                   ;SW09=1?
017676  000241                          CLC                     ;CLEAR CARRY
017700  106100                          ROLB    R0              ;SHIFT BIT IN R0
017702  001360                          BNE     64$             ;IF R0=0 THEN DONE
017704  012737  017720  001220          MOV     #67$,LOCK       ;NEW SCOP1
017712  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
017716  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
017720                          67$:
017720  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
017724  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017726  122103                          122100!3                ;MOV DATA TO IBUS REGISTER 3
017730  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
017732  021065                          21005!<3*20>            ;READ FROM IBUS REGISTER 3
017734  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
017736  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
017742  120504                          CMPB    R5,R4           ;DATA CORRECT?
017744  001401                          BEQ     68$             ;BR IF YES
017746  104005                          EMT     5               ;ERROR
017750  104401                  68$:    SCOP1                   ;SW09=1?
017752  005100                          COM     R0              ;CHANGE TO FLOATING 1
017754  000241                          CLC                     ;CLEAR CARRY
017756  106100                          ROLB    R0              ;SHIFT BIT IN R0
017760  001356                          BNE     69$             ;IF R0=0 THEN DONE
017762  104400                          SCOPE                   ;SCOPE THIS TEST


                                ;*************************** TEST 44 ***************************
                                ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                ;*FLOAT A 1 THROUGH IBUS REGISTER 4
                                ;*FLOAT A 0 THROUGH IBUS REGISTER 4
                                ;;***********************************************************************

                                ;  TEST 44
                                ;--------------
017764  012737  000044  001226  TST44:  MOV     #44,TSTNO
017772  012737  020140  001216          MOV     #TST45,NEXT
020000  012737  020020  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
020006  104412                          MSTCLR                  ;MASTER CLEAR DMC11
020010  012702  000004                  MOV     #4,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
020014  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020020                          64$:
020020  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020024  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020026  122104                          122100!4                ;MOV DATA TO IBUS REGISTER 4
020030  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020032  021105                          21005!<4*20>            ;READ FROM IBUS REGISTER 4
020034  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020036  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020042  120504                          CMPB    R5,R4           ;DATA CORRECT?
```

```
020044  001401                          BEQ     65$             ;BR IF YES
020046  104005                          EMT     5               ;ERROR
020050  104401                  65$:    SCOP1                   ;SW09=1?
020052  000241                          CLC                     ;CLEAR CARRY
020054  106100                          ROLB    R0              ;SHIFT BIT IN R0
020056  001360                          BNE     64$             ;IF R0=0 THEN DONE
020060  012737  020074  001220          MOV     #67$,LOCK       ;NEW SCOP1
020066  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020072  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
020074                          67$:
020074  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020100  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020102  122104                          122100!4                ;MOV DATA TO IBUS REGISTER 4
020104  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020106  021105                          21005!<4*20>            ;READ FROM IBUS REGISTER 4
020110  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020112  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020116  120504                          CMPB    R5,R4           ;DATA CORRECT?
020120  001401                          BEQ     68$             ;BR IF YES
020122  104005                          EMT     5               ;ERROR
020124  104401                  68$:    SCOP1                   ;SW09=1?
020126  005100                          COM     R0              ;CHANGE TO FLOATING 1
020130  000241                          CLC                     ;CLEAR CARRY
020132  106100                          ROLB    R0              ;SHIFT BIT IN R0
020134  001356                          BNE     69$             ;IF R0=0 THEN DONE
020136  104400                          SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 45 ****************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 5
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 5
                                        ;:************************************************************************

                                        ;  TEST 45
                                        ;--------------
020140  012737  000045  001226  TST45:  MOV     #45,TSTNO
020146  012737  020314  001216          MOV     #TST46,NEXT
020154  012737  020174  001220          MOV     #64$,LOCK

                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
020162  104412                          MSTCLR                  ;MASTER CLEAR DMC11
020164  012702  000005                  MOV     #5,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
020170  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020174                          64$:
020174  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020200  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020202  122105                          122100!5                ;MOV DATA TO IBUS REGISTER 5
020204  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020206  021125                          21005!<5*20>            ;READ FROM IBUS REGISTER 5
020210  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020212  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020216  120504                          CMPB    R5,R4           ;DATA CORRECT?
020220  001401                          BEQ     65$             ;BR IF YES
020222  104005                          EMT     5               ;ERROR
020224  104401                  65$:    SCOP1                   ;SW09=1?
020226  000241                          CLC                     ;CLEAR CARRY
020230  106100                          ROLB    R0              ;SHIFT BIT IN R0
```

```
020232  001360                          BNE     64$             ;IF R0=0 THEN DONE
020234  012737  020250  001220          MOV     #67$,LOCK       ;NEW SCOP1
020242  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020246  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
020250                          67$:
020250  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020254  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020256  122105                          122100!5                ;MOV DATA TO IBUS REGISTER 5
020260  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020262  021125                          21005!<5*20>            ;READ FROM IBUS REGISTER 5
020264  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020266  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020272  120504                          CMPB    R5,R4           ;DATA CORRECT?
020274  001401                          BEQ     68$             ;BR IF YES
020276  104005                          EMT     5               ;ERROR
020300  104401                  68$:    SCOP1                   ;SW09=1?
020302  005100                          COM     R0              ;CHANGE TO FLOATING 1
020304  000241                          CLC                     ;CLEAR CARRY
020306  106100                          ROLB    R0              ;SHIFT BIT IN R0
020310  001356                          BNE     69$             ;IF R0=0 THEN DONE
020312  104400                          SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 46 ***************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 6
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 6
                                        ;;***********************************************************************

                                        ;  TEST 46
                                        ;-------------
020314  012737  000046  001226  TST46:  MOV     #46,TSTNO
020322  012737  020470  001216          MOV     #TST47,NEXT
020330  012737  020350  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
020336  104412                          MSTCLR                  ;MASTER CLEAR DMC11
020340  012702  000006                  MOV     #6,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
020344  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020350                          64$:
020350  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020354  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020356  122106                          122100!6                ;MOV DATA TO IBUS REGISTER 6
020360  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020362  021145                          21005!<6*20>            ;READ FROM IBUS REGISTER 6
020364  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020366  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020372  120504                          CMPB    R5,R4           ;DATA CORRECT?
020374  001401                          BEQ     65$             ;BR IF YES
020376  104005                          EMT     5               ;ERROR
020400  104401                  65$:    SCOP1                   ;SW09=1?
020402  000241                          CLC                     ;CLEAR CARRY
020404  106100                          ROLB    R0              ;SHIFT BIT IN R0
020406  001360                          BNE     64$             ;IF R0=0 THEN DONE
020410  012737  020424  001220          MOV     #67$,LOCK       ;NEW SCOP1
020416  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020422  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
020424                          67$:
```

```
020424  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020430  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020432  122106                          122100!6                ;MOV DATA TO IBUS REGISTER 6
020434  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020436  021145                          21005!<6*20>            ;READ FROM IBUS REGISTER 6
020440  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020442  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020446  120504                          CMPB    R5,R4           ;DATA CORRECT?
020450  001401                          BEQ     68$             ;BR IF YES
020452  104005                          EMT     5               ;ERROR
020454  104401                  68$:    SCOP1                   ;SW09=1?
020456  005100                          COM     R0              ;CHANGE TO FLOATING 1
020460  000241                          CLC                     ;CLEAR CARRY
020462  106100                          ROLB    R0              ;SHIFT BIT IN R0
020464  001356                          BNE     69$             ;IF R0=0 THEN DONE
020466  104400                          SCOPE                   ;SCOPE THIS TEST


                                        ;*************************** TEST 47 ****************************
                                        ;*MICRO PROCESSOR IBUS REGISTER WRITE/READ TEST
                                        ;*FLOAT A 1 THROUGH IBUS REGISTER 7
                                        ;*FLOAT A 0 THROUGH IBUS REGISTER 7
                                        ;;************************************************************

                                        ;  TEST 47
                                        ;--------------
020470  012737  000047  001226  TST47:  MOV     #47,TSTNO
020476  012737  020644  001216          MOV     #TST50,NEXT
020504  012737  020524  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
020512  104412                          MSTCLR                  ;MASTER CLEAR DMC11
020514  012702  000007                  MOV     #7,R2           ;SAVE REGISTER ADDRESS FOR TYPEOUT
020520  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020524                          64$:
020524  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020530  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC-5304
020532  122107                          122100!7                ;MOV DATA TO IBUS REGISTER 7
020534  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020536  021165                          21005!<7*20>            ;READ FROM IBUS REGISTER 7
020540  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020542  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020546  120504                          CMPB    R5,R4           ;DATA CORRECT?
020550  001401                          BEQ     65$             ;BR IF YES
020552  104005                          EMT     5               ;ERROR
020554  104401                  65$:    SCOP1                   ;SW09=1?
020556  000241                          CLC                     ;CLEAR CARRY
020560  106100                          ROLB    R0              ;SHIFT BIT IN R0
020562  001360                          BNE     64$             ;IF R0=0 THEN DONE
020564  012737  020600  001220          MOV     #67$,LOCK       ;NEW SCOP1
020572  012700  000001                  MOV     #1,R0           ;START WITH BIT 0
020576  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
020600                          67$:
020600  010061  000004                  MOV     R0,4(R1)        ;PUT PATTERN INTO PORT4
020604  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020606  122107                          122100!7                ;MOV DATA TO IBUS REGISTER 7
020610  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020612  021165                          21005!<7*20>            ;READ FROM IBUS REGISTER 7
```

```
020614  010005                          MOV     R0,R5           ;PUT EXPECTED IN R5
020616  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" INTO R4
020622  120504                          CMPB    R5,R4           ;DATA CORRECT?
020624  001401                          BEQ     68$             ;BR IF YES
020626  104005                          EMT     5               ;ERROR
020630  104401                  68$:    SCOP1                   ;SW09=1?
020632  005100                          COM     R0              ;CHANGE TO FLOATING 1
020634  000241                          CLC                     ;CLEAR CARRY
020636  106100                          ROLB    R0              ;SHIFT BIT IN R0
020640  001356                          BNE     69$             ;IF R0=0 THEN DONE
020642  104400                          SCOPE                   ;SCOPE THIS TEST
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                                        ;*************************** TEST 50 ****************************
                                        ;*MICRO PROCESSOR IBUS DUAL ADDRESS TEST
                                        ;*WRITE ALL IBUS REGISTERS WITH INCREMENTING PATTERN
                                        ;*READ ALL IBUS REGISTERS TO VERIFY CORRECT ADDRESSING
                                        ;:************************************************************************

                                        ;  TEST 50
                                        ;--------------
020644  012737  000050  001226  TST50:  MOV     #50,TSTNO
020652  012737  021072  001216          MOV     #TST51,NEXT
020660  012737  020676  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
020666  104412                          MSTCLR                  ;MASTER CLEAR DMC11
020670  012700  000001                  MOV     #1,R0           ;START WITH A ONE
020674  005002                          CLR     R2              ;R2 CONTAINS ADDRESS OF REGISTER
020676  010203                  1$:     MOV     R2,R3           ;R3=REGISTER ADDRESS
020700  010061  000004                  MOV     R0,4(R1)        ;WRITE DATA TO PORT4
020704  042737  000017  020720          BIC     #17,5$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
020712  050337  020720                  BIS     R3,5$           ;ADD ADDRESS TO INSTRUCTION
020716  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020720  122100                  5$:     122100                  ;MOVE DATA TO IBUS REGISTER
020722  006303                          ASL     R3              ;SHIFT ADDRESS
020724  006303                          ASL     R3              ;4 TIMES TO GET
020726  006303                          ASL     R3              ;IT TO BITS 4-7
020730  006303                          ASL     R3              ;OF NEXT INSTRUCTION
020732  042737  000360  020746          BIC     #360,6$         ;CLEAR ADDRESS FIELD
020740  050337  020746                  BIS     R3,6$           ;ADD ADDRESS TO INSTRUCTION
020744  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
020746  021005                  6$:     21005                   ;READ FROM IBUS REGISTER
020750  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
020752  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
020756  120504                          CMPB    R5,R4           ;IS DATA CORRECT?
020760  001401                          BEQ     2$              ;BR IF YES
020762  104005                          EMT     5               ;DATA ERROR
020764  104401                  2$:     SCOP1                   ;SW09=1?
020766  005200                          INC     R0              ;INCREMENT PATTERN
020770  005202                          INC     R2              ;INCREMENT REGISTER ADDRESS
020772  022702  000010                  CMP     #7+1,R2 ;LAST ADDRESS DONE?
020776  001337                          BNE     1$              ;BR IF NO
021000  012737  021016  001220          MOV     #3$,LOCK        ;NEW SCOP1
021006  012700  000001                  MOV     #1,R0           ;RESTART PATTERN TO 1
021012  005002                          CLR     R2              ;RESTART AT ADDRESS 0
021014  005003                          CLR     R3              ;RESTART AT ADDRESS 0
021016  042737  000360  021032  3$:     BIC     #360,7$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
```

```
021024  050337  021032                  BIS     R3,7$           ;ADD ADDRESS TO INSTRUCTION
021030  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021032  021005                  7$:     21005                   ;READ FROM IBUS REGISTER
021034  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021036  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R5
021042  120504                          CMPB    R5,R4           ;DATA CORRECT?
021044  001401                          BEQ     4$              ;BR IF YES
021046  104005                          EMT     5               ;DUAL ADDRESSING ERROR
021050  104401                  4$:     SCOP1                   ;SW09=1?
021052  005200                          INC     R0              ;INCREMENT PATTERN
021054  005202                          INC     R2              ;NEXT ADDRESS
021056  062703  000020                  ADD     #20,R3          ;ADD 1 TO ADDRESS IN R3(SHIFTED 4 TIMES)
021062  022702  000010                  CMP     #7+1,R2 ;LAST ADDRESS DONE?
021066  001353                          BNE     3$              ;BR IF NO
021070  104400                          SCOPE                   ;SCOPE THIS TEST
    38

                                        ;*************************** TEST 51 ****************************
                                        ;*MICRO PROCESSOR BR REGISTER TEST
                                        ;*FLOAT A 1 THROUGH THE BR
                                        ;*FLOAT A 0 THROUGH THE BR
                                        ;:************************************************************************

                                        ;  TEST 51
                                        ;--------------
021072  012737  000051  001226  TST51:  MOV     #51,TSTNO
021100  012737  021242  001216          MOV     #TST52,NEXT
021106  012737  021122  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
021114  104412                          MSTCLR                  ;MASTER CLEAR DMC11
021116  012700  000001                  MOV     #1,R0           ;START PATTERN WITH BIT0
021122                          64$:
021122  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN IN PORT4
021126  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021130  120500                          120500                  ;MOVE DATA TO THE BR REGISTER
021132  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021134  061225                          061225                  ;MOVE BR TO PORT 5
021136  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021140  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
021144  120504                          CMPB    R5,R4           ;DATA CORRECT?
021146  001401                          BEQ     65$             ;BR IF YES
021150  104006                          EMT     6               ;DATA ERROR
021152  104401                  65$:    SCOP1
021154  000241                          CLC                     ;CLEAR CARRY
021156  106100                          ROLB    R0              ;SHIFT BIT IN R0
021160  001360                          BNE     64$             ;DONE IF R0=0
021162  012737  021176  001220          MOV     #67$,LOCK       ;NEW SCOP1
021170  012700  000001                  MOV     #1,R0           ;START PATTERN WITH BIT0
021174  005100                  69$:    COM     R0              ;CHANGE TO FLOATING ZERO
021176                          67$:
021176  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN IN PORT4
021202  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021204  120500                          120500                  ;MOVE DATA TO THE BR REGISTER
021206  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021210  061225                          061225                  ;MOVE BR TO PORT 5
021212  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021214  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
```

```
021220  120504                          CMPB    R5,R4           ;DATA CORRECT?
021222  001401                          BEQ     68$             ;BR IF YES
021224  104006                          EMT     6               ;DATA ERROR
021226  104401                  68$:    SCOP1
021230  005100                          COM     R0              ;CHANGE BACK TO A ONE
021232  000241                          CLC                     ;CLEAR CARRY
021234  106100                          ROLB    R0              ;SHIFT BIT IN R0
021236  001356                          BNE     69$             ;DONE IF R0=0
021240  104400                          SCOPE                   ;SCOPE THIS TEST
 42

                                        ;*************************** TEST 52 ****************************
                                        ;*SCRATCH PAD TEST
                                        ;*FLOAT A 1 THROUGH EACH SCRATCH PAD LOCATION
                                        ;*FLOAT A 0 THROUGH EACH SCRATCH PAD LOCATION
                                        ;:************************************************************

                                        ;  TEST 52
                                        ;--------------
021242  012737  000052  001226  TST52:  MOV     #52,TSTNO
021250  012737  021510  001216          MOV     #TST53,NEXT
021256  012737  021274  001220          MOV     #64$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
021264  104412                          MSTCLR                  ;MASTER CLEAR DMC11
021266  005002                          CLR     R2              ;START AT ADDRESS ZERO
021270  012700  000001                  MOV     #1,R0           ;START WITH BIT0
021274  042737  000017  021314  64$:    BIC     #17,65$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
021302  050237  021314                  BIS     R2,65$          ;ADD ADDRESS TO INSTRUCTION
021306  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN TO PORT4
021312  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021314  123100                  65$:    123100                  ;WRITE SCRATCH PAD(ADDRESS IN R2)
021316  042737  000017  021332          BIC     #17,66$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
021324  050237  021332                  BIS     R2,66$          ;ADD ADDRESS TO INSTRUCTION
021330  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021332  040600                  66$:    040600                  ;MOV SP TO BR
021334  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021336  061225                          061225                  ;MOVE BR TO PORT5
021340  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021342  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
021346  120504                          CMPB    R5,R4           ;DATA CORRECT
021350  001401                          BEQ     67$             ;BR IF YES
021352  104007                          EMT     7               ;DATA ERROR
021354  104401                  67$:    SCOP1                   ;SW09=1?
021356  000241                          CLC                     ;CLEAR CARRY
021360  106100                          ROLB    R0              ;SHIFT BIT IN R0
021362  001344                          BNE     64$             ;DONE IF R0=0
021364  012737  021400  001220          MOV     #69$,LOCK       ;NEW SCOP1
021372  012700  000001                  MOV     #1,R0           ;START WITH BIT0
021376  005100                  73$:    COM     R0              ;CHANGE TO FLOATING ZERO
021400  042737  000017  021420  69$:    BIC     #17,70$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
021406  050237  021420                  BIS     R2,70$          ;ADD ADDRESS TO INSTRUCTION
021412  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN TO PORT4
021416  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021420  123100                  70$:    123100                  ;WRITE SCRATCH PAD(ADDRESS IN R2)
021422  042737  000017  021436          BIC     #17,71$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
021430  050237  021436                  BIS     R2,71$          ;ADD ADDRESS TO INSTRUCTION
021434  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
021436  040600                  71$:    040600                  ;MOV SP TO BR
021440  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021442  061225                          061225                  ;MOVE BR TO PORT5
021444  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021446  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
021452  12C504                          CMPB    R5,R4           ;DATA CORRECT
021454  001401                          BEQ     72$             ;BR IF YES
021456  104007                          EMT     7               ;DATA ERROR
021460  104401                  72$:    SCOP1                   ;SW09=1?
021462  005100                          COM     R0              ;CHANGE BACK TO A ONE
021464  000241                          CLC                     ;CLEAR CARRY
021466  106100                          ROLB    R0              ;SHIFT BIT IN R0
021470  001342                          BNE     73$             ;DONE IF R0=0
021472  012700  000001                  MOV     #1,R0           ;RESTART AT BIT 0
021476  005202                          INC     R2              ;NEXT SP ADDRESS
021500  022702  000020                  CMP     #20,R2  ;LAST ADDRESS?
021504  001273                          BNE     64$             ;BR IF NO
021506  104400                          SCOPE                   ;SCOPE THIS TEST
    43

                                        ;***************************** TEST 53 *****************************
                                        ;*SCRATCH PAD DUAL ADDRESSING TEST
                                        ;*WRITE AN INCREMENTING PATTERN IN ALL SP LOCATIONS
                                        ;*READ ALL SP LOCATIONS TO VERIFY CORRECT ADDRESSING
                                        ;:*************************************************************************

                                        ;  TEST 53
                                        ;-------------
021510  012737  000053  001226  TST53:  MOV     #53,TSTNO
021516  012737  021732  001216          MOV     #TST54,NEXT
021524  012737  021542  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
021532  104412                          MSTCLR                  ;MASTER CLEAR DMC11
021534  012700  000001                  MOV     #1,R0           ;START WITH A 1
021540  005003                          CLR     R3              ;ADDRESS 0
021542  010302                  1$:     MOV     R3,R2           ;MOVE ADDRESS TO R2
021544  042737  000017  021564          BIC     #17,2$          ;CLEAR ADDRESS FIELD
021552  050237  021564                  BIS     R2,2$           ;ADD ADDRESS TO INSTRUCTION
021556  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN TO PORT4
021562  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021564  123100                  2$:     123100                  ;WRITE SP(ADDRESS IN R2)
021566  042737  000017  021602          BIC     #17,3$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
021574  050237  021602                  BIS     R2,3$           ;ADD ADDRESS TO INSTRUCTION
021600  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021602  060600                  3$:     60600                   ;MOV SP TO BR
021604  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021606  061225                          61225                   ;MOV BR TO PORT5
021610  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021612  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
021616  120504                          CMPB    R5,R4           ;DATA CORRECT?
021620  001401                          BEQ     4$              ;BR IF YES
021622  104007                          EMT     7               ;DATA ERROR
021624  104401                  4$:     SCOP1                   ;SW09=0
021626  005200                          INC     R0              ;INCREMENT PATTERN
021630  005203                          INC     R3              ;NEXT ADDRESS
021632  022703  000020                  CMP     #20,R3          ;LAST ADDRESS DONE?
021636  001341                          BNE     1$              ;BR IF NO
```

```
021640  012737  021654  001220          MOV     #5$,LOCK        ;NEW SCOP1
021646  012700  000001                  MOV     #1,R0           ;RESTART PATTERN AT 1
021652  005003                          CLR     R3              ;RESTART AT ADDRESS ZERO
021654  010302                  5$:     MOV     R3,R2           ;PUT ADDRESS IN R2
021656  042737  000017  021672          BIC     #17,6$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
021664  050237  021672                  BIS     R2,6$           ;ADD ADDRESS TO INSTRUCTION
021670  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021672  060600                  6$:     60600                   ;MOV SP TO BR
021674  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
021676  061225                          61225                   ;MOV BR TO PORT5
021700  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
021702  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
021706  120504                          CMPB    R5,R4           ;DATA CORRECT?
021710  001401                          BEQ     7$              ;BR IF YES
021712  104007                          EMT     7               ;SP ADDRESSING ERROR
021714  104401                  7$:     SCOP1                   ;SW09=1?
021716  005200                          INC     R0              ;INCREMENT PATTERN
021720  005203                          INC     R3              ;NEXT ADDRESS
021722  022703  000020                  CMP     #20,R3  ;LAST ADDRESS DONE?
021726  001352                          BNE     5$              ;BR IF NO
021730  104400                          SCOPE                   ;SCOPE THIS TEST
47

                                ;****************************** TEST 54 ****************************
                                ;*INTERRUPT TEST
                                ;*TEST THAT DEVICE CAN INTERRUPT TO VECTOR A
                                ;:*************************************************************

                                ;  TEST 54
                                ;--------------
021732  012737  000054  001226  TST54:  MOV     #54,TSTNO
021740  012737  022026  001216          MOV     #TST55,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
021746  000005                          RESET                   ;BUS RESET
021750  005011                          CLR     (R1)            ;CLEAR RUN
021752  004537  034642                  JSR     R5,SETVEC       ;SET UP VECTORS
021756  022020                          3$                      ;XX0
021760  022016                          2$                      ;XX4
021762     340     340                  .BYTE   340,340         ;LEVEL 7
021764  012737  000340  177776  1$:     MOV     #340,PS         ;PS = LEVEL 7
021772  012761  000200  000004          MOV     #200,4(R1)      ;WRITE PORT4
022000  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
022002  121111                          121111                  ;SET BR RQ IN IBUS* REG 11
022004  005037  177776                  CLR     PS              ;ALLOW INTERRUPT
022010  000240                          NOP
022012  104010                          EMT     10              ;NO INTERRUPT
022014  000403                          BR      4$
022016  104011                  2$:     EMT     11              ;WRONG VECTOR
022020  012706  001200          3$:     MOV     #STACK,SP       ;RESET STACK
022024  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
48

                                ;****************************** TEST 55 ****************************
                                ;*INTERRUPT TEST
                                ;*TEST THAT DEVICE CAN INTERRUPT TO VECTOR B
                                ;:*************************************************************
```

```
                                                ;  TEST 55
                                                ;-------------
 022026  012737  000055  001226  TST55:  MOV     #55,TSTNO
 022034  012737  022120  001216           MOV     #TST56,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 022042  104412                           MSTCLR                 ;MASTER CLEAR DMC11
 022044  004537  034642                   JSR     R5,SETVEC      ;SET UP VECTORS
 022050  022110                           2$                     ;XX0
 022052  022112                           3$                     ;XX4
 022054     340     340                   .BYTE   340,340        ;LEVEL 7
 022056  012737  000340  177776  1$:      MOV     #340,PS        ;PS = LEVEL 7
 022064  012761  000300  000004           MOV     #300,4(R1)     ;WRITE PORT4
 022072  104414                           ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022074  121111                           121111                 ;SET BR RQ IN IBUS* REG 11
 022076  005037  177776                   CLR     PS             ;ALLOW INTERRUPT
 022102  000240                           NOP
 022104  104010                           EMT     10             ;NO INTERRUPT
 022106  000403                           BR      4$
 022110  104011                  2$:      EMT     11             ;WRONG VECTOR
 022112  012706  001200          3$:      MOV     #STACK,SP      ;RESET STACK
 022116  104400                  4$:      SCOPE                  ;SCOPE THIS TEST
    49

                                                ;**************************** TEST 56 ****************************
                                                ;*PRIORITY INTERRUPT TESTS
                                                ;*SET PS TO ALL BR LEVELS EQUAL OR GREATER THAN
                                                ;*THE DMC11 LEVEL,VERIFY THAT DMC11 DOES NOT INTERRUPT
                                                ;:*****************************************************************

                                                ;  TEST 56
                                                ;-------------
 022120  012737  000056  001226  TST56:  MOV     #56,TSTNO
 022126  012737  022240  001216           MOV     #TST57,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 022134  104412                           MSTCLR                 ;MASTER CLEAR DMC11
 022136  012702  000340                   MOV     #340,R2        ;PUT LEVEL 7 IN R2
 022142  010237  177776                   MOV     R2,PS          ;SET PRIORITY TO 7
 022146  013700  001366                   MOV     STAT1,R0       ;GET BR LEVEL OF DMC11
 022152  006200                           ASR     R0             ;SHIFT R0 4 TIMES
 022154  006200                           ASR     R0             ;TO GET PROPER LEVEL
 022156  006200                           ASR     R0
 022160  006200                           ASR     R0
 022162  042700  177437                   BIC     #177437,R0     ;CLEAR UNWANTED BITS
 022166  004537  034642                   JSR     R5,SETVEC      ;SET UP VECTORS
 022172  022234                           2$                     ;A VECTOR
 022174  022234                           2$                     ;B VECTOR
 022176     340     340                   .BYTE   340,340        ;PRIORITY 7
 022200  012761  000200  000004  4$:      MOV     #200,4(R1)     ;LOAD PORT4
 022206  104414                           ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022210  121111                           121111                 ;SET BR REQUEST
 022212  010237  177776          5$:      MOV     R2,PS          ;PUT LEVEL IN R2 IN PS
 022216  000240                           NOP
 022220  020002                           CMP     R0,R2          ;IS PRESENT PS LEVEL = TO DMC LEVEL
 022222  001403                           BEQ     1$             ;BR IF YES
 022224  162702  000040                   SUB     #40,R2         ;NO GET NEXT LOWER LEVEL IN R2
 022230  000770                           BR      5$             ;AND CONTINUE WITH TEST
 022232  104400                  1$:      SCOPE                  ;SCOPE THIS TEST
```

```
022234  104020                  2$:     EMT     20              ;ERROR UNEXPECTED INTERRUPT
022236  000002                          RTI
50

                                ;*************************** TEST 57 ***************************
                                ;*PRIORITY INTERRUPT TESTS
                                ;*SET PS TO ALL BR LEVELS LESS THAN THE DMC11 LEVEL
                                ;*VERIFY THAT THE DMC11 WILL INTERRUPT
                                ;:***********************************************************

                                ;  TEST 57
                                ;------------ -
022240  012737  000057  001226  TST57:  MOV     #57,TSTNO
022246  012737  022404  001216          MOV     #TST60,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
022254  104412                  MSTCLR                  ;MASTER CLEAR DMC11
022256  012702  000340          MOV     #340,R2         ;PUT LEVEL 7 IN R2
022262  010237  177776          MOV     R2,PS           ;SET PRIORITY TO 7
022266  013700  001366          MOV     STAT1,R0        ;GET BR LEVEL OF DMC11
022272  006200                  ASR     R0              ;SHIFT R0 4 TIMES
022274  006200                  ASR     R0              ;TO GET PROPER LEVEL
022276  006200                  ASR     R0
022300  006200                  ASR     R0
022302  042700  177437          BIC     #177437,R0      ;CLEAR UNWANTED BITS
022306  010002                  MOV     R0,R2           ;PUT DMC LEVEL IN R2
022310  162702  000040          SUB     #40,R2          ;GET NEXT LOWER LEVEL IN R2
022314  004537  034642          JSR     R5,SETVEC       ;SET UP VECTORS
022320  022366                  2$                      ;A VECTOR
022322  022374                  3$                      ;B VECTOR
022324     340     340          .BYTE   340,340         ;PRIORITY 7
022326  012761  000200  000004  4$:     MOV     #200,4(R1)      ;LOAD PORT4
022334  104414                  ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
022336  121111                  121111                  ;SET BR REQUEST
022340  010237  177776          5$:     MOV     R2,PS           ;PUT LEVEL IN R2 IN PS
022344  000240                  NOP
022346  104010                  EMT     10              ;ERROR, NO INTERRUPT
022350  022702  000140          6$:     CMP     #140,R2         ;IS IT DOWN TO LEVEL 3 YET?
022354  001403                  BEQ     1$              ;YES,DMC DID NOT INTERUPT, ERROR
022356  162702  000040          SUB     #40,R2          ;PUT NEXT LOWER LEVEL IN R2
022362  000761                  BR      4$              ;CONTINUE TEST
022364  104400                  1$:     SCOPE           ;SCOPE THIS TEST
022366  012716  022350          2$:     MOV     #6$,(SP)        ;SET UP FOR RTI
022372  000002                  RTI
022374  104011                  3$:     EMT     11              ;ERROR, WRONG VECTOR
022376  012716  022350          MOV     #6$,(SP)        ;SET UP FOR RTI
022402  000002                  RTI
54

                                ;*************************** TEST 60 ***************************
                                ;*NPR TEST
                                ;*TEST OF DATO, 1 WORD FROM UPROC TO 11 MEMORY
                                ;:***********************************************************

                                ;  TEST 60
                                ;---------- --
022404  012737  000060  001226  TST60:  MOV     #60,TSTNO
022412  012737  022510  001216          MOV     #TST61,NEXT
```

```
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
 022420  000005                       RESET              ;BUS RESET
 022422  005011                       CLR     (R1)       ;CLEAR RUN
 022424  005061  000004               CLR     4(R1)      ;CLR PORT4
 022430  004537  034664               JSR     R5,NPRSET  ;SET UP IBUS REG 0 7
 022434  000000                       0                  ;IN DATA
 022436  177777                        1                 ;OUT DATA
 022440  022506                       3$                 ;IN BA
 022442  022504                       2$                 ;OUT BA
 022444  005037  022504               CLR     2$         ;CLEAR 2$
 022450  012761  000021  000004       MOV     #21,4(R1)  ;WRITE PORT4
 022456  104414                       ROMCLK             ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022460  121110                       121110             ;SET NPR BITS IN IBUS* REG 11
 022462  000240                       NOP
 022464  012705  177777               MOV     #-1,R5     ;PUT "EXPECTED' IN R5
 022470  013704  022504               MOV     2$,R4      ;PUT "FOUND" IN R4
 022474  020504                       CMP     R5,R4      ;DATA CORRECT?
 022476  001401                       BEQ     4$         ;BR IF YES
 022500  104012                       EMT     12         ;ERROR NPR FAILED
 022502  104400             4$:       SCOPE              ;SCOPE THIS TEST
 022504  000000             2$:       0                  ;OUT BA
 022506  000000             3$:       0                  ;IN BA
  55

                                    ;****************************** TEST 61 ******************************
                                    ;*NPR TEST
                                    ;*TEST OF DATI, 1 WORD FROM 11 MEMORY TO UPROC
                                    ;:*************************************************************************

                                    ;  TEST 61
                                    ;--------------
 022510  012737  000061  001226  TST61:  MOV     #61,TSTNO
 022516  012737  022624  001216          MOV     #TST62,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
 022524  104412                       MSTCLR             ;MASTER CLEAR DMC11
 022526  005061  000004               CLR     4(R1)      ;CLR PORT4
 022532  004537  034664               JSR     R5,NPRSET  ;SET UP IBUS REG 0 7
 022536  000000                       0                  ;IN DATA
 022540  177777                       -1                 ;OUT DATA
 022542  022622                       3$                 ;IN BA
 022544  022620                       2$                 ;OUT BA
 022546  012737  177777  022622       MOV     #-1,3$     ;PUT DATA IN 3$
 022554  012761  000001  000004       MOV     #1,4(R1)   ;WRITE PORT4
 022562  104414                       ROMCLK             ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022564  121110                       121110             ;SET NPR BITS IN IBUS* REG 11
 022566  000240                       NOP
 022570  012705  177777               MOV     #-1,R5     ;PUT "EXPECTED" IN R5
 022574  104414                       ROMCLK             ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022576  021004                       021004             ;MOVE IN DATA LOW BYTE TO PORT4
 022600  104414                       ROMCLK             ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 022602  021025                       021025             ;MOVE IN DATA HIGH BYTE TO PORT5
 022604  016104  000004               MOV     4(R1),R4   ;PUT "FOUND" IN R4
 022610  020504                       CMP     R5,R4      ;DATA CORRECT?
 022612  001401                       BEQ     4$         ;BR IF YES
 022614  104012                       EMT     12         ;ERROR NPR FAILED
 022616  104400             4$:       SCOPE              ;SCOPE THIS TEST
 022620  000000             2$:       0                  ;OUT BA
```

```
                022622  000000                  3$:     0                       ;IN BA
    56

                                                ;************************** TEST 62 **************************
                                                ;*NPR TEST
                                                ;*TEST OF DATOB, 1 BYTE FROM UPROC TO 11 MEMORY
                                                ;:**********************************************************************

                                                ;  TEST 62
                                                ;- ---------- -
                022624  012737  000062  001226  TST62:  MOV     #62,TSTNO
                022632  012737  022726  001216          MOV     #TST63,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
                022640  104412                          MSTCLR                  ;MASTER CLEAR DMC11
                022642  005061  000004                  CLR     4(R1)           ;CLR PORT4
                022646  004537  034664                  JSR     R5,NPRSET       ;SET UP IBUS REG 0 7
                022652  000000                          0                       ;IN DATA
                022654  177777                          -1                      ;OUT DATA
                022656  022724                          3$                      ;IN BA
                022660  022723                          2$+1            ;OUT BA
                022662  005037  022722                  CLR     2$              ;CLEAR 2$
                022666  012761  000221  000004          MOV     #221,4(R1)      ;WRITE PORT4
                022674  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                022676  121110                          121110                  ;SET NPR BITS IN IBUS* REG 11
                022700  000240                          NOP
                022702  012705  177400                  MOV     #177400,R5              ;PUT "EXPECTED" IN R5
                022706  013704  022722                  MOV     2$,R4           ;PUT "FOUND" IN R4
                022712  020504                          CMP     R5,R4           ;DATA CORRECT?
                022714  001401                          BEQ     4$              ;BR IF YES
                022716  104012                          EMT     12              ;ERROR NPR FAILED
                022720  104400                  4$:     SCOPE                   ;SCOPE THIS TEST
                022722  000000                  2$:     0                       ;OUT BA
                022724  000000                  3$:     0                       ;IN BA
    57

                                                ;************************** TEST 63 **************************
                                                ;*TEST OF EA BITS 16 AND 17
                                                ;*DO A DATO TO AN ADDRESS USING OUT BA BITS 16 AND 17
                                                ;*VERIFY CORRECT RESULTS
                                                ;:**********************************************************************

                                                ;  TEST 63
                                                ;-------------
                022726  012737  000063  001226  TST63:  MOV     #63,TSTNO
                022734  012737  023064  001216          MOV     #TST64,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
                022742  104412                          MSTCLR                  ;MASTER CLEAR DMC11
                022744  013737  001412  022772          MOV     DMP04,1$        ;USE SEL4 FOR ADDRESS
                022752  013737  001412  022770          MOV     DMP04,2$        ;USE SEL4 FOR ADDRESS
                022760  004537  034664                  JSR     R5,NPRSET       ;LOAD BA AND DATA
                022764  000000                          0                       ;IN DATA
                022766  125252                          125252                  ;OUT DATA
                022770  000000                  2$:     0                       ;IN BA
                022772  000000                  1$:     0                       ;OUT BA
                022774  012761  000014  000004          MOV     #14,4(R1)       ;LOAD SEL 4 WITH OUT BA16 AND 17
                023002  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
                023004  121111                          121111                  ;SET OUTBA 16 AND 17
```

```
        023006  012761  000021  000004          MOV     #21,4(R1)       ;LOAD SEL4
        023014  012761  121110  000006          MOV     #121110,6(R1)   ;PUT INSTRUCTION IN SEL6
        023022  012711  003000                  MOV     #BIT9!BIT10,(R1);SET CROMI AND CROMO!!
        023026  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK IT!
        023032  000240                          NOP                     ;WAIT FOR NPR
        023034  012705  121110                  MOV     #121110,R5      ;PUT "EXPECTED" IN R5
        023040  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        023042  021044                          021044                  ;MOVE OUT DATA LB TO SEL4
        023044  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        023046  021065                          021065                  ;MOVE OUT DATA HB TO SEL5
        023050  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
        023054  020504                          CMP     R5,R4           ;CORRECT RESULTS ?
        023056  001401                          BEQ     3$              ;BR IF YES
        023060  104012                          EMT     12              ;ERROR BA 16 AND 17 FAILED
        023062  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
    58

                                                ;***************************** TEST 64 *****************************
                                                ;*TEST OF EA BITS 16 AND 17
                                                ;*DO A DATI USING IN BA BITS 16 AND 17
                                                ;*VERIFY CORRECT RESULTS
                                                ;:*************************************************************************

                                                ;  TEST 64
                                                ;--------------
        023064  012737  000064  001226  TST64:  MOV     #64,TSTNO
        023072  012737  023210  001216          MOV     #TST65,NEXT
                                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
        023100  104412                          MSTCLR                  ;MASTER CLEAR DMC11
        023102  013737  001412  023130          MOV     DMP04,1$        ;USE SEL4 FOR ADDRESS
        023110  013737  001412  023126          MOV     DMP04,2$        ;USE SEL4 FOR ADDRESS
        023116  004537  034664                  JSR     R5,NPRSET       ;LOAD BA AND DATA
        023122  000000                          0                       ;IN DATA
        023124  125252                          125252                  ;OUT DATA
        023126  000000                  2$:     0                       ;IN BA
        023130  000000                  1$:     0                       ;OUT BA
        023132  012761  000015  000004          MOV     #15,4(R1)       ;LOAD SEL4
        023140  012761  121110  000006          MOV     #121110,6(R1)   ;PUT INSTRUCTION IN SEL6
        023146  012711  003000                  MOV     #BIT9!BIT10,(R1);SET CROMI AND CROMO!!
        023152  052711  000400                  BIS     #BIT8,(R1)      ;CLOCK IT!
        023156  000240                          NOP                     ;WAIT FOR NPR
        023160  012705  121110                  MOV     #121110,R5      ;PUT "EXPECTED" IN R5
        023164  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        023166  021004                          021004                  ;MOVE IN DATA LB TO SEL4
        023170  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        023172  021025                          021025                  ;MOVE IN DATA HB TO SEL5
        023174  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
        023200  020504                          CMP     R5,R4           ;CORRECT RESULTS ?
        023202  001401                          BEQ     3$              ;BR IF YES
        023204  104012                          EMT     12              ;ERROR BA 16 AND 17 FAILED
        023206  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
    59

                                                ;***************************** TEST 65 *****************************
                                                ;*NPR NON-EXISTENT MEMORY TEST
                                                ;*DO A DATO TO A NON-EXISTENT ADDRESS
                                                ;*VERIFY THAT THE NON-EXISTENT BIT SET IN IBUS REG 11
```

```
                                        ;::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

                                        ;  TEST 65
                                        ;----  ------ -
.   023210  012737  000065  001226  TST65:  MOV     #65,TSTNO
    023216  012737  023320  001216          MOV     #TST66,NEXT
                                                            ;R1 CONTAINS BASE DMC11 ADDRESS
    023224  104412                          MSTCLR                  ;MASTER CLEAR DMC11
    023226  004537  034664                  JSR     R5,NPRSET       ;LOAD IBUS REGISTERS 0-7
    023232  000000                          0                       ;IN DATA
    023234  000000                          0                       ;OUT DATA
    023236  177320                          177320                  ;IN BA
    023240  177320                          177320                  ;OUT BA
    023242  012761  000014  000004          MOV     #14,4(R1)       ;SET OUT BA BITS 16+17 IN PORT4
    023250  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023252  121111                          121111                  ;SET OUTBA 16 AND 17
    023254  012761  000021  000004          MOV     #21,4(R1)       ;SET NPR REQUEST BITS IN PORT4
    023262  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023264  121110                          121110                  ;MOV IBUS* 4 TO IBUS* 10
    023266  000240                          NOP
    023270  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023272  121225                          121225                  ;MOV IBUS*11 TO IBUS*5
    023274  012705  000001                  MOV     #1,R5           ;PUT "EXPECTED" IN R5
    023300  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
    023304  042704  177776                  BIC     #177776,R4      ;CLEAR UNWANTED BITS
    023310  020504                          CMP     R5,R4           ;DATA CORRECT?
    023312  001401                          BEQ     1$              ;BR IF YES
    023314  104012                          EMT     12              ;ERROR NON-EXISTENT MEM BIT FAILED TO SET
    023316  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
60

                                        ;*************************** TEST 66 ****************************
                                        ;*NPR NON-EXISTENT MEMORY TEST
                                        ;*DO A DATI FROM A NON-EXISTENT ADDRESS
                                        ;*VERIFY THAT THE NON-EXISTENT BIT SET IN IBUS REG 11
                                        ;::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

                                        ;  TEST 66
                                        ;--------------
    023320  012737  000066  001226  TST66:  MOV     #66,TSTNO
    023326  012737  023426  001216          MOV     #TST67,NEXT
                                                            ;R1 CONTAINS BASE DMC11 ADDRESS
    023334  104412                          MSTCLR                  ;MASTER CLEAR DMC11
    023336  004537  034664                  JSR     R5,NPRSET       ;LOAD IBUS REGISTERS 0-7
    023342  000000                          0                       ;IN DATA
    023344  000000                          0                       ;OUT DATA
    023346  177320                          177320                  ;IN BA
    023350  177320                          177320                  ;OUT BA
    023352  005061  000004                  CLR     4(R1)
    023356  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023360  121111                          121111                  ;CLEAR NON-EXISTENT BIT
    023362  012761  000015  000004          MOV     #15,4(R1)       ;SET NPR REQUEST BITS IN PORT4
    023370  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023372  121110                          121110                  ;MOV IBUS* 4 TO IBUS* 10
    023374  000240                          NOP
    023376  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    023400  121225                          121225                  ;MOV IBUS*11 TO IBUS*5
```

```
023402  012705  000001                  MOV     #1,R5           ;PUT "EXPECTED" IN R5
023406  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND' IN R4
023412  042704  177776                  BIC     #177776,R4      ;CLEAR UNWANTED BITS
023416  020504                          CMP     R5,R4           ;DATA CORRECT?
023420  001401                          BEQ     1$              ;BR IF YES
023422  104012                          EMT     12              ;ERROR NON-EXISTENT MEM BIT FAILED TO SET
023424  104400                  1$:     SCOPE                   ;SCOPE THIS TEST
    61

                                        ;***************************** TEST 67 *****************************
                                        ;*NPR TEST
                                        ;*USING DATO, NPR A BINARY COUNT (0-377 )
                                        ;*FROM MICRO-PROCESSOR TO ALL AVAILABLE MEMORY
                                        ;:***********************************************************************

                                        ;  TEST 67
                                        ;-------------
023426  012737  000067  001226  TST67:  MOV     #67,TSTNO
023434  012737  000003  001222          MOV     #3,ICOUNT
023442  012737  023624  001216          MOV     #TST70,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
023450  104412                          MSTCLR                  ;MASTER CLEAR DMC11
023452  005037  023622                  CLR     5$              ;START FLAG AT 0
023456  005000                          CLR     R0              ;DATA
023460  012702  036566                  MOV     #CORMAX,R2      ;ADDRESS
023464                          1$:
023464  010037  023514                  MOV     R0,2$           ;LOAD DATA
023470  010237  023520                  MOV     R2,4$           ;LOAD BA
023474  032702  000001                  BIT     #BIT0,R2        ;IS BA ODD?
023500  001402                          BEQ     .+6             ;BR IF NO
023502  000337  023514                  SWAB    2$              ;IF ODD PUT DATA IN HI-BYTE
023506  004537  034664                  JSR     R5,NPRSET       ;LOAD NPR REGISTERS
023512  000000                          0                       ;IN DATA
023514  000000                  2$:     0                       ;OUT DATA
023516  000000                          0                       ;IN BA
023520  000000                  4$:     0                       ;OUT BA
023522  105012                          CLRB    (R2)            ;CLEAR MEMORY LOCATION
023524  012761  000221  000004          MOV     #221,4(R1)      ;LOAD PORT4
023532  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023534  121110                          121110                  ;DO THE NPR
023536  000240                          NOP
023540  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
023542  111204                          MOVB    (R2),R4         ;PUT "FOUND" IN R4
023544  120504                          CMPB    R5,R4           ;IS DATA CORRECT?
023546  001401                          BEQ     3$              ;BR IF YES
023550  104021                          EMT     21              ;ERROR, DATA INCORRECT
023552  104401                  3$:     SCOP1
023554  005200                          INC     R0              ;NEXT CHARACTER
023556  042700  177400                  BIC     #177400,R0      ;USE ONLY LOW BYTE
023562  005737  023622                  TST     5$              ;HAS MAX MEMORY BEEN REACHED YET?
023566  001402                          BEQ     6$              ;BR IF NO
023570  005700                          TST     R0              ;DONE PATTERN?
023572  001412                          BEQ     7$              ;BR IF YES
023574  005202                  6$:     INC     R2              ;INC BA
023576  023702  001304                  CMP     MEMLIM,R2       ;REACHED MEMORY LIMIT YET?
023602  001330                          BNE     1$              ;BR IF NOT
023604  012702  036566                  MOV     #CORMAX,R2      ;RESTART BA AT FIRST ADDRESS
```

```
023610  012737  177777  023622          MOV     #-1,5$          ;SET FLAG TO END TEST AT END OF DATA PATTERN
023616  000722                          BR 1$                   ;CONTINUE
023620  104400                  7$:     SCOPE                   ;SCOPE THIS TEST
023622  000000                  5$:     0                       ;THIS LOCATION IS A FLAG,  IT STARTS AT 0,
                                                                ;AND IS SET TO -1 WHEN LAST MEMORY ADDRESS
                                                                ;IS USED, TEST IS THEN ENDED WHEN PATTERN IS FINISHED
65

                                        ;***************************** TEST 70 *****************************
                                        ;*MAIN MEMORY TEST
                                        ;*FLOAT A 1 THROUGH ALL MAIN MEMORY LOCATIONS
                                        ;:***********************************************************************

                                        ;  TEST 70
                                        ;--------------
023624  012737  000070  001226  TST70:  MOV     #70,TSTNO
023632  012737  023752  001216          MOV     #TST71,NEXT
023640  012737  023656  001220          MOV     #65$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
023646  104412                          MSTCLR                  ;MASTER CLEAR DMC11
023650  005002                          CLR     R2              ;START WITH ADDRESS 0
023652  012700  000001          1$:     MOV     #1,R0           ;START WITH BIT 0
023656  042737  000377  023672  65$:    BIC     #377,66$                ;CLEAR ADDRESS FIELD OF INSTRUCTION
023664  050237  023672                  BIS     R2,66$          ;ADD ADDRESS TO INSTRUCTION
023670  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023672  010000                  66$:    010000                  ;LOAD MAR WITH ADDRESS IN R2
023674  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN IN PORT4
023700  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023702  122500                          122500                  ;MOVE PORT4 TO MEMORY
023704  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
023706  040620                          040620                  ;MOVE MEMORY TO BR
023710  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION,  .OMCLK PC=5304
023712  061225                          61225                   ;MOVE BR TO PORT5
023714  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
023716  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
023722  120504                          CMPB    R5,R4           ;DATA CORRECT?
023724  001401                          BEQ     67$             ;BR IF YES
023726  104013                          EMT     13              ;DATA ERROR
023730  104401                  67$:    SCOP1                   ;SW09=1?
023732  000241                          CLC                     ;CLEAR CARRY
023734  106100                          ROLB    R0              ;SHIFT BIT IN R0
023736  001347                          BNE     65$             ;DONE IF R0=0
023740  005202                          INC     R2              ;NEXT ADDRESS
023742  022702  000400                  CMP     #400,R2         ;LAST ADDRESS
023746  001341                          BNE     1$              ;BR IF NO
023750  104400                          SCOPE                   ;SCOPE THIS TEST
66

                                        ;***************************** TEST 71 *****************************
                                        ;*MAIN MEMORY TEST
                                        ;*FLOAT A 0 THROUGH ALL MAIN MEMORY LOCATIONS
                                        ;:***********************************************************************

                                        ;  TEST 71
                                        ;--------------
023752  012737  000071  001226  TST71:  MOV     #71,TSTNO
023760  012737  024104  001216          MOV     #TST72,NEXT
```

```
        023766  012737  024006  001220          MOV     #65$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
        023774  104412                          MSTCLR                  ;MASTER CLEAR DMC11
        023776  005002                          CLR     R2              ;START WITH ADDRESS 0
        024000  012700  000001          1$:     MOV     #1,R0           ;START WITH BIT 0
        024004  005100                  64$:    COM     R0              ;CHANGE TO FLOATING 0
        024006  042737  000377  024022  65$:    BIC     #377,66$                ;CLEAR ADDRESS FIELD OF INSTRUCTION
        024014  050237  024022                  BIS     R2,66$          ;ADD ADDRESS TO INSTRUCTION
        024020  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024022  010000                  66$:    010000                  ;LOAD MAR WITH ADDRESS IN R2
        024024  010061  000004                  MOV     R0,4(R1)        ;WRITE PATTERN IN PORT4
        024030  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024032  122500                          122500                  ;MOVE PORT4 TO MEMORY
        024034  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024036  040620                          040620                  ;MOVE MEMORY TO BR
        024040  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024042  061225                          61225                   ;MOVE BR TO PORT5
        024044  010005                          MOV     R0,R5           ;PUT "EXPECTED" IN R5
        024046  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
        024052  120504                          CMPB    R5,R4           ;DATA CORRECT?
        024054  001401                          BEQ     67$             ;BR IF YES
        024056  104013                          EMT     13              ;DATA ERROR
        024060  104401                  67$:    SCOP1                   ;SW09=1?
        024062  005100                          COM     R0              ;CHANGE TO FLOATING 1
        024064  000241                          CLC                     ;CLEAR CARRY
        024066  106100                          ROLB    R0              ;SHIFT BIT IN R0
        024070  001345                          BNE     64$             ;DONE IF R0=0
        024072  005202                          INC     R2              ;NEXT ADDRESS
        024074  022702  000400                  CMP     #400,R2         ;LAST ADDRESS
        024100  001337                          BNE     1$              ;BR IF NO
        024102  104400                          SCOPE                   ;SCOPE THIS TEST
    67

                                        ;****************************** TEST 72 ******************************
                                        ;*MAIN MEMORY DUAL ADDRESSING TEST
                                        ;*LOAD EACH MEMORY LOCATION WITH ITS OWN ADDRESS
                                        ;*READ BACK EACH LOCATION TO VERIFY CORRECT ADDRESSING
                                        ;;*****************************************************************

                                        ;  TEST 72
                                        ;--------------
        024104  012737  000072  001226  TST72:  MOV     #72,TSTNO
        024112  012737  024304  001216          MOV     #TST73,NEXT
        024120  012737  024132  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
        024126  104412                          MSTCLR                  ;MASTER CLEAR DMC11
        024130  005002                          CLR     R2              ;START AT ADDRESS 0
        024132  042737  000377  024146  1$:     BIC     #377,2$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
        024140  050237  024146                  BIS     R2,2$           ;ADD ADDRESS TO INSTRUCTION
        024144  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024146  010000                  2$:     010000                  ;LOAD MAR
        024150  010261  000004                  MOV     R2,4(R1)
        024154  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024156  122500                          122500                  ;MOVE PORT4 TO MEMORY
        024160  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
        024162  040620                          040620                  ;MOVE MEMORY TO THE BR
        024164  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
024166  061225                          61225                   ;MOV BR TO PORT5
024170  010205                          MOV     R2,R5           ;PUT "EXPECTED" IN R5
024172  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
024176  120504                          CMPB    R5,R4           ;DATA CORRECT?
024200  001401                          BEQ     3$              ;BR IF YES
024202  104013                          EMT     13              ;DATA ERROR
024204  104401                  3$:     SCOP1                   ;SW09=1?
024206  005202                          INC     R2              ;NEXT ADDRESS
024210  022702  000400                  CMP     #400,R2         ;LAST ADDRESS
024214  001346                          BNE     1$              ;BR IF NO
024216  012737  024226  001220          MOV     #4$,LOCK        ;NEW SCOPE 1
024224  005002                          CLR     R2              ;RESTART AT ADDRESS 0
024226  042737  000377  024242  4$:     BIC     #377,5$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
024234  050237  024242                  BIS     R2,5$           ;ADD ADDRESS TO INSTRUCTION
024240  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024242  010000                  5$:     010000                  ;LOAD THE MAR
024244  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024246  040620                          040620                  ;MOVE MEMORY TO THE BR
024250  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024252  061225                          61225                   ;MOV BR TO PORT5
024254  010205                          MOV     R2,R5           ;PUT "EXPECTED" IN R5
024256  116104  000005                  MOVB    5(R1),R4        ;PUT "FOUND" IN R4
024262  120504                          CMPB    R5,R4           ;DATA CORRECT?
024264  001401                          BEQ     6$              ;BR IF YES
024266  104013                          EMT     13              ;ADDRESSING ERROR
024270  104401                  6$:     SCOP1                   ;SW09=1?
024272  005202                          INC     R2              ;NEXT ADDRESS
024274  022702  000400                  CMP     #400,R2         ;IS IT THE LAST
024300  001352                          BNE     4$              ;BR IF NO
024302  104400                          SCOPE                   ;SCOPE THIS TEST
   68

                                        ;***************************** TEST 73 *****************************
                                        ;*MAR TEST
                                        ;*PERFORM DUAL ADDRESSING TEST
                                        ;*USING MAR AUTO-INC FEATURE
                                        ;:***************************************************************

                                        ;  TEST 73
                                        ;--------------
024304  012737  000073  001226  TST73:  MOV     #73,TSTNO
024312  012737  024440  001216          MOV     #TST74,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
024320  104412                          MSTCLR                  ;MASTER CLEAR DMC11
024322  005002                          CLR     R2              ;START WITH A ZERO
024324  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024326  010000                          010000                  ;LOAD MAR
024330  032737  100000  001366          BIT     #BIT15,STAT1    ;DMC?
024336  001402                          BEQ     .+6             ;BR IF YES
024340  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024342  004000                          4000                    ;MAR HI _ 0 (KMC ONLY)
024344  010261  000004          1$:     MOV     R2,4(R1)        ;WRITE DATA TO PORT4
024350  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024352  136500                          136500                  ;LOAD MEM AUTO-INC MAR
024354  005202                          INC     R2              ;INCREMENT DATA
024356  022702  000400                  CMP     #400,R2         ;DONE YET?
024362  001370                          BNE     1$              ;BR IF NO
```

```
024364  005002                          CLR     R2              ;RESTART WITH A ZERO
024366  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024370  010000                          010000                  ;LOAD MAR
024372  032737  100000  001366          BIT     #BIT15,STAT1    ;DMC?
024400  001402                          BEQ     .+6             ;BR IF YES
024402  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024404  004000                          4000                    ;MAR HI _ 0 (KMC ONLY)
024406                          2$:
024406  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024410  055224                          055224                  ;MOVE MEM TO PORT4
024412  010205                          MOV     R2,R5           ;PUT "EXPECTED" IN R5
024414  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
024420  120504                          CMPB    R5,R4           ;DATA CORRECT?
024422  001401                          BEQ     3$              ;BR IF YES
024424  104014                          EMT     14              ;MAR ERROR
024426  005202                  3$:     INC     R2              ;NEXT ADDRESS
024430  022702  000400                  CMP     #400,R2         ;DONE YET?
024434  001364                          BNE     2$              ;BR IF NO
024436  104400                          SCOPE                   ;SCOPE THIS TEST
   72

                                        ;***************************** TEST 74 ****************************
                                        ;*ALU C BIT TEST
                                        ;*TEST THAT AN ADD OF 377 AND 377 WILL SET THE C BIT
                                        ;:**************************************************************

                                        ;  TEST 74
                                        ;--------------
024440  012737  000074  001226  TST74:  MOV     #74,TSTNO
024446  012737  024552  001216          MOV     #TST75,NEXT
024454  012737  024500  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
024462  104412                          MSTCLR                  ;MASTER CLEAR DMC11
024464  004737  034726                  JSR     PC,MEMLD        ;LOAD MAINMEM DATA
024470  024542                          TDATA                   ;POINTER TO DATA
024472  004737  034762                  JSR     PC,SPLD         ;LOAD SP DATA
024476  024542                          TDATA                   ;POINTER TO DATA
024500                          1$:
024500  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024502  010000                          010000                  ;MAR_0
024504  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024506  054400                          054400!<0*20>           ;ADD 377 AND 377, TO SET C BIT
024510  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024512  040421                          040401!<1*20>           ;ADD 0 AND 0 AND THE C BIT
024514  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
024516  061224                          61224                   ;PUT RESULTS IN PORT4
024520  012705  000001                  MOV     #1,R5           ;PUT "EXPECTED" IN R5
024524  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
024530  120504                          CMPB    R5,R4           ;DATA CORRECT?
024532  001401                          BEQ     2$              ;BR IF YES
024534  104015                          EMT     15              ;ERROR C BIT NOT SET
024536  104401                  2$:     SCOP1                   ;SW09=1?
024540  104400                          SCOPE                   ;SCOPE THIS TEST
024542     377     000     000  TDATA:  .BYTE   -1,0,0,0,0,0,0,0
024545     000     000     000
024550     000     000
                                .EVEN
```

```
     73

                                        ;*************************** TEST 75 ****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION SEL B WITH C BIT CLEARED
                                        ;*ALU FUNCTION (B)    CODE=11
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:************************************************************************

                                        ;  TEST 75
                                        ;--------------
 024552  012737  000075  001226  TST75:  MOV     #75,TSTNO
 024560  012737  024726  001216          MOV     #TST76,NEXT
 024566  012737  024620  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 024574  104412                         MSTCLR                 ;MASTER CLEAR DMC11
 024576  005000                         CLR     R0             ;MEM + SP ADDRESS
 024600  012702  024716                 MOV     #5$,R2         ;POINTER TO CORRECT DATA
 024604  004737  034726                 JSR     PC,MEMLD       ;LOAD 8 WORDS OF MAIN MEMORY
 024610  035052                         MEMDAT                 ;POINTER TO DATA
 024612  004737  034762                 JSR     PC,SPLD        ;LOAD 8 WORDS OF SP
 024616  035062                         SPDAT                  ;POINTER TO DATA
 024620  004737  035026          1$:    JSR     PC,CLRC        ;CLEAR C BIT!
 024624  042737  000017  024640         BIC     #17,2$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
 024632  050037  024640                 BIS     R0,2$          ;ADD ADDRESS TO INSTRUCTION
 024636  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 024640  010000                  2$:    010000                 ;LOAD MAR
 024642  042737  000017  024656         BIC     #17,3$         ;CLEAR ADDRESS OF INSTRUCTION
 024650  050037  024656                 BIS     R0,3$          ;ADD ADDRESS TO INSTRUCTION
 024654  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 024656  040620                  3$:    040400!<11*20>         ;BR _ SEL B
 024660  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 024662  061224                         61224                  ;MOVE BR TO PORT4
 024664  111205                         MOVB    (R2),R5        ;PUT "EXPECTED" IN R5
 024666  116104  000004                 MOVB    4(R1),R4       ;PUT "FOUND" IN R4
 024672  120504                         CMPB    R5,R4          ;DATA CORRECT?
 024674  001401                         BEQ     4$             ;BR IF YES
 024676  104015                         EMT     15             ;ALU ERROR
 024700  104401                  4$:    SCOP1                  ;SW09=1?
 024702  005202                         INC     R2             ;NEXT DATA
 024704  005200                         INC     R0             ;NEXT ADDRESS
 024706  022700  000010                 CMP     #10,R0         ;DONE YET?
 024712  001342                         BNE     1$             ;BR IF NO
 024714  104400                         SCOPE                  ;SCOPE THIS TEST
 024716     000     377     000  5$:    .BYTE   0,-1,0,-1,125,252,125,252
 024721     377     125     252
 024724     125     252
                                 .EVEN
     74

                                        ;*************************** TEST 76 ****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION SEL A WITH C BIT CLEARED
                                        ;*ALU FUNCTION (A)    CODE=10
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
```

```
                                        ;:**************************************************************************

                                        ;  TEST 76
                                        ;--------------
024726  012737  000076  001226  TST76:  MOV     #76,TSTNO
024734  012737  025102  001216          MOV     #TST77,NEXT
024742  012737  024774  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
024750  104412                          MSTCLR                  ;MASTER CLEAR DMC11
024752  005000                          CLR     R0              ;MEM + SP ADDRESS
024754  012702  025072                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
024760  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
024764  035052                          MEMDAT                  ;POINTER TO DATA
024766  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
024772  035062                          SPDAT                   ;POINTER TO DATA
024774  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
025000  042737  000017  025014          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
025006  050037  025014                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
025012  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025014  010000                  2$:     010000                  ;LOAD MAR
025016  042737  000017  025032          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
025024  050037  025032                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
025030  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025032  040600                  3$:     040400!<10*20>          ;BR _ SEL A
025034  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025036  061224                          61224                   ;MOVE BR TO PORT4
025040  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
025042  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
025046  120504                          CMPB    R5,R4           ;DATA CORRECT?
025050  001401                          BEQ     4$              ;BR IF YES
025052  104015                          EMT     15              ;ALU ERROR
025054  104401                  4$:     SCOP1                   ;SW09=1?
025056  005202                          INC     R2              ;NEXT DATA
025060  005200                          INC     R0              ;NEXT ADDRESS
025062  022700  000010                  CMP     #10,R0          ;DONE YET?
025066  001342                          BNE     1$              ;BR IF NO
025070  104400                          SCOPE                   ;SCOPE THIS TEST
025072     000     000     377  5$:     .BYTE   0,0,-1,-1,125,125,252,252
025075     377     125     125
025100     252     252
                                .EVEN
75

                                        ;***************************** TEST 77 ****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION A OR NOTB WITH C BIT CLEARED
                                        ;*ALU FUNCTION (A OR NOTB)    CODE=12
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:**************************************************************************

                                        ;  TEST 77
                                        ;--------------
025102  012737  000077  001226  TST77:  MOV     #77,TSTNO
025110  012737  025256  001216          MOV     #TST100,NEXT
025116  012737  025150  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
```

```
025124  104412                          MSTCLR                  ;MASTER CLEAR DMC11
025126  005000                          CLR     R0              ;MEM + SP ADDRESS
025130  012702  025246                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
025134  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
025140  035052                          MEMDAT                  ;POINTER TO DATA
025142  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
025146  035062                          SPDAT                   ;POINTER TO DATA
025150  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
025154  042737  000017  025170          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
025162  050037  025170                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
025166  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025170  010000                  2$:     010000                  ;LOAD MAR
025172  042737  000017  025206          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
025200  050037  025206                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
025204  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025206  040640                  3$:     040400!<12*20>          ;BR _ A OR NOTB
025210  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025212  061224                          61224                   ;MOVE BR TO PORT4
025214  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
025216  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
025222  120504                          CMPB    R5,R4           ;DATA CORRECT?
025224  001401                          BEQ     4$              ;BR IF YES
025226  104015                          EMT     15              ;ALU ERROR
025230  104401                  4$:     SCOP1                   ;SW09=1?
025232  005202                          INC     R2              ;NEXT DATA
025234  005200                          INC     R0              ;NEXT ADDRESS
025236  022700  000010                  CMP     #10,R0          ;DONE YET?
025242  001342                          BNE     1$              ;BR IF NO
025244  104400                          SCOPE                   ;SCOPE THIS TEST
025246    377     000     377   5$:     .BYTE   -1,0,-1,-1,-1,125,252,-1
025251    377     377     125
025254    252     377
                                .EVEN
76

                                ;*************************** TEST 100 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION A AND B WITH C BIT CLEARED
                                ;*ALU FUNCTION: (A AND B)    CODE=13
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*****************************************************************

                                ;  TEST 100
                                ;--------------
025256  012737  000100  001226  TST100: MOV     #100,TSTNO
025264  012737  025432  001216          MOV     #TST101,NEXT
025272  012737  025324  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
025300  104412                          MSTCLR                  ;MASTER CLEAR DMC11
025302  005000                          CLR     R0              ;MEM + SP ADDRESS
025304  012702  025422                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
025310  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
025314  035052                          MEMDAT                  ;POINTER TO DATA
025316  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
025322  035062                          SPDAT                   ;POINTER TO DATA
025324  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
```

```
025330  042737  000017  025344          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
025336  050037  025344                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
025342  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025344  010000                  2$:     010000                  ;LOAD MAR
025346  042737  000017  025362          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
025354  050037  025362                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
025360  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025362  040660                  3$:     040400!<13*20>          ;BR   A AND B
025364  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025366  061224                          61224                   ;MOVE BR TO PORT4
025370  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
025372  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
025376  120504                          CMPB    R5,R4           ;DATA CORRECT?
025400  001401                          BEQ     4$              ;BR IF YES
025402  104015                          EMT     15              ;ALU ERROR
025404  104401                  4$:     SCOP1                   ;SW09=1?
025406  005202                          INC     R2              ;NEXT DATA
025410  005200                          INC     R0              ;NEXT ADDRESS
025412  022700  000010                  CMP     #10,R0          ;DONE YET?
025416  001342                          BNE     1$              ;BR IF NO
025420  104400                          SCOPE                   ;SCOPE THIS TEST
025422     000     000     000  5$:     .BYTE   0,0,0,-1,125,0,0,252
025425     377     125     000
025430     000     252
                                .EVEN

                        ;*************************** TEST 101 ****************************
                        ;*ALU TEST
                        ;*TEST OF ALU FUNCTION A OR B WITH C BIT CLEARED
                        ;*ALU FUNCTION (A OR B)    CODE=14
                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                        ;:*************************************************************

                        ;  TEST 101
                        ;-------------
025432  012737  000101  001226  TST101: MOV     #101,TSTNO
025440  012737  025606  001216          MOV     #TST102,NEXT
025446  012737  025500  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
025454  104412                          MSTCLR                  ;MASTER CLEAR DMC11
025456  005000                          CLR     R0              ;MEM + SP ADDRESS
025460  012702  025576                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
025464  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
025470  035052                          MEMDAT                  ;POINTER TO DATA
025472  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
025476  035062                          SPDAT                   ;POINTER TO DATA
025500  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
025504  042737  000017  025520          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
025512  050037  025520                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
025516  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025520  010000                  2$:     010000                  ;LOAD MAR
025522  042737  000017  025536          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
025530  050037  025536                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
025534  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025536  040700                  3$:     040400!<14*20>          ;BR   A OR B
```

```
025540  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025542  061224                          61224                   ;MOVE BR TO PORT4
025544  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
025546  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND' IN R4
025552  120504                          CMPB    R5,R4           ;DATA CORRECT?
025554  001401                          BEQ     4$              ;BR IF YES
025556  104015                          EMT     15              ;ALU ERROR
025560  104401                  4$:     SCOP1                   ;SW09=1?
025562  005202                          INC     R2              ;NEXT DATA
025564  005200                          INC     R0              ;NEXT ADDRESS
025566  022700  000010                  CMP     #10,R0          ;DONE YET?
025572  001342                          BNE     1$              ;BR IF NO
025574  104400                          SCOPE                   ;SCOPE THIS TEST
025576     000     377     377  5$:     .BYTE   0, 1,-1,-1,125,-1, 1,252
025601     377     125     377
025604     377     252
                                .EVEN
78

                                ;*************************** TEST 102 ***************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION A XOR B WITH C BIT CLEARED
                                ;*ALU FUNCTION (A XOR B)    CODE=15
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;;************************************************************************

                                ;  TEST 102
                                ;-------------
025606  012737  000102  001226  TST102: MOV     #102,TSTNO
025614  012737  025762  001216          MOV     #TST103,NEXT
025622  012737  025654  001220          MOV     #1$,LOCK

                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
025630  104412                          MSTCLR                  ;MASTER CLEAR DMC11
025632  005000                          CLR     R0              ;MEM + SP ADDRESS
025634  012702  025752                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
025640  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
025644  035052                          MEMDAT                  ;POINTER TO DATA
025646  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
025652  035062                          SPDAT                   ;POINTER TO DATA
025654  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
025660  042737  000017  025674          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
025666  050037  025674                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
025672  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025674  010000                  2$:     010000                  ;LOAD MAR
025676  042737  000017  025712          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
025704  050037  025712                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
025710  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025712  040720                  3$:     040400!<15*20>          ;BR _ A XOR B
025714  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
025716  061224                          61224                   ;MOVE BR TO PORT4
025720  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
025722  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
025726  120504                          CMPB    R5,R4           ;DATA CORRECT?
025730  001401                          BEQ     4$              ;BR IF YES
025732  104015                          EMT     15              ;ALU ERROR
025734  104401                  4$:     SCOP1                   ;SW09=1?
```

```
        025736  005202                          INC     R2              ;NEXT DATA
        025740  005200                          INC     R0              ;NEXT ADDRESS
        025742  022700  000010                  CMP     #10,R0          ;DONE YET?
        025746  001342                          BNE     1$              ;BR IF NO
        025750  104400                          SCOPE                   ;SCOPE THIS TEST
        025752     000     377     377  5$:     .BYTE   0, 1,-1,0,0, 1,-1,0
        025755     000     000     377
        025760     377     000
                                    .EVEN
    79
                                            ;***************************** TEST 103 *****************************
                                            ;*ALU TEST
                                            ;*TEST OF ALU FUNCTION ADD WITH C BIT CLEARED
                                            ;*ALU FUNCTION (A PLUS B)    CODE=00
                                            ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                            ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                            ;:************************************************************************

                                            ;  TEST 103
                                            ;--------- ----
    025762  012737  000103  001226  TST103: MOV     #103,TSTNO
    025770  012737  026136  001216          MOV     #TST104,NEXT
    025776  012737  026030  001220          MOV     #1$,LOCK
                                                                    ;R1 CONTAINS BASE DMC11 ADDRESS
    026004  104412                          MSTCLR                  ;MASTER CLEAR DMC11
    026006  005000                          CLR     R0              ;MEM + SP ADDRESS
    026010  012702  026126                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
    026014  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
    026020  035052                          MEMDAT                  ;POINTER TO DATA
    026022  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
    026026  035062                          SPDAT                   ;POINTER TO DATA
    026030  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
    026034  042737  000017  026050          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
    026042  050037  026050                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
    026046  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    026050  010000                  2$:     010000                  ;LOAD MAR
    026052  042737  000017  026066          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCT
    026060  050037  026066                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTIO
    026064  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    026066  040400                  3$:     040400!<00*20>          ;BR   ADD
    026070  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    026072  061224                          61224                   ;MOVE BR TO PORT4
    026074  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
    026076  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
    026102  120504                          CMPB    R5,R4           ;DATA CORRECT?
    026104  001401                          BEQ     4$              ;BR IF YES
    026106  104015                          EMT     15              ;ALU ERROR
    026110  104401                  4$:     SCOP1                   ;SW09=1?
    026112  005202                          INC     R2              ;NEXT DATA
    026114  005200                          INC     R0              ;NEXT ADDRESS
    026116  022700  000010                  CMP     #10,R0          ;DONE YET?
    026122  001342                          BNE     1$              ;BR IF NO
    026124  104400                          SCOPF                   ;SCOPE THIS TEST
    026126     000     377     377  5$:     .BYTE   0,-1,-1,376,252,-1,-1,124
    026131     376     252     377
    026134     377     124
```

```
                                .EVEN
80

                                ;*************************** TEST 104 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION 2A W/C WITH C BIT CLEARED
                                ;*ALU FUNCTION (A PLUS A PLUS C)    CODE=6
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;;*************************************************************

                                ;  TEST 104
                                ;------- -  ---
026136  012737  000104  001226  TST104: MOV     #104,TSTNO
026144  012737  026312  001216         MOV     #TST105,NEXT
026152  012737  026204  001220         MOV     #1$,LOCK

                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
026160  104412                 MSTCLR                  ;MASTER CLEAR DMC11
026162  005000                 CLR     R0              ;MEM + SP ADDRESS
026164  012702  026302         MOV     #5$,R2          ;POINTER TO CORRECT DATA
026170  004737  034726         JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
026174  035052                 MEMDAT                  ;POINTER TO DATA
026176  004737  034762         JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
026202  035062                 SPDAT                   ;POINTER TO DATA
026204  004737  035026       1$:       JSR     PC,CLRC         ;CLEAR C BIT!
026210  042737  000017  026224         BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
026216  050037  026224                 BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
026222  104414                 ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026224  010000                 2$:     010000          ;LOAD MAR
026226  042737  000017  026242         BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
026234  050037  026242                 BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
026240  104414                 ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026242  040540                 3$:     040400!<6*20>   ;BR _ 2A W/C
026244  104414                 ROMCLK                  ;NEXT WORD IS INSTRUCTION, RUMCLK PC=5304
026246  061224                 61224                   ;MOVE BR TO PORT4
026250  111205                 MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
026252  116104  000004         MOVB    4(R1),R4        ;PUT "FOUND" IN R4
026256  120504                 CMPB    R5,R4           ;DATA CORRECT?
026260  001401                 BEQ     4$              ;BR IF YES
026262  104015                 EMT     15              ;ALU ERROR
026264  104401                 4$:     SCOP1           ;SW09=1?
026266  005202                 INC     R2              ;NEXT DATA
026270  005200                 INC     R0              ;NEXT ADDRESS
026272  022700  000010         CMP     #10,R0          ;DONE YET?
026276  001342                 BNE     1$              ;BR IF NO
026300  104400                 SCOPE                   ;SCOPE THIS TEST
026302     000     000     376  5$:     .BYTE   0,0,376,376,252,252,124,124
026305     376     252     252
026310     124     124
                                .EVEN
81

                                ;*************************** TEST 105 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION SUB WITH C BIT CLEARED
                                ;*ALU FUNCTION (A-B)    CODE=16
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
```

```
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:**********************************************************************

                                        ;  TEST 105
                                        ;--------------
026312  012737  000105  001226  TST105: MOV     #105,TSTNO
026320  012737  026466  001216          MOV     #TST106,NEXT
026326  012737  026360  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
026334  104412                          MSTCLR                  ;MASTER CLEAR DMC11
026336  005000                          CLR     R0              ;MEM + SP ADDRESS
026340  012702  026456                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
026344  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
026350  035052                          MEMDAT                  ;POINTER TO DATA
026352  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
026356  035062                          SPDAT                   ;POINTER TO DATA
026360  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
026364  042737  000017  026400          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
026372  050037  026400                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
026376  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026400  010000                  2$:     010000                  ;LOAD MAR
026402  042737  000017  026416          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
026410  050037  026416                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
026414  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026416  040740                  3$:     040400!<16*20>          ;BR _ SUB
026420  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026422  061224                          61224                   ;MOVE BR TO PORT4
026424  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
026426  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
026432  120504                          CMPB    R5,R4           ;DATA CORRECT?
026434  001401                          BEQ     4$              ;BR IF YES
026436  104015                          EMT     15              ;ALU ERROR
026440  104401                  4$:     SCOP1                   ;SW09=1?
026442  005202                          INC     R2              ;NEXT DATA
026444  005200                          INC     R0              ;NEXT ADDRESS
026446  022700  000010                  CMP     #10,R0          ;DONE YET?
026452  001342                          BNE     1$              ;BR IF NO
026454  104400                          SCOPE                   ;SCOPE THIS TEST
026456     000     001     377  5$:     .BYTE   0,1,-1,0,0,253,125,0
026461     000     000     253
026464     125     000
                                .EVEN
82

                                        ;***************************** TEST 106 *****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION ADD W/C WITH C BIT CLEARED
                                        ;*ALU FUNCTION (A PLUS B PLUS C)    CODE=01
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:**********************************************************************

                                        ;  TEST 106
                                        ;--------------
026466  012737  000106  001226  TST106: MOV     #106,TSTNO
026474  012737  026642  001216          MOV     #TST107,NEXT
026502  012737  026534  001220          MOV     #1$,LOCK
```

```
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
026510  104412                          MSTCLR        ;MASTER CLEAR DMC11
026512  005000                          CLR     R0    ;MEM + SP ADDRESS
026514  012702  026632                  MOV     #5$,R2        ;POINTER TO CORRECT DATA
026520  004737  034726                  JSR     PC,MEMLD      ;LOAD 8 WORDS OF MAIN MEMORY
026524  035052                          MEMDAT        ;POINTER TO DATA
026526  004737  034762                  JSR     PC,SPLD       ;LOAD 8 WORDS OF SP
026532  035062                          SPDAT         ;POINTER TO DATA
026534  004737  035026          1$:     JSR     PC,CLRC       ;CLEAR C BIT!
026540  042737  000017  026554          BIC     #17,2$        ;CLEAR ADDRESS FIELD OF INSTRUCTION
026546  050037  026554                  BIS     R0,2$         ;ADD ADDRESS TO INSTRUCTION
026552  104414                          ROMCLK        ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026554  010000                  2$:     010000        ;LOAD MAR
026556  042737  000017  026572          BIC     #17,3$        ;CLEAR ADDRESS OF INSTRUCTION
026564  050037  026572                  BIS     R0,3$         ;ADD ADDRESS TO INSTRUCTION
026570  104414                          ROMCLK        ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026572  040420                  3$:     040400!<01*20>        ;BR _ ADD W/C
026574  104414                          ROMCLK        ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
026576  061224                          61224         ;MOVE BR TO PORT4
026600  111205                          MOVB    (R2),R5       ;PUT "EXPECTED" IN R5
026602  116104  000004                  MOVB    4(R1),R4      ;PUT "FOUND" IN R4
026606  120504                          CMPB    R5,R4         ;DATA CORRECT?
026610  001401                          BEQ     4$            ;BR IF YES
026612  104015                          EMT     15            ;ALU ERROR
026614  104401                  4$:     SCOP1         ;SW09=1?
026616  005202                          INC     R2            ;NEXT DATA
026620  005200                          INC     R0            ;NEXT ADDRESS
026622  022700  000010                  CMP     #10.,R0       ;DONE YET?
026626  001342                          BNE     1$            ;BR IF NO
026630  104400                          SCOPE         ;SCOPE THIS TEST
026632     000     377     377  5$:     .BYTE   0,-1,-1,376,252,-1,-1,124
026635     376     252     377
026640     377     124
                                .EVEN
83

                                ;*************************** TEST 107 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION SUB W/C WITH C BIT CLEARED
                                ;*ALU FUNCTION (A-B-C)    CODE=2
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*****************************************************************

                                ;  TEST 107
                                ;--------------
026642  012737  000107  001226  TST107: MOV     #107,TSTNO
026650  012737  027016  001216          MOV     #TST110,NEXT
026656  012737  026710  001220          MOV     #1$,LOCK

                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
026664  104412                          MSTCLR        ;MASTER CLEAR DMC11
026666  005000                          CLR     R0    ;MEM + SP ADDRESS
026670  012702  027006                  MOV     #5$,R2        ;POINTER TO CORRECT DATA
026674  004737  034726                  JSR     PC,MEMLD      ;LOAD 8 WORDS OF MAIN MEMORY
026700  035052                          MEMDAT        ;POINTER TO DATA
026702  004737  034762                  JSR     PC,SPLD       ;LOAD 8 WORDS OF SP
026706  035062                          SPDAT         ;POINTER TO DATA
```

```
 026710  004737  035026          1$:   JSR     PC,CLRC         ;CLEAR C BIT!
 026714  042737  000017  026730        BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
 026722  050037  026730                BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
 026726  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 026730  010000                  2$:   010000                  ;LOAD MAR
 026732  042737  000017  026746        BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
 026740  050037  026746                BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
 026744  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 026746  040440                  3$:   040400!<2*20>           ;BR _ SUB W/C
 026750  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 026752  061224                        61224                   ;MOVE BR TO PORT4
 026754  111205                        MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
 026756  116104  000004                MOVB    4(R1),R4        ;PUT "FOUND" IN R4
 026762  120504                        CMPB    R5,R4           ;DATA CORRECT?
 026764  001401                        BEQ     4$              ;BR IF YES
 026766  104015                        EMT     15              ;ALU ERROR
 026770  104401                  4$:   SCOP1                   ;SW09=1?
 026772  005202                        INC     R2              ;NEXT DATA
 026774  005200                        INC     R0              ;NEXT ADDRESS
 026776  022700  000010                CMP     #10,R0          ;DONE YET?
 027002  001342                        BNE     1$              ;BR IF NO
 027004  104400                        SCOPE                   ;SCOPE THIS TEST
 027006     377     000     376  5$:   .BYTE   -1,0,376,-1,-1,252,124,-1
 027011     377     377     252
 027014     124     377
                                .EVEN
    84

                                ;***************************** TEST 110 *****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION INC A WITH C BIT CLEARED
                                ;*ALU FUNCTION (A PLUS 1)    CODE=3
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;;***************************************************************************

                                ;  TEST 110
                                ;--------------
 027016  012737  000110  001226  TST110: MOV     #110,TSTNO
 027024  012737  027172  001216         MOV     #TST111,NEXT
 027032  012737  027064  001220         MOV     #1$,LOCK

                                                               ;R1 CONTAINS BASE DMC11 ADDRESS
 027040  104412                        MSTCLR                  ;MASTER CLEAR DMC11
 027042  005000                        CLR     R0              ;MEM + SP ADDRESS
 027044  012702  027162                MOV     #5$,R2          ;POINTER TO CORRECT DATA
 027050  004737  034726                JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
 027054  035052                        MEMDAT                  ;POINTER TO DATA
 027056  004737  034762                JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
 027062  035062                        SPDAT                   ;POINTER TO DATA
 027064  004737  035026          1$:   JSR     PC,CLRC         ;CLEAR C BIT!
 027070  042737  000017  027104        BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
 027076  050037  027104                BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
 027102  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 027104  010000                  2$:   010000                  ;LOAD MAR
 027106  042737  000017  027122        BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
 027114  050037  027122                BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
 027120  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
```

```
027122  040460                  3$:     040400!<3*20>           ;BR _ INC A
027124  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027126  061224                          61224                   ;MOVE BR TO PORT4
027130  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
027132  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
027136  120504                          CMPB    R5,R4           ;DATA CORRECT?
027140  001401                          BEQ     4$              ;BR IF YES
027142  104015                          EMT     15              ;ALU ERROR
027144  104401                  4$:     SCOP1                   ;SW09=1?
027146  005202                          INC     R2              ;NEXT DATA
027150  005200                          INC     R0              ;NEXT ADDRESS
027152  022700  000010                  CMP     #10,R0          ;DONE YET?
027156  001342                          BNE     1$              ;BR IF NO
027160  104400                          SCOPE                   ;SCOPE THIS TEST
027162     001     001     000  5$:     .BYTE   1,1,0,0,126,126,253,253
027165     000     126     126
027170     253     253
                                .EVEN
    85

                                ;***************************** TEST 111 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION 2A WITH C BIT CLEARED
                                ;*ALU FUNCTION (A PLUS A)    CODE=5
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*************************************************************

                                ;  TEST 111
                                ;-------------
027172  012737  000111  001226  TST111: MOV     #111,TSTNO
027200  012737  027346  001216          MOV     #TST112,NEXT
027206  012737  027240  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
027214  104412                          MSTCLR                  ;MASTER CLEAR DMC11
027216  005000                          CLR     R0              ;MEM + SP ADDRESS
027220  012702  027336                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
027224  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
027230  035052                          MEMDAT                  ;POINTER TO DATA
027232  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
027236  035062                          SPDAT                   ;POINTER TO DATA
027240  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
027244  042737  000017  027260          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
027252  050037  027260                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
027256  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027260  010000                  2$:     010000                  ;LOAD MAR
027262  042737  000017  027276          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
027270  050037  027276                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
027274  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027276  040520                  3$:     040400!<5*20>           ;BR _ 2A
027300  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027302  061224                          61224                   ;MOVE BR TO PORT4
027304  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
027306  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
027312  120504                          CMPB    R5,R4           ;DATA CORRECT?
027314  001401                          BEQ     4$              ;BR IF YES
027316  104015                          EMT     15              ;ALU ERROR
```

```
027320  104401                  4$:     SCOP1                   ;SW09=1?
027322  005202                          INC     R2              ;NEXT DATA
027324  005200                          INC     R0              ;NEXT ADDRESS
027326  022700  000010                  CMP     #10,R0          ;DONE YET?
027332  001342                          BNE     1$              ;BR IF NO
027334  104400                          SCOPE                   ;SCOPE THIS TEST
027336     000     000     376  5$:     .BYTE   0,0,376,376,252,252,124,124
027341     376     252     252
027344     124     124
                                .EVEN
    86

                                ;*************************** TEST 112 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION A PLUS C WITH C BIT CLEARED
                                ;*ALU FUNCTION (A PLUS C)    CODE=4
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*************************************************************************

                                ;  TEST 112
                                ;--------------
027346  012737  000112  001226  TST112: MOV     #112,TSTNO
027354  012737  027522  001216          MOV     #TST113,NEXT
027362  012737  027414  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
027370  104412                          MSTCLR                  ;MASTER CLEAR DMC11
027372  005000                          CLR     R0              ;MEM + SP ADDRESS
027374  012702  027512                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
027400  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
027404  035052                          MEMDAT                  ;POINTER TO DATA
027406  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
027412  035062                          SPDAT                   ;POINTER TO DATA
027414  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
027420  042737  000017  027434          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
027426  050037  027434                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
027432  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027434  010000                  2$:     010000                  ;LOAD MAR
027436  042737  000017  027452          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
027444  050037  027452                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
027450  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027452  040500                  3$:     040400!<4*20>           ;BR _ A PLUS C
027454  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027456  061224                          61224                   ;MOVE BR TO PORT4
027460  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
027462  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
027466  120504                          CMPB    R5,R4           ;DATA CORRECT?
027470  001401                          BEQ     4$              ;BR IF YES
027472  104015                          EMT     15              ;ALU ERROR
027474  104401                  4$:     SCOP1                   ;SW09=1?
027476  005202                          INC     R2              ;NEXT DATA
027500  005200                          INC     R0              ;NEXT ADDRESS
027502  022700  000010                  CMP     #10,R0          ;DONE YET?
027506  001342                          BNE     1$              ;BR IF NO
027510  104400                          SCOPE                   ;SCOPE THIS TEST
027512     000     000     377  5$:     .BYTE   0,0,-1,-1,125,125,252,252
027515     377     125     125
```

```
        027520     252     252
                                .EVEN
    87

                                ;*************************** TEST 113 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION 2'S COMP SUB WITH C BIT CLEARED
                                ;*ALU FUNCTION (A-B 1)    CODE=17
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*************************************************************

                                ;  TEST 113
                                ;--------------
    027522  012737  000113  001226  TST113: MOV     #113,TSTNO
    027530  012737  027676  001216          MOV     #TST114,NEXT
    027536  012737  027570  001220          MOV     #1$,LOCK

                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
    027544  104412                          MSTCLR                  ;MASTER CLEAR DMC11
    027546  005000                          CLR     R0              ;MEM + SP ADDRESS
    027550  012702  027666                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
    027554  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
    027560  035052                          MEMDAT                  ;POINTER TO DATA
    027562  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
    027566  035062                          SPDAT                   ;POINTER TO DATA
    027570  004737  035026          1$:     JSR     PC,CLRC         ;CLEAR C BIT!
    027574  042737  000017  027610          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
    027602  050037  027610                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
    027606  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    027610  010000                  2$:     010000                  ;LOAD MAR
    027612  042737  000017  027626          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
    027620  050037  027626                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
    027624  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    027626  040760                  3$:     040400!<17*20>          ;BR _ 2'S COMP SUB
    027630  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    027632  061224                          61224                   ;MOVE BR TO PORT4
    027634  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
    027636  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
    027642  120504                          CMPB    R5,R4           ;DATA CORRECT?
    027644  001401                          BEQ     4$              ;BR IF YES
    027646  104015                          EMT     15              ;ALU ERROR
    027650  104401                  4$:     SCOP1                   ;SW09=1?
    027652  005202                          INC     R2              ;NEXT DATA
    027654  005200                          INC     R0              ;NEXT ADDRESS
    027656  022700  000010                  CMP     #10,R0          ;DONE YET?
    027662  001342                          BNE     1$              ;BR IF NO
    027664  104400                          SCOPE                   ;SCOPE THIS TEST
    027666     377     000     376  5$:     .BYTE   -1,0,376,-1,-1,252,124,-1
    027671     377     377     252
    027674     124     377
                                .EVEN
    88

                                ;*************************** TEST 114 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION DEC A WITH C BIT CLEARED
                                ;*ALU FUNCTION (A-1)    CODE=7
```

```
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*****************************************************************

                                        ;  TEST 114
                                        ;--------------
027676  012737  000114  001226  TST114: MOV     #114,TSTNO
027704  012737  030052  001216         MOV     #TST115,NEXT
027712  012737  027744  001220         MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
027720  104412                         MSTCLR                  ;MASTER CLEAR DMC11
027722  005000                         CLR     R0              ;MEM + SP ADDRESS
027724  012702  030042                 MOV     #5$,R2          ;POINTER TO CORRECT DATA
027730  004737  034726                 JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
027734  035052                         MEMDAT                  ;POINTER TO DATA
027736  004737  034762                 JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
027742  035062                         SPDAT                   ;POINTER TO DATA
027744  004737  035026         1$:     JSR     PC,CLRC         ;CLEAR C BIT!
027750  042737  000017  027764         BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
027756  050037  027764                 BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
027762  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
027764  010000         2$:             010000                  ;LOAD MAR
027766  042737  000017  030002         BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
027774  050037  030002                 BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
030000  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030002  040560         3$:             040400!<7*20>           ;BR _ DEC A
030004  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030006  061224                         61224                   ;MOVE BR TO PORT4
030010  111205                         MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
030012  116104  000004                 MOVB    4(R1),R4        ;PUT "FOUND" IN R4
030016  120504                         CMPB    R5,R4           ;DATA CORRECT?
030020  001401                         BEQ     4$              ;BR IF YES
030022  104015                         EMT     15              ;ALU ERROR
030024  104401                 4$:     SCOP1                   ;SW09=1?
030026  005202                         INC     R2              ;NEXT DATA
030030  005200                         INC     R0              ;NEXT ADDRESS
030032  022700  000010                 CMP     #10,R0          ;DONE YET?
030036  001342                         BNE     1$              ;BR IF NO
030040  104400                         SCOPE                   ;SCOPE THIS TEST
030042     377     377     376  5$:     .BYTE   -1,-1,376,376,124,124,251,251
030045     376     124     124
030050     251     251
                                .EVEN
89
                                        ;***************************** TEST 115 *****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION SEL B WITH C BIT SET
                                        ;*ALU FUNCTION (B)    CODE=11
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*****************************************************************

                                        ;  TEST 115
                                        ;--------------
030052  012737  000115  001226  TST115: MOV     #115,TSTNO
030060  012737  030226  001216         MOV     #TST116,NEXT
```

```
 030066  012737  030120  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 030074  104412                          MSTCLR                 ;MASTER CLEAR DMC11
 030076  005000                          CLR     R0             ;MEM + SP ADDRESS
 030100  012702  030216                  MOV     #5$,R2         ;POINTER TO CORRECT DATA
 030104  004737  034726                  JSR     PC,MEMLD       ;LOAD 8 WORDS OF MAIN MEMORY
 030110  035052                          MEMDAT                 ;POINTER TO DATA
 030112  004737  034762                  JSR     PC,SPLD        ;LOAD 8 WORDS OF SP
 030116  035062                          SPDAT                  ;POINTER TO DATA
 030120  004737  035040          1$:     JSR     PC,SETC        ;SET C BIT!
 030124  042737  000017  030140          BIC     #17,2$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
 030132  050037  030140                  BIS     R0,2$          ;ADD ADDRESS TO INSTRUCTION
 030136  104414                          ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 030140  010000                  2$:     010000                 ;LOAD MAR
 030142  042737  000017  030156          BIC     #17,3$         ;CLEAR ADDRESS OF INSTRUCTION
 030150  050037  030156                  BIS     R0,3$          ;ADD ADDRESS TO INSTRUCTION
 030154  104414                          ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 030156  040620                  3$:     040400!<11*20>         ;BR _ SEL B
 030160  104414                          ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
 030162  061224                          61224                  ;MOVE BR TO PORT4
 030164  111205                          MOVB    (R2),R5        ;PUT "EXPECTED" IN R5
 030166  116104  000004                  MOVB    4(R1),R4       ;PUT "FOUND" IN R4
 030172  120504                          CMPB    R5,R4          ;DATA CORRECT?
 030174  001401                          BEQ     4$             ;BR IF YES
 030176  104015                          EMT     15             ;ALU ERROR
 030200  104401                  4$:     SCOP1                  ;SW09=1?
 030202  005202                          INC     R2             ;NEXT DATA
 030204  005200                          INC     R0             ;NEXT ADDRESS
 030206  022700  000010                  CMP     #10,R0         ;DONE YET?
 030212  001342                          BNE     1$             ;BR IF NO
 030214  104400                          SCOPE                  ;SCOPE THIS TEST
 030216     000     377     000  5$:     .BYTE   0,-1,0,-1,125,252,125,252
 030221     377     125     252
 030224     125     252
                                 .EVEN
90
                                         ;***************************** TEST 116 *****************************
                                         ;*ALU TEST
                                         ;*TEST OF ALU FUNCTION SEL A WITH C BIT SET
                                         ;*ALU FUNCTION (A)    CODE=10
                                         ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                         ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                         ;:************************************************************************

                                         ;  TEST 116
                                         ;--------------
 030226  012737  000116  001226  TST116: MOV     #116,TSTNO
 030234  012737  030402  001216          MOV     #TST117,NEXT
 030242  012737  030274  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
 030250  104412                          MSTCLR                 ;MASTER CLEAR DMC11
 030252  005000                          CLR     R0             ;MEM + SP ADDRESS
 030254  012702  030372                  MOV     #5$,R2         ;POINTER TO CORRECT DATA
 030260  004737  034726                  JSR     PC,MEMLD       ;LOAD 8 WORDS OF MAIN MEMORY
 030264  035052                          MEMDAT                 ;POINTER TO DATA
 030266  004737  034762                  JSR     PC,SPLD        ;LOAD 8 WORDS OF SP
```

```
030272  035062                          SPDAT                   ;POINTER TO DATA
030274  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
030300  042737  000017  030314          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
030306  050037  030314                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
030312  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030314  010000                  2$:     010000                  ;LOAD MAR
030316  042737  000017  030332          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
030320  050037  030332                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
030330  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030332  040600                  3$:     040400!<10*20>          ;BR _ SEL A
030334  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030336  061224                          61224                   ;MOVE BR TO PORT4
030340  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
030342  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
030346  120504                          CMPB    R5,R4           ;DATA CORRECT?
030350  001401                          BEQ     4$              ;BR IF YES
030352  104015                          EMT     15              ;ALU ERROR
030354  104401                  4$:     SCOP1                   ;SW09=1?
030356  005202                          INC     R2              ;NEXT DATA
030360  005200                          INC     R0              ;NEXT ADDRESS
030362  022700  000010                  CMP     #10,R0          ;DONE YET?
030366  001342                          BNE     1$              ;BR IF NO
030370  104400                          SCOPE                   ;SCOPE THIS TEST
030372     000     000     377  5$:     .BYTE   0,0,-1,-1,125,125,252,252
030375     377     125     125
030400     252     252
                                .EVEN
91

                                        ;****************************** TEST 117 ******************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION A OR NOTB WITH C BIT SET
                                        ;*ALU FUNCTION (A OR NOTB)    CODE=12
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*************************************************************************

                                        ;  TEST 117
                                        ;-------------
030402  012737  000117  001226  TST117: MOV     #117,TSTNO
030410  012737  030556  001216          MOV     #TST120,NEXT
030416  012737  030450  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
030424  104412                          MSTCLR                  ;MASTER CLEAR DMC11
030426  005000                          CLR     R0              ;MEM + SP ADDRESS
030430  012702  030546                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
030434  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
030440  035052                          MEMDAT                  ;POINTER TO DATA
030442  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
030446  035062                          SPDAT                   ;POINTER TO DATA
030450  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
030454  042737  000017  030470          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
030462  050037  030470                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
030466  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030470  010000                  2$:     010000                  ;LOAD MAR
030472  042737  000017  030506          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
030500  050037  030506                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
```

```
030504  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030506  040640                  3$:     040400!<12.20>          ;BR _ A OR NOTB
030510  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030512  061224                          61224                   ;MOVE BR TO PORT4
030514  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
030516  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
030522  120504                          CMPB    R5,R4           ;DATA CORRECT?
030524  001401                          BEQ     4$              ;BR IF YES
030526  104015                          EMT     15              ;ALU ERROR
030530  104401                  4$:     SCOP1                   ;SW09=1?
030532  005202                          INC     R2              ;NEXT DATA
030534  005200                          INC     R0              ;NEXT ADDRESS
030536  022700  000010                  CMP     #10,R0          ;DONE YET?
030542  001342                          BNE     1$              ;BR IF NO
030544  104400                          SCOPE                   ;SCOPE THIS TEST
030546     377     000     377  5$:     .BYTE   -1,0,-1, 1,-1,125,252,-1
030551     377     377     125
030554     252     377
                               .EVEN
92

                                        ;****************************** TEST 120 ******************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION A AND B WITH C BIT SET
                                        ;*ALU FUNCTION (A AND B)    CODE=13
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*************************************************************************

                                        ;  TEST 120
                                        ;--------------
030556  012737  000120  001226  TST120: MOV     #120,TSTNO
030564  012737  030732  001216          MOV     #TST121,NEXT
030572  012737  030624  001220          MOV     #1$,LOCK

                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
030600  104412                          MSTCLR                  ;MASTER CLEAR DMC11
030602  005000                          CLR     R0              ;MEM + SP ADDRESS
030604  012702  030722                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
030610  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
030614  035052                          MEMDAT                  ;POINTER TO DATA
030616  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
030622  035062                          SPDAT                   ;POINTER TO DATA
030624  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
030630  042737  000017  030644          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
030636  050037  030644                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
030642  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030644  010000                  2$:     010000                  ;LOAD MAR
030646  042737  000017  030662          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
030654  050037  030662                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
030660  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030662  040660                  3$:     040400!<13.20>          ;BR _ A AND B
030664  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
030666  061224                          61224                   ;MOVE BR TO PORT4
030670  111205                          MOVB    (R2),R5         ;PUT 'EXPECTED" IN R5
030672  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
030676  120504                          CMPB    R5,R4           ;DATA CORRECT?
030700  001401                          BEQ     4$              ;BR IF YES
```

```
030702  104015                          EMT     15              ;ALU ERROR
030704  104401                  4$:     SCOP1                   ;SW09=1?
030706  005202                          INC     R2              ;NEXT DATA
030710  005200                          INC     R0              ;NEXT ADDRESS
030712  022700  000010                  CMP     #10,R0          ;DONE YET?
030716  001342                          BNE     1$              ;BR IF NO
030720  104400                          SCOPE                   ;SCOPE THIS TEST
030722     000     000     000  5$:     .BYTE   0,0,0, 1,125,0,0,252
030725     377     125     000
030730     000     252
                                .EVEN
    93

                                ;*************************** TEST 121 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION A OR B WITH C BIT SET
                                ;*ALU FUNCTION (A OR B)    CODE=14
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*************************************************************************

                                ;  TEST 121
                                ;-------- -----
030732  012737  000121  001226  TST121: MOV     #121,TSTNO
030740  012737  031106  001216          MOV     #TST122,NEXT
030746  012737  031000  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
030754  104412                          MSTCLR                  ;MASTER CLEAR DMC11
030756  005000                          CLR     R0              ;MEM + SP ADDRESS
030760  012702  031076                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
030764  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
030770  035052                          MEMDAT                  ;POINTER TO DATA
030772  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
030776  035062                          SPDAT                   ;POINTER TO DATA
031000  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
031004  042737  000017  031020          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
031012  050037  031020                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
031016  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC 5304
031020  010000                  2$:     010000                  ;LOAD MAR
031022  042737  000017  031036          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
031030  050037  031036                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
031034  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031036  040700                  3$:     040400!<14*20>          ;BR _ A OR B
031040  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031042  061224                          61224                   ;MOVE BR TO PORT4
031044  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
031046  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
031052  120504                          CMPB    R5,R4           ;DATA CORRECT?
031054  001401                          BEQ     4$              ;BR IF YES
031056  104015                          EMT     15              ;ALU ERROR
031060  104401                  4$:     SCOP1                   ;SW09=1?
031062  005202                          INC     R2              ;NEXT DATA
031064  005200                          INC     R0              ;NEXT ADDRESS
031066  022700  000010                  CMP     #10,R0          ;DONE YET?
031072  001342                          BNE     1$              ;BR IF NO
031074  104400                          SCOPE                   ;SCOPE THIS TEST
031076     000     377     377  5$:     .BYTE   0,-1, 1, 1,125, 1, 1,252
```

```
        031101     377     125     377
        031104     377     252
                                   .EVEN
    94

                                   ;****************************** TEST 122 ****************************
                                   ;*ALU TEST
                                   ;*TEST OF ALU FUNCTION A XOR B WITH C BIT SET
                                   ;*ALU FUNCTION (A XOR B)    CODE=15
                                   ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                   ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                   ;:*************************************************************************

                                   ;  TEST 122
                                   ;---------- ---
    031106  012737  000122  001226 TST122: MOV     #122,TSTNO
    031114  012737  031262  001216         MOV     #TST123,NEXT
    031122  012737  031154  001220         MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
    031130  104412                         MSTCLR                  ;MASTER CLEAR DMC11
    031132  005000                         CLR     R0              ;MEM + SP ADDRESS
    031134  012702  031252                 MOV     #5$,R2          ;POINTER TO CORRECT DATA
    031140  004737  034726                 JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
    031144  035052                         MEMDAT                  ;POINTER TO DATA
    031146  004737  034762                 JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
    031152  035062                         SPDAT                   ;POINTER TO DATA
    031154  004737  035040         1$:     JSR     PC,SETC         ;SET C BIT!
    031160  042737  000017  031174         BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
    031166  050037  031174                 BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
    031172  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    031174  010000         2$:             010000                  ;LOAD MAR
    031176  042737  000017  031212         BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
    031204  050037  031212                 BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
    031210  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC-5304
    031212  040720         3$:             040400!<15*20>          ;BR _ A XOR B
    031214  104414                         ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    031216  061224                         61224                   ;MOVE BR TO PORT4
    031220  111205                         MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
    031222  116104  000004                 MOVB    4(R1),R4        ;PUT "FOUND" IN R4
    031226  120504                         CMPB    R5,R4           ;DATA CORRECT?
    031230  001401                         BEQ     4$              ;BR IF YES
    031232  104015                         EMT     15              ;ALU ERROR
    031234  104401         4$:             SCOP1                   ;SW09=1?
    031236  005202                         INC     R2              ;NEXT DATA
    031240  005200                         INC     R0              ;NEXT ADDRESS
    031242  022700  000010                 CMP     #10,R0          ;DONE YET?
    031246  001342                         BNE     1$              ;BR IF NO
    031250  104400                         SCOPE                   ;SCOPE THIS TEST
    031252     000     377     377 5$:     .BYTE   0,-1,-1,0,0,-1,-1,0
    031255     000     000     377
    031260     377     000
                                   .EVEN
    95

                                   ;****************************** TEST 123 ****************************
                                   ;*ALU TEST
                                   ;*TEST OF ALU FUNCTION ADD WITH C BIT SET
```

```
                                        ;*ALU FUNCTION (A PLUS B)    CODE=00
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*****************************************************************

                                        ;  TEST 123
                                        ;-------------
031262  012737  000123  001226  TST123: MOV     #123,TSTNO
031270  012737  031436  001216         MOV     #TST124,NEXT
031276  012737  031330  001220         MOV     #1$,LOCK

                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
031304  104412                         MSTCLR                 ;MASTER CLEAR DMC11
031306  005000                         CLR     R0             ;MEM + SP ADDRESS
031310  012702  031426                 MOV     #5$,R2         ;POINTER TO CORRECT DATA
031314  004737  034726                 JSR     PC,MEMLD       ;LOAD 8 WORDS OF MAIN MEMORY
031320  035052                         MEMDAT                 ;POINTER TO DATA
031322  004737  034762                 JSR     PC,SPLD        ;LOAD 8 WORDS OF SP
031326  035062                         SPDAT                  ;POINTER TO DATA
031330  004737  035040         1$:     JSR     PC,SETC        ;SET C BIT!
031334  042737  000017  031350         BIC     #17,2$         ;CLEAR ADDRESS FIELD OF INSTRUCTION
031342  050037  031350                 BIS     R0,2$          ;ADD ADDRESS TO INSTRUCTION
031346  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031350  010000                 2$:     010000                 ;LOAD MAR
031352  042737  000017  031366         BIC     #17,3$         ;CLEAR ADDRESS OF INSTRUCTION
031360  050037  031366                 BIS     R0,3$          ;ADD ADDRESS TO INSTRUCTION
031364  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC-5304
031366  040400                 3$:     040400!<00*20>         ;BR _ ADD
031370  104414                         ROMCLK                 ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031372  061224                         61224                  ;MOVE BR TO PORT4
031374  111205                         MOVB    (R2),R5        ;PUT "EXPECTED" IN R5
031376  116104  000004                 MOVB    4(R1),R4       ;PUT "FOUND" IN R4
031402  120504                         CMPB    R5,R4          ;DATA CORRECT?
031404  001401                         BEQ     4$             ;BR IF YES
031406  104015                         EMT     15             ;ALU ERROR
031410  104401                 4$:     SCOP1                  ;SW09=1?
031412  005202                         INC     R2             ;NEXT DATA
031414  005200                         INC     R0             ;NEXT ADDRESS
031416  022700  000010                 CMP     #10,R0         ;DONE YET?
031422  001342                         BNE     1$             ;BR IF NO
031424  104400                         SCOPE                  ;SCOPE THIS TEST
031426     000     377     377  5$:     .BYTE   0,-1,-1,376,252,-1,-1,124
031431     376     252     377
031434     377     124
                                .EVEN
96

                                        ;***************************** TEST 124 ****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION 2A W/C WITH C BIT SET
                                        ;*ALU FUNCTION (A PLUS A PLUS C)    CODE=6
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*****************************************************************

                                        ;  TEST 124
                                        ;-------------
031436  012737  000124  001226  TST124: MOV     #124,TSTNO
```

```
031444  012737  031612  001216          MOV     #TST125,NEXT
031452  012737  031504  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
031460  104412                          MSTCLR          ;MASTER CLEAR DMC11
031462  005000                          CLR     R0      ;MEM + SP ADDRESS
031464  012702  031602                  MOV     #5$,R2  ;POINTER TO CORRECT DATA
031470  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
031474  035052                          MEMDAT          ;POINTER TO DATA
031476  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
031502  035062                          SPDAT           ;POINTER TO DATA
031504  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
031510  042737  000017  031524          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
031516  050037  031524                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
031522  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031524  010000                  2$:     010000          ;LOAD MAR
031526  042737  000017  031542          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
031534  050037  031542                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
031540  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031542  040540                  3$:     040400!<6*20>   ;BR _ 2A W/C
031544  104414                          ROMCLK          ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031546  061224                          61224           ;MOVE BR TO PORT4
031550  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
031552  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
031556  120504                          CMPB    R5,R4           ;DATA CORRECT?
031560  001401                          BEQ     4$              ;BR IF YES
031562  104015                          EMT     15              ;ALU ERROR
031564  104401                  4$:     SCOP1           ;SW09=1?
031566  005202                          INC     R2              ;NEXT DATA
031570  005200                          INC     R0              ;NEXT ADDRESS
031572  022700  000010                  CMP     #10,R0          ;DONE YET?
031576  001342                          BNE     1$              ;BR IF NO
031600  104400                          SCOPE           ;SCOPE THIS TEST
031602     001     001     377  5$:     .BYTE   1,1,-1,-1,253,253,125,125
031605     377     253     253
031610     125     125
                                .EVEN
97

                                        ;*************************** TEST 125 ****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION SUB WITH C BIT SET
                                        ;*ALU FUNCTION (A-B)    CODE=16
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;;*************************************************************************

                                        ;  TEST 125
                                        ;--------------
031612  012737  000125  001226  TST125: MOV     #125,TSTNO
031620  012737  031766  001216          MOV     #TST126,NEXT
031626  012737  031660  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
031634  104412                          MSTCLR          ;MASTER CLEAR DMC11
031636  005000                          CLR     R0      ;MEM + SP ADDRESS
031640  012702  031756                  MOV     #5$,R2  ;POINTER TO CORRECT DATA
031644  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
031650  035052                          MEMDAT          ;POINTER TO DATA
```

```
031652  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
031656  035062                          SPDAT                   ;POINTER TO DATA
031660  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
031664  042737  000017  031700          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
031672  050037  031700                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
031676  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031700  010000                  2$:     010000                  ;LOAD MAR
031702  042737  000017  031716          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
031710  050037  031716                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
031714  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031716  040740                  3$:     040400!<16*20>          ;BR _ SUB
031720  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
031722  061224                          61224                   ;MOVE BR TO PORT4
031724  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
031726  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
031732  120504                          CMPB    R5,R4           ;DATA CORRECT?
031734  001401                          BEQ     4$              ;BR IF YES
031736  104015                          EMT     15              ;ALU ERROR
031740  104401                  4$:     SCOP1                   ;SW09=1?
031742  005202                          INC     R2              ;NEXT DATA
031744  005200                          INC     R0              ;NEXT ADDRESS
031746  022700  000010                  CMP     #10,R0          ;DONE YET?
031752  001342                          BNE     1$              ;BR IF NO
031754  104400                          SCOPE                   ;SCOPE THIS TEST
031756     000     001     377  5$:     .BYTE   0,1,-1,0,0,253,125,0
031761     000     000     253
031764     125     000
                                .EVEN
   98

                                ;*************************** TEST 126 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION ADD W/C WITH C BIT SET
                                ;*ALU FUNCTION (A PLUS B PLUS C)    CODE=01
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;:*************************************************************

                                ;  TEST 126
                                ;--------------
031766  012737  000126  001226  TST126: MOV     #126,TSTNO
031774  012737  032142  001216          MOV     #TST127,NEXT
032002  012737  032034  001220          MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
032010  104412                          MSTCLR                  ;MASTER CLEAR DMC11
032012  005000                          CLR     R0              ;MEM + SP ADDRESS
032014  012702  032132                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
032020  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
032024  035052                          MEMDAT                  ;POINTER TO DATA
032026  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
032032  035062                          SPDAT                   ;POINTER TO DATA
032034  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
032040  042737  000017  032054          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
032046  050037  032054                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
032052  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032054  010000                  2$:     010000                  ;LOAD MAR
032056  042737  000017  032072          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
```

```
032064  050037  032072                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
032070  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032072  040420                  3$:     040400!<01*20>          ;BR   ADD W/C
032074  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032076  061224                          61224                   ;MOVE BR TO PORT4
032100  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
032102  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
032106  120504                          CMPB    R5,R4           ;DATA CORRECT?
032110  001401                          BEQ     4$              ;BR IF YES
032112  104015                          EMT     15              ;ALU ERROR
032114  104401                  4$:     SCOP1                   ;SW09=1?
032116  005202                          INC     R2              ;NEXT DATA
032120  005200                          INC     R0              ;NEXT ADDRESS
032122  022700  000010                  CMP     #10,R0          ;DONE YET?
032126  001342                          BNE     1$              ;BR IF NO
032130  104400                          SCOPE                   ;SCOPE THIS TEST
032132     001     000     000  5$:     .BYTE   1,0,0, 1,253,0,0,125
032135     377     253     000
032140     000     125
                                .EVEN
    99

                                        ;***************************** TEST 127 *****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION SUB W/C WITH C BIT SET
                                        ;*ALU FUNCTION (A-B-C)    CODE=2
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:*************************************************************************

                                        ;  TEST 127
                                        ;-------------
032142  012737  000127  001226  TST127: MOV     #127,TSTNO
032150  012737  032316  001216          MOV     #TST130,NEXT
032156  012737  032210  001220          MOV     #1$,LOCK

                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
032164  104412                          MSTCLR                  ;MASTER CLEAR DMC11
032166  005000                          CLR     R0              ;MEM + SP ADDRESS
032170  012702  032306                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
032174  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
032200  035052                          MEMDAT                  ;POINTER TO DATA
032202  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
032206  035062                          SPDAT                   ;POINTER TO DATA
032210  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
032214  042737  000017  032230          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
032222  050037  032230                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
032226  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032230  010000                  2$:     010000                  ;LOAD MAR
032232  042737  000017  032246          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
032240  050037  032246                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
032244  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032246  040440                  3$:     040400!<2*20>           ;BR _ SUB W/C
032250  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032252  061224                          61224                   ;MOVE BR TO PORT4
032254  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
032256  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
032262  120504                          CMPB    R5,R4           ;DATA CORRECT?
```

```
032264  001401                          BEQ     4$              ;BR IF YES
032266  104015                          EMT     15              ;ALU ERROR
032270  104401                  4$:     SCOP1                   ;SW09=1?
032272  005202                          INC     R2              ;NEXT DATA
032274  005200                          INC     R0              ;NEXT ADDRESS
032276  022700  000010                  CMP     #10,R0          ;DONE YET?
032302  001342                          BNE     1$              ;BR IF NO
032304  104400                          SCOPE                   ;SCOPE THIS TEST
032306     000     001     377  5$:     .BYTE   0,1, 1,0,0,253,125,0
032311     000     000     253
032314     125     000
                                .EVEN
100

                                ;*************************** TEST 130 ****************************
                                ;*ALU TEST
                                ;*TEST OF ALU FUNCTION INC A WITH C BIT SET
                                ;*ALU FUNCTION (A PLUS 1)    CODE=3
                                ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                ;;*************************************************************************

                                ;  TEST 130
                                ;--------------
032316  012737  000130  001226  TST130: MOV     #130,TSTNO
032324  012737  032472  001216          MOV     #TST131,NEXT
032332  012737  032364  001220          MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
032340  104412                          MSTCLR                  ;MASTER CLEAR DMC11
032342  005000                          CLR     R0              ;MEM + SP ADDRESS
032344  012702  032462                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
032350  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
032354  035052                          MEMDAT                  ;POINTER TO DATA
032356  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
032362  035062                          SPDAT                   ;POINTER TO DATA
032364  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
032370  042737  000017  032404          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
032376  050037  032404                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
032402  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032404  010000                  2$:     010000                  ;LOAD MAR
032406  042737  000017  032422          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
032414  050037  032422                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
032420  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032422  040460                  3$:     040400!<3*20>           ;BR _ INC A
032424  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032426  061224                          61224                   ;MOVE BR TO PORT4
032430  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
032432  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
032436  120504                          CMPB    R5,R4           ;DATA CORRECT?
032440  001401                          BEQ     4$              ;BR IF YES
032442  104015                          EMT     15              ;ALU ERROR
032444  104401                  4$:     SCOP1                   ;SW09=1?
032446  005202                          INC     R2              ;NEXT DATA
032450  005200                          INC     R0              ;NEXT ADDRESS
032452  022700  000010                  CMP     #10,R0          ;DONE YET?
032456  001342                          BNE     1$              ;BR IF NO
032460  104400                          SCOPE                   ;SCOPE THIS TEST
```

```
032462  001  001  000  5$:    .BYTE   1,1,0,0,126,126,253,253
032465  000  126  126
032470  253  253
                              .EVEN
101

                              ;***************************** TEST 131 *****************************
                              ;*ALU TEST
                              ;*TEST OF ALU FUNCTION 2A WITH C BIT SET
                              ;*ALU FUNCTION (A PLUS A)    CODE=5
                              ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                              ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                              ;:************************************************************************

                              ;  TEST 131
                              ;----------  -
032472  012737  000131  001226  TST131: MOV     #131,TSTNO
032500  012737  032646  001216         MOV     #TST132,NEXT
032506  012737  032540  001220         MOV     #1$,LOCK
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
032514  104412                        MSTCLR                  ;MASTER CLEAR DMC11
032516  005000                        CLR     R0              ;MEM + SP ADDRESS
032520  012702  032636                MOV     #5$,R2          ;POINTER TO CORRECT DATA
032524  004737  034726                JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
032530  035052                        MEMDAT                  ;POINTER TO DATA
032532  004737  034762                JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
032536  035062                        SPDAT                   ;POINTER TO DATA
032540  004737  035040         1$:    JSR     PC,SETC         ;SET C BIT!
032544  ^ /37  000017  032560        BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
032552  ^D0037  032560               BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
032556  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032560  010000                 2$:    010000                  ;LOAD MAR
032562  042737  000017  032576        BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
032570  050037  032576                BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
032574  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032576  040520                 3$:    040400!<5*20>           ;BR _ 2A
032600  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032602  061224                        61224                   ;MOVE BR TO PORT4
032604  111205                        MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
032606  116104  000004                MOVB    4(R1),R4        ;PUT "FOUND" IN R4
032612  120504                        CMPB    R5,R4           ;DATA CORRECT?
032614  001401                        BEQ     4$              ;BR IF YES
032616  104015                        EMT     '5              ;ALU ERROR
032620  104401                 4$:    SCOP1                   ;SW09=1?
032622  005202                        INC     R2              ;NEXT DATA
032624  005200                        INC     R0              ;NEXT ADDRESS
032626  022700  000010                CMP     #10,R0          ;DONE YET?
032632  001342                        BNE     1$              ;BR IF NO
032634  104400                        SCOPE                   ;SCOPE THIS TEST
032636     000     000     376  5$:    .BYTE   0,0,376,376,252,252,124,124
032641     376     252     252
032644     124     124
                              .EVEN
102

                              ;***************************** TEST 132 *****************************
                              ;*ALU TEST
```

```
                                        ;*TEST OF ALU FUNCTION A PLUS C WITH C BIT SET
                                        ;*ALU FUNCTION (A PLUS C)    CODE=4
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;;*****************************************************************

                                        ;  TEST 132
                                        ;--------------
032646  012737  000132  001226  TST132: MOV     #132,TSTNO
032654  012737  033022  001216         MOV     #TST133,NEXT
032662  012737  032714  001220         MOV     #1$,LOCK
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
032670  104412                        MSTCLR                  ;MASTER CLEAR DMC11
032672  005000                        CLR     R0              ;MEM + SP ADDRESS
032674  012702  033012                MOV     #5$,R2          ;POINTER TO CORRECT DATA
032 00  004737  034726                JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
032704  035052                        MEMDAT                  ;POINTER TO DATA
032706  004737  034762                JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
032712  035062                        SPDAT                   ;POINTER TO DATA
032714  004737  035040         1$:    JSR     PC,SETC         ;SET C BIT!
032720  042737  000017  032734        BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
032726  050037  032734                BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
032732  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032734  010000                 2$:    010000                  ;LOAD MAR
032736  042737  000017  032752        BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
032744  050037  032752                BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
032750  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032752  040500                 3$:    040400!<4*20>           ;BR _ A PLUS C
032754  104414                        ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
032756  061224                        61224                   ;MOVE BR TO PORT4
032760  111205                        MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
032762  116104  000004                MOVB    4(R1),R4        ;PUT "FOUND" IN R4
032766  120504                        CMPB    R5,R4           ;DATA CORRECT?
032770  001401                        BEQ     4$              ;BR IF YES
032772  104015                        EMT     15              ;ALU ERROR
032774  104401                 4$:    SCOP1                   ;SW09=1?
032776  005202                        INC     R2              ;NEXT DATA
033000  005200                        INC     R0              ;NEXT ADDRESS
033002  022700  000010                CMP     #10,R0          ;DONE YET?
033006  001342                        BNE     1$              ;BR IF NO
033010  104400                        SCOPE                   ;SCOPE THIS TEST
033012     001     001     000  5$:    .BYTE   1,1,0,0,126,126,253,253
033015     000     126     126
033020     253     253
                                 .EVEN
103

                                        ;***************************** TEST 133 *****************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION 2'S COMP SUB WITH C BIT SET
                                        ;*ALU FUNCTION (A-B-1)    CODE=17
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;;*****************************************************************

                                        ;  TEST 133
                                        ;--------------
```

```
033022  012737  000133  001226  TST133: MOV     #133,TSTNO
033030  012737  033176  001216          MOV     #TST134,NEXT
033036  012737  033070  001220          MOV     #1$,LOCK
                                                ;R1 CONTAINS BASE DMC11 ADDRESS
033044  104412                          MSTCLR                  ;MASTER CLEAR DMC11
033046  005000                          CLR     R0              ;MEM + SP ADDRESS
033050  012702  033166                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
033054  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
033060  035052                          MEMDAT                  ;POINTER TO DATA
033062  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
033066  035062                          SPDAT                   ;POINTER TO DATA
033070  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
033074  042737  000017  033110          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
033102  050037  033110                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
033106  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033110  010000                  2$:     010000                  ;LOAD MAR
033112  042737  000017  033126          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
033120  050037  033126                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
033124  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033126  040760                  3$:     040400!<17*20>          ;BR _ 2'S COMP SUB
033130  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033132  061224                          61224                   ;MOVE BR TO PORT4
033134  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
033136  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
033142  120504                          CMPB    R5,R4           ;DATA CORRECT?
033144  001401                          BEQ     4$              ;BR IF YES
033146  104015                          EMT     15              ;ALU ERROR
033150  104401                  4$:     SCOP1                   ;SW09=1?
033152  005202                          INC     R2              ;NEXT DATA
033154  005200                          INC     R0              ;NEXT ADDRESS
033156  022700  000010                  CMP     #10,R0          ;DONE YET?
033162  001342                          BNE     1$              ;BR IF NO
033164  104400                          SCOPE                   ;SCOPE THIS TEST
033166     377     000     376  5$:     .BYTE   -1,0,376,-1,-1,252,124,-1
033171     377     377     252
033174     124     377
                                .EVEN
104

                                        ;****************************** TEST 134 ******************************
                                        ;*ALU TEST
                                        ;*TEST OF ALU FUNCTION DEC A WITH C BIT SET
                                        ;*ALU FUNCTION (A-1)    CODE=7
                                        ;*LOAD MAIN MEM AND SP WITH 8 WORDS OF DATA
                                        ;*PERFORM THE FUNCTION, VERIFY THE RESULTS
                                        ;:**************************************************************************

                                        ;  TEST 134
                                        ;--------------
033176  012737  000134  001226  TST134: MOV     #134,TSTNO
033204  012737  033352  001216          MOV     #TST135,NEXT
033212  012737  033244  001220          MOV     #1$,LOCK
                                                ;R1 CONTAINS BASE DMC11 ADDRESS
033220  104412                          MSTCLR                  ;MASTER CLEAR DMC11
033222  005000                          CLR     R0              ;MEM + SP ADDRESS
033224  012702  033342                  MOV     #5$,R2          ;POINTER TO CORRECT DATA
033230  004737  034726                  JSR     PC,MEMLD        ;LOAD 8 WORDS OF MAIN MEMORY
```

```
033234  035052                          MEMDAT                  ;POINTER TO DATA
033236  004737  034762                  JSR     PC,SPLD         ;LOAD 8 WORDS OF SP
033242  035062                          SPDAT                   ;POINTER TO DATA
033244  004737  035040          1$:     JSR     PC,SETC         ;SET C BIT!
033250  042737  000017  033264          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
033256  050037  033264                  BIS     R0,2$           ;ADD ADDRESS TO INSTRUCTION
033262  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033264  010000                  2$:     010000                  ;LOAD MAR
033266  042737  000017  033302          BIC     #17,3$          ;CLEAR ADDRESS OF INSTRUCTION
033274  050037  033302                  BIS     R0,3$           ;ADD ADDRESS TO INSTRUCTION
033300  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033302  040560                  3$:     040400!<7*20>           ;BR _ DEC A
033304  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033306  061224                          61224                   ;MOVE BR TO PORT4
033310  111205                          MOVB    (R2),R5         ;PUT "EXPECTED" IN R5
033312  116104  000004                  MOVB    4(R1),R4        ;PUT "FOUND" IN R4
033316  120504                          CMPB    R5,R4           ;DATA CORRECT?
033320  001401                          BEQ     4$              ;BR IF YES
033322  104015                          EMT     15              ;ALU ERROR
033324  104401                  4$:     SCOP1                   ;SW09=1?
033326  005202                          INC     R2              ;NEXT DATA
033330  005200                          INC     R0              ;NEXT ADDRESS
033332  022700  000010                  CMP     #10,R0          ;DONE YET?
033336  001342                          BNE     1$              ;BR IF NO
033340  104400                          SCOPE                   ;SCOPE THIS TEST
033342     377     377     376  5$:     .BYTE   -1,-1,376,376,124,124,251,251
033345     376     124     124
033350     251     251
                                .EVEN
105

                                ;****************************** TEST 135 ******************************
                                ;*TEST OF PROGRAM CLOCK BIT
                                ;*DO A MASTER CLEAR, WRITE THE PROGRAM CLOCK BIT TO A ONE,
                                ;*VERIFY THAT IT CLEARS, AND THEN SETS SOME TIME LATER
                                ;;**************************************************************************

                                ;  TEST 135
                                ;--------------
033352  012737  000135  001226  TST135: MOV     #135,TSTNO
033360  012737  033544  001216          MOV     #TST136,NEXT
                                                        ;R1 CONTAINS BASE DMC11 ADDRESS
033366  104412                          MSTCLR                  ;MASTER CLEAR DMC11
033370  005037  001416                  CLR     TEMP            ;PREPARE FOR
033374  005037  001246                  CLR     TEMP1           ;DELAY
033400  012702  000011                  MOV     #11,R2          ;SAVE FOR TYPEOUT
033404  012761  000020  000004  1$:     MOV     #20,4(R1)       ;LOAD PORT 4
033412  152761  000002  000001          BISB    #BIT1,1(R1)     ;SET ROMI
033420  012761  121111  000006          MOV     #121111,6(R1)   ;SEL6 _ INSTRUCTION
033426  152761  000003  000001          BISB    #BIT1!BIT0,1(R1);SET CLOCK BIT
033434  012761  121224  000006          MOV     #121224,6(R1)   ;LOAD NEXT INSTRUCTION
033442  152761  000003  000001          BISB    #BIT1!BIT0,1(R1);READ CLOCK BIT
033450  142761  000003  000001          BICB    #BIT1!BIT0,1(R1);CLEAR MAINT BITS
033456  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
033462  005005                          CLR     R5              ;PUT "EXPECTED" IN R5
033464  120504                          CMPB    R5,R4           ;IS PGM CLOCK CLEAR?
033466  001401                          BEQ     2$
```

```
033470  104016                          EMT     16              ;ERROR, PGM CLOCK IS NOT CLEAR
033472                          2$:
033472  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
033474  121224                          121224                  ;PORT4_LU11
033476  122761  000020  000004          CMPB    #20,4(R1)       ;IS PGM CLOCK SET?
033504  001416                          BEQ     3$              ;BR IF YES
033506  062737  000001  001416          ADD     #1,TEMP         ;INCREMENT DELAY
033514  005537  001246                  ADC     TEMP1           ;INCREMENT DELAY
033520  022737  000006  001246          CMP     #6,TEMP1        ;IS DELAY DONE
033526  001361                          BNE     2$              ;BR IF NO
033530  012705  000020                  MOV     #20,R5          ;PUT "EXPECTED" IN R5
033534  016104  000004                  MOV     4(R1),R4        ;PUT "FOUND" IN R4
033540  104016                          EMT     16              ;ERROR PGM CLOCK NOT SET
033542  104400                  3$:     SCOPE                   ;SCOPE THIS TEST
106

                                ;***************************** TEST 136 *****************************
                                ;*FORCE POWER FAIL TEST
                                ;*SET FORCE POWER FAIL BIT VERIFY THAT PROCESSOR TRAPS TO 24
                                ;*GOING DOWN AND COMING UP. VERIFY ALSO THAT BUS INIT WAS
                                ;*BLOCKED FROM GETTING TO THE DMC DURING THE POWER FAIL
                                ;*THIS TEST MAY HANG ON SOME PROCESSORS IF AN M9301 IS PRESENT.
                                ;*TO AVOID HANGING SW02 (POWER ON REBOOT ENABLE) ON THE M9301
                                ;*MUST BE IN THE OFF POSITION. THIS TEST WILL ALSO FAIL IF THE
                                ;*CPU POWER FAIL VECTOR IS SET TO ANY LOCATION OTHER THAN 24.
                                ;*IF THIS TEST HANGS OR FAILS DUE TO EITHER REASON ABOVE THE
                                ;*FOLLOWING PATCH MAY BE INSTALLED TO SKIP THIS TEST:
                                ;*
                                ;*      LOC 33362       WAS 33544       SB 33736
                                ;;*************************************************************

                                ;  TEST 136
                                ;-------------
033544  012737  000136  001226  TST136: MOV     #136,TSTNO
033552  012737  033766  001216          MOV     #TST137,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
033560  104412                          MSTCLR                  ;MASTER CLEAR DMC11
033562  005037  001416                  CLR     TEMP            ;PREPARE FOR DELAY
033566  013746  000024                  MOV     @#24,-(SP)      ;STORE POWER FAIL ADDRESS
033572  012737  033636  000024          MOV     #1$,@#24        ;SET UP FOR FORCE POWER FAIL
033600  012761  000002  000004          MOV     #2,4(R1)        ;LOAD PORT4
033606  012711  001000                  MOV     #BIT9,(R1)      ;SET ROMI
033612  012761  121111  000006          MOV     #121111,6(R1)   ;LOAD INSTRUCTION
033620  012711  001400                  MOV     #BIT9!BIT8,(R1) ;CLOCK INSTRUCTION
033624  005237  001416          5$:     INC     TEMP            ;WAIT FOR POWER FAIL
033630  001375                          BNE     5$              ;BR IF DELAY NOT DONE
033632  104017                          EMT     17              ;ERROR, NO POWER FAIL
033634  000426                          BR      4$
033636  012737  033654  000024  1$:     MOV     #3$,@#24        ;POWER UP ADDRESS
033644  010637  033652                  MOV     SP,2$           ;STORE STACK
033650  000000                          HALT                    ;WAIT FOR POWER UP SEQUENCE
033652  000000                  2$:     0
033654  013706  033652          3$:     MOV     2$,SP           ;RESTORE STACK
033660  022626                          POP2SP                  ;POP STACK TWICE
033662  012637  000024                  MOV     (SP)+,@#24      ;RESTORE TRUE POWER FAIL ADDRESS
033666  022737  005336  000024          CMP     #.PFAIL,@#24    ;IS IT CORRECT?
033674  001406                          BEQ     4$              ;BR IF YES
```

```
033676  104017                          EMT     17              ;ERROR, STACK IS INCORRECT
033700  012737  005336  000024          MOV     @.PFAIL,@#24    ;RESTORE TRUE POWER FAIL ADDRESS
033706  012706  001200                  MOV     #STACK,SP       ;RESTORE STACK
033712  005737  000042          4$:     TST     @#42            ; CHECK FOR ACT-11 OR DDP
033716  001407                          BEQ     7$
033720  012701  000140                  MOV     #140, R1
033724  005000                  6$:     CLR     R0              ; DELAY TO WAIT FOR RK05 TO BECOME
033726  005300                  8$:     DEC     R0              ; READY AFTER POWER FAIL
033730  001376                          BNE     8$
033732  005301                          DEC     R1
033734  001373                          BNE     6$
033736  013701  001404          7$:     MOV     DMCSR,R1        ;RESTORE ADDRESS. R1 CLOBBERED ON 11/84 PWRFAIL
033742  012711  003000                  MOV     #BIT9!BIT10,(R1);SEL6 = MAINT IR
033746  012705  121111                  MOV     #121111,R5      ;R5 = EXPECTED
033752  016104  000004                  MOV     4(R1),R4        ;R4 = FOUND
033756  020504                          CMP     R5,R4           ;MAINT IR SHOULD = 12111
033760  001401                          BEQ     .+4             ;BR IF OK
033762  104025                          EMT     25              ;IF = 0 THEN BUS INIT WAS
                                                                ;NOT BLOCKED FROM CLEARING
                                                                ;THE DMC-11
033764  104400                  SCOPE                           ;SCOPE THIS TEST
107

                        ;*************************** TEST 137 ****************************
                        ;*MICRO-PROCESSOR NOISE TEST
                        ;*WRITE ALL ZERO'S THEN ALL ONE'S THEN A DATA PATTERN
                        ;*TO THE IBUS* AND IBUS REGISTERS AND TO THE SP AND MAIN MEM
                        ;*THEN GO BACK AND READ THE DATA PATERNS  TO VERIFY THAT
                        ;*READING AND WRITING OF OTHER LOCATIONS AND REGISTERS
                        ;*DID NOT CHANGE THE DATA.
                        ;;*************************************************************

                        ;  TEST 137
                        ;--------------
033766  012737  000137  001226  TST137: MOV     #137,TSTNO
033774  012737  003364  001216          MOV     #.EOP,NEXT
                                                                ;R1 CONTAINS BASE DMC11 ADDRESS
034002  104412                          MSTCLR                  ;MASTER CLEAR DMC11
034004  005002                          CLR     R2              ;R2 IS INDEX REGISTER
034006  042737  000017  034032  1$:     BIC     #17,2$          ;CLEAR ADDRESS FIELD
034014  156237  034626  034032          BISB    30$(R2),2$      ;ADD IBUS* REG ADDRESS TO INSTRUCTION
034022  116261  034634  000004          MOVB    31$(R2),4(R1)   ;LOAD PORT4
034030  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034032  121100                  2$:     121100                  ;WRITE IBUS* REGISTER
034034  005202                          INC     R2              ;INC INDEX REGISTER
034036  022702  000005                  CMP     #5,R2           ;DONE YET?
034042  001361                          BNE     1$              ;BR IF NO
034044  005002                          CLR     R2              ;R2 IS IBUS REGISTER ADDRESS
034046  042737  000017  034112  3$:     BIC     #17,4$          ;CLEAR ADDRESS FIELD OF INSTRUCTIONS
034054  042737  000017  034124          BIC     #17,5$
034062  042737  000017  034134          BIC     #17,6$
034070  050237  034112                  BIS     R2,4$           ;ADD IBUS REG ADDRESS TO INSTRUCTION
034074  050237  034124                  BIS     R2,5$
034100  050237  034134                  BIS     R2,6$
034104  105061  000004                  CLRB    4(R1)           ;CLEAR PORT4
034110  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034112  122100                  4$:     122100                  ;WRITE 0 TO IBUS REG
```

```
034114  112761  000377  000004          MOVB    #377,4(R1)      ;LOAD PORT4
034122  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034124  122100                  5$:     122100                  ;WRITE ALL ONES TO IBUS REG
034126  110261  000004                  MOVB    R2,4(R1)        ;LOAD PORT4
034132  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034134  122100                  6$:     122100                  ;WRITE ITS OWN ADDRESS TO IBUS REG
034136  005202                          INC     R2              ;NEXT ADDRESS
034140  022702  000010                  CMP     #10,R2          ;DONE YET?
034144  001340                          BNE     3$              ;BR IF NO
034146  005002                          CLR     R2              ;START AT SP ADDRESS 0
034150  042737  000017  034214  7$:     BIC     #17,8$          ;CLEAR ADDRESS FIELD
034156  042737  000017  034226          BIC     #17,9$
034164  042737  000017  034236          BIC     #17,10$
034172  050237  034214                  BIS     R2,8$           ;ADD ADDRESS TO INSTRUCTION
034176  050237  034226                  BIS     R2,9$
034202  050237  034236                  BIS     R2,10$
034206  105061  000004                  CLRB    4(R1)           ;CLEAR PORT4
034212  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034214  123100                  8$:     123100                  ;WRITE ZERO TO SP
034216  112761  000377  000004          MOVB    #377,4(R1)      ;LOAD PORT4
034224  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034226  123100                  9$:     123100                  ;WRITE ALL ONES TO SP
034230  110261  000004                  MOVB    R2,4(R1)        ;LOAD PORT4
034234  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034236  123100                  10$:    123100                  ;WRITE SP ADDRESS TO ITSELF
034240  005202                          INC     R2              ;NEXT SP ADDRESS
034242  022702  000020                  CMP     #20,R2          ;DONE YET?
034246  001340                          BNE     7$              ;BR IF NO
034250  005002                          CLR     R2              ;R2 = MAIN MEM ADDRESS
034252  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC-5304
034254  010000                          010000                  ;MAR _ 0
034256  105061  000004          11$:    CLRB    4(R1)           ;CLEAR PORT4
034262  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034264  122500                          122500                  ;WRITE ZEROS TO MEM
034266  112761  000377  000004          MOVB    #377,4(R1)      ;LOAD PORT4
034274  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034276  122500                          122500                  ;WRITE ONES TO MEM
034300  110261  000004                  MOVB    R2,4(R1)        ;LOAD PORT4
034304  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034306  136500                          136500                  ;WRITE TO MEM IT OWN ADDRESS
034310  005202                          INC     R2              ;NEXT MEM ADDRESS
034312  022702  000400                  CMP     #400,R2         ;DONE YET?
034316  001357                          BNE     11$             ;BR IF NO

                                        ;NOW GO BACK AND READ EVERYTHING

034320  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034322  010000                          010000                  ;MAR_0
034324  032737  100000  001366          BIT     #BIT15,STAT1    ;DMC?
034332  001402                          BEQ     .+6             ;BR IF YES
034334  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034336  004000                          4000                    ;MAR HI _ 0 (KMC ONLY)
034340  005000                          CLR     R0              ;R0 IS INDEX REGISTER
034342  042737  000360  034400  12$:    BIC     #360,13$        ;CLEAR ADDRESS FIELD
034350  116002  034626                  MOVB    30$(R0),R2      ;R2 = IBUS* ADDRESS
034354  010203                          MOV     R2,R3           ;PUT IBUS* ADDRESS IN R3
034356  006303                          ASL     R3              ;SHIFT ADDRESS TO BITS 4-7
```

```
034360  006303                          ASL     R3
034362  006303                          ASL     R3
034364  006303                          ASL     R3
034366  050337  034400                  BIS     R3,13$          ;AD↓ ADDRESS TO INSTRUCTION
034372  116005  034634                  MOVB    31$(R0),R5      ;R5 = "EXPECTED"
034376  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034400  121004                  13$:    121004                  ;PORT4 _ IBUS* REGISTER
034402  016104  000004                  MOV     4(R1),R4        ;R4 = "FOUND"
034406  120504                          CMPB    R5,R4           ;IBUS* CONTENTS OK?
034410  001401                          BEQ     .+4             ;BR IF YES
034412  104004                          EMT     4               ;IBUS* DATA ERROR
034414  005200                          INC     R0              ;INC COUNTER
034416  022700  000005                  CMP     #5,R0           ;DONE YET?
034422  001347                          BNE     12$             ;BR IF NO
034424  005002                          CLR     R2              ;R2 = IBUS REG ADDRESS
034426  042737  000360  034456  14$:    BIC     #360,15$        ;CLEAR ADDRESS FIELD OF INSTRUCTION
034434  010203                          MOV     R2,R3           ;R3 = IBUS ADDRESS
034436  006303                          ASL     R3              ;SHIFT ADDRESS TO BITS 4-7
034440  006303                          ASL     R3
034442  006303                          ASL     R3
034444  006303                          ASL     R3
034446  050337  034456                  BIS     R3,15$          ;ADD ADDRESS TO INSTUCTION
034452  010205                          MOV     R2,R5           ;R5 = "EXPECTED"
034454  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034456  021004                  15$:    021004                  ;PORT4 _ IBUS REG
034460  016104  000004                  MOV     4(R1),R4        ;R4 = "FOUND"
034464  120504                          CMPB    R5,R4           ;IBUS CONTENTS OK?
034466  001401                          BEQ     .+4             ;BR IF YES
034470  104005                          EMT     5               ;IBUS DATA ERROR
034472  005202                          INC     R2              ;NEXT IBUS REGISTER
034474  022702  000010                  CMP     #10,R2          ;DONE YET?
034500  001352                          BNE     14$             ;BR IF NO
034502  005002                          CLR     R2              ;R2 = SP ADDRESS
034504  042737  000017  034520  16$:    BIC     #17,17$ ;CLEAR ADRESS FIELD OF INSTRUCTION
034512  050237  034520                  BIS     R2,17$          ;ADD ADDRESS TO INSTRUCTION
034516  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034520  040600                  17$:    040600                  ;BR _ SP
034522  010205                          MOV     R2,R5           ;R5 = "EXPECTED"
034524  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034526  061224                          061224                  ;PORT4 _ BR
034530  016104  000004                  MOV     4(R1),R4        ;R4 = "FOUND"
034534  120504                          CMPB    R5,R4           ;SP CONTENTS OK?
034536  001401                          BEQ     .+4             ;BR IF YES
034540  104007                          EMT     7               ;SP DATA ERROR
034542  005202                          INC     R2              ;NEXT SP LOCATION
034544  022702  000020                  CMP     #20,R2          ;DONE YET?
034550  001355                          BNE     16$             ;BR IF NO
034552  005002                          CLR     R2              ;R2 = MEMORY ADDRESS
034554  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC-5304
034556  010000                          010000                  ;MAR _ 0
034560  032737  100000  001366          BIT     #BIT15,STAT1    ;DMC?
034566  001402                          BEQ     .+6             ;BR IF YES
034570  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034572  004000                          4000                    ;MAR HI _ 0 (KMC ONLY)
034574  010205                  18$:    MOV     R2,R5           ;R5 = "EXPECTED"
034576  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
034600  055224                          055224                  ;PORT4 _ MAIN MEM
```

```
        034602  016104  000004                  MOV     4(R1),R4        ;R4 = "FOUND"
        034606  120504                          CMPB    R5,R4           ;MAIN MEM CONTENTS OK?
        034610  001401                          BEQ     .+4             ;BR IF YES
        034612  104013                          EMT     13              ;MAIN MEM DATA ERROR
        034614  005202                          INC     R2              ;NEXT MEM ADDRESS
        034616  022702  000400                  CMP     #400,R2         ;DONE YET?
        034622  001364                          BNE     18$             ;BR IF NO
        034624  104400                          SCOPE                   ;SCOPE THIS TEST
        034626     000     002     003  30$:    .BYTE   0,2,3,5,10
        034631     005     010
                                        .EVEN
        034634     001     003     004  31$:    .BYTE   1,3,4,6,10
        034637     006     010
                                        .EVEN
   110
   111
   112                                  ;SUBROUTINES
   113                                  ;-----------
   114
   115 034642                           SETVEC:
   116                                          ;THIS SUBROUTINE LOADS THE VECTORS AND VECTOR LEVELS
   117
   118 034642  012577  144526                   MOV     (R5)+,@DMRVEC   ;LOAD BASE VECTOR
   119 034646  012577  144526                   MOV     (R5)+,@DMTVEC   ;LOAD VECTOR + 2
   120 034652  112577  144520                   MOVB    (R5)+,@DMRLVL   ;LOAD VECTOR + 4
   121 034656  112577  144520                   MOVB    (R5)+,@DMTLVL   ;LOAD VECTOR + 6
   122 034662  000205                           RTS     R5              ;RETURN
   123
   124
   125 034664                           NPRSET:
   126                                          ;THIS SUBROUTINE LOADS IBUS REGISTERS 0-7
   127                                          ;WITH NPR INFORMATION (INBA, OUTBA, OUT DATA)
   128
   129 034664  010246                           MOV     R2,-(SP)        ;SAVE R2
   130 034666  005002                           CLR     R2              ;START AT IBUS REG 0
   131 034670  112561  000004           1$:     MOVB    (R5)+,4(R1)     ;LOAD PORT4
   132 034674  042737  000017  034710           BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
   133 034702  050237  034710                   BIS     R2,2$           ;ADD ADDRESS TO INSTRUCTION
   134 034706  104414                           ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
   135 034710  122100                   2$:     122100                  ;MOVE PORT4 TO IBUS REG
   136 034712  005202                           INC     R2              ;NEXT ADDRESS
   137 034714  022702  000010                   CMP     #10,R2          ;ALL DONE?
   138 034720  001363                           BNE     1$              ;BR IF NO
   139 034722  012602                           MOV     (SP)+,R2        ;RESTORE R2
   140 034724  000205                           RTS     R5              ;RETURN
   141
   142
   143 034726                           MEMLD:
   144                                          ;THIS SUBROUTINE LOADS THE FIRST 8 LOCATIONS OF MAIN
   145                                          ;MEMORY WITH THIS DATA: 0,-1,,0,-1,125,252,125,252
   146
   147 034726  013605                           MOV     @(SP)+,R5       ;PUT POINTER TO DATA IN R5
   148 034730  062746  000002                   ADD     #2,-(SP)        ;ADJUST STACK
   149 034734  012704  000010                   MOV     #10,R4          ;DO 8 LOADS
   150 034740  104414                           ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
   151 034742  010000                           010000                  ;MAR < 0
   152 034744  112577  144442           1$:     MOVB    (R5)+,@DMP04    ;LOAD PORT4
```

```
    153 034750  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    154 034752  136500                          136500                  ;MOV DATA TO MEM, AUTO INC MAR
    155 034754  005304                          DEC     R4              ;DECREMENT COUNT
    156 034756  001372                          BNE     1$              ;BR IF NOT DONE
    157 034760  000207                          RTS     PC              ;RETURN
    158
    159
    162 034762                          SPLD:
    163                                         ;THIS SUBROUTINE LOADS THE FIRST 8 SCRATCH PAD
    164                                         ;LOCATIONS WITH: 0,0, 1,-1,125,125,252,252
    165
    166 034762  013605                          MOV     @(SP)+,R5       ;PUT POINTER TO DATA IN R5
    167 034764  062746  000002                  ADD     #2,-(SP)        ;ADJUST STACK
    168 034770  005004                          CLR     R4              ;START AT SP ADDRESS 0
    169 034772  112577  144414          1$:     MOVB    (R5)+,@DMP04    ;LOAD PORT4 WITH DATA
    170 034776  042737  000017  035012          BIC     #17,2$          ;CLEAR ADDRESS FIELD OF INSTRUCTION
    171 035004  050437  035012                  BIS     R4,2$           ;ADD ADDRESS TO INSTRUCTION
    172 035010  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    173 035012  123100                  2$:     123100                  ;MOVE DATA TO SP
    174 035014  005204                          INC     R4              ;INCREMENT COUNT
    175 035016  022704  000010                  CMP     #10,R4          ;DONE YET?
    176 035022  001363                          BNE     1$              ;BR IF NO
    177 035024  000207                          RTS     PC              ;RETURN
    178
    179
    180 035026                          CLRC:
    181                                         ;THIS SUBROUTINE CLEARS THE MICRO PROCESSOR C BIT
    182
    183 035026  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    184 035030  010000                          010000                  ;MAR_0
    185 035032  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    186 035034  040400                          040400!<0*20>           ;CLEAR C BIT
    187 035036  000207                          RTS     PC              ;RETURN
    188
    189
    190 035040                          SETC:
    191                                         ;THIS SUBROUTINE SETS THE MICRO PROCESSOR C BIT
    192
    193 035040  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    194 035042  010003                          010003                  ;MAR_3
    195 035044  104414                          ROMCLK                  ;NEXT WORD IS INSTRUCTION, ROMCLK PC=5304
    196 035046  040403                          040403!<0*20>           ;SET C BIT
    197 035050  000207                          RTS     PC              ;RETURN
    198
    199
    200 035052      000     377     000  MEMDAT: .BYTE   0,-1,0,-1,125,252,125,252
        035055      377     125     252
        035060      125     252
    201 035062      000     000     377  SPDAT:  .BYTE   0,0,-1,-1,125,125,252,252
        035065      377     125     125
        035070      252     252
    202                                 .EVEN
    207 035072      377     125     116  EM1:    .ASCIZ  <377>/UNIBUS REGISTER ADDRESSING TIME-OUT/
    208 035137      377     125     116  EM2:    .ASCIZ  <377>/UNIBUS REGISTER WRITE, READ TEST/
    209 035201      377     115     111  EM3:    .ASCIZ  <377>/MICRO PROCESSOR TEST/
    210 035227      377     115     111  EM4:    .ASCIZ  <377>/MICRO PROCESSOR WRITE, READ TEST/
    211 035271      377     102     122  EM5:    .ASCIZ  <377>/BR REGISTER TEST/
```

```
 212 035313     377     123     103  EM6:    .ASCIZ  <377>/SCRATCH PAD TEST/
 213 035335     377     104     105  EM7:    .ASCIZ  <377>/DEVICE FAILED TO INTERRUPT/
 214 035371     377     104     105  EM10:   .ASCIZ  <377>/DEVICE INTERRUPTED TO WRONG VECTOR/
 215 035435     377     116     120  EM11:   .ASCIZ  <377>/NPR TEST/
 216 035447     377     115     101  EM12:   .ASCIZ  <377>/MAIN MEMORY TEST/
 217 035471     377     115     101  EM13:   .ASCIZ  <377>/MAR TEST/
 218 035503     377     101     114  EM14:   .ASCIZ  <377>/ALU TEST/
 219 035515     377     120     122  EM15:   .ASCIZ  <377>/PROGRAM CLOCK TEST/
 220 035541     377     106     117  EM16:   .ASCIZ  <377>/FORCE POWER FAIL ERROR/
 221 035571     377     125     116  EM17:   .ASCIZ  <377>/UNEXPECTED INTERRUPT/
 222 035617     377     104     115  EM20:   .ASCIZ  <377>/DMC11 CONFIGURATION ERROR/
 223 035652     377     115     101  EM21:   .ASCIZ  <377>/MAINTENANCE INSTRUCTION REGISTER TEST/
 224 035721     377     120     117  EM22:   .ASCIZ  <377>/POWER FAIL INITIALIZE FAILURE/
 225
 226 035760     377     122     105  DH1:    .ASCIZ  <377>/REGISTER          TRAPPED FROM/
 227 036021     377     105     130  DH2:     ASCIZ  <377>/EXPECTED  FOUND     REGISTER/
 228 036057     377     105     130  DH3:    .ASCIZ  <377>/EXPECTED  FOUND/
 229 036100     377     105     130  DH4:    .ASCIZ  <377>/EXPECTED  FOUND   IBUS* REGISTER/
 230 036142     377     105     130  DH5:    .ASCIZ  <377>/EXPECTED  FOUND   IBUS REGISTER/
 231 036203     377     105     130  DH6:    .ASCIZ  <377>/EXPECTED  FOUND     ADDRESS/
 232                                 .EVEN
 233
 234 036240  000002                 DT1:    2
 235 036242     006     015                  .BYTE   6,15
 236 036244  001262                          SAVR1
 237 036246     006     002                  .BYTE   6,2
 238 036250  001264                          SAVR2
 239 036252  000003                 DT2:    3
 240 036254     006     004                  .BYTE   6,4
 241 036256  001272                          SAVR5
 242 036260     006     004                  .BYTE   6,4
 243 036262  001270                          SAVR4
 244 036264     006     002                  .BYTE   6,2
 245 036266  001262                          SAVR1
 246 036270  000002                 DT3:    2
 247 036272     006     004                  .BYTE   6,4
 248 036274  001272                          SAVR5
 249 036276     006     002                  .BYTE   6,2
 250 036300  001270                          SAVR4
 251 036302  000003                 DT4:    3
 252 036304     003     007                  .BYTE   3,7
 253 036306  001272                          SAVR5
 254 036310     003     011                  .BYTE   3,11
 255 036312  001270                          SAVR4
 256 036314     002     002                  .BYTE   2,2
 257 036316  001264                          SAVR2
 258 036320  000003                 DT5:    3
 259 036322     003     007                  .BYTE   3,7
 260 036324  001272                          SAVR5
 261 036326     003     007                  .BYTE   3,7
 262 036330  001270                          SAVR4
 263 036332     006     002                  .BYTE   6,2
 264 036334  001264                          SAVR2
 265 036336  000002                 DT6:    2
 266 036340     003     007                  .BYTE   3,7
 267 036342  001272                          SAVR5
 268 036344     003     002                  .BYTE   3,2
```

```
    269 036346  001270                          SAVR4
    270 036350  000002                  DT7:    2
    271 036352     006      004                 .BYTE   6,4
    272 036354  001262                          SAVR1
    273 036356     006      002                 .BYTE   6,2
    274 036360  001404                          DMCSR
    275 036362                          .ERRTAB:
    276 036362  000000                          0
    277 036364  000000                          0
    278 036366  000000                          0
    279 036370  035072                          EM1
    280 036372  035760                          DH1     ;EMT    1
    281 036374  036240                          DT1
    282 036376  035137                          EM2
    283 036400  036021                          DH2     ;EMT    2
    284 036402  036252                          DT2
    285 036404  035201                          EM3
    286 036406  036057                          DH3     ;EMT    3
    287 036410  036270                          DT3
    288 036412  035227                          EM4
    289 036414  036100                          DH4     ;EMT    4
    290 036416  036302                          DT4
    291 036420  035227                          EM4
    292 036422  036142                          DH5     ;EMT    5
    293 036424  036302                          DT4
    294 036426  035271                          EM5
    295 036430  036057                          DH3     ;EMT    6
    296 036432  036336                          DT6
    297 036434  035313                          EM6
    298 036436  036203                          DH6     ;EMT    7
    299 036440  036320                          DT5
    300 036442  035335                          EM7
    301 036444  000000                          0       ;EMT    10
    302 036446  000000                          0
    303 036450  035371                          EM10
    304 036452  000000                          0       ;EMT    11
    305 036454  000000                          0
    306 036456  035435                          EM11
    307 036460  036057                          DH3     ;EMT    12
    308 036462  036270                          DT3
    309 036464  035447                          EM12
    310 036466  036203                          DH6     ;EMT    13
    311 036470  036320                          DT5
    312 036472  035471                          EM13
    313 036474  036203                          DH6     ;EMT    14
    314 036476  036320                          DT5
    315 036500  035503                          EM14
    316 036502  036057                          DH3     ;EMT    15
    317 036504  036336                          DT6
    318 036506  035515                          EM15
    319 036510  036100                          DH4     ;EMT    16
    320 036512  036302                          DT4
    321 036514  035541                          EM16
    322 036516  000000                          0       ;EMT    17
    323 036520  000000                          0
    324 036522  035571                          EM17
    325 036524  000000                          0       ;EMT    20
```

DMC11 ALU TESTS

```
    326 036526  000000                          0
    327 036530  035435                          EM11
    328 036532  036203                          DH6     ;EMT    21
    329 036534  036320                          DT5
    330 036536  035617                          EM20
    331 036540  036057                          DH3     ;EMT    22
    332 036542  036350                          DT7
    333 036544  035652                          EM21
    334 036546  036057                          DH3     ;EMT    23
    335 036550  036270                          DT3
    336 036552  035617                          EM20
    337 036554  000000                          0       ;EMT    24
    338 036556  000000                          0
    339 036560  035721                          EM22
    340 036562  036057                          DH3     ;EMT    25
    341 036564  036270                          DT3
    342
    343                             .EVEN
    344 036566                      CORMAX:
    349         000001              .END
```

SYMBOL TABLE

```
ADRCNT= 004373
AUDONE  003024
AUSTRT  002446
AUTO.S  010512
BINWRD  004714
BIT0  = 000001
BIT1  = 000002
BIT10 = 002000
BIT11 = 004000
BIT12 = 010000
BIT13 = 020000
BIT14 = 040000
BIT15 = 100000
BIT2  = 000004
BIT3  = 000010
BIT4  = 000020
BIT5  = 000040
BIT6  = 000100
BIT7  = 000200
BIT8  = 000400
BIT9  = 001000
BM      007054
BRLVL   012252
BRW     003730
BRX     003732
CHRCNT  004712
CKSWR   007606
CKSWR1  007666
CKSWR2  007700
CKSWR3  007704
CKSWR4  007710
CKSWR5  010014
CLKX    001242
CLRC    035026
CNERR   007277
CNT.MA  001702
CNVRT = 104411
CONERR  007223
CONN    007114
CONTAB  002776
CONVRT= 104410
CORMAX  036566
CRAM    006606
CREAM   001320
CSR     006510
CSRMAP  010514
CYCLE   010060
DATABP  005216
DATACL= 104415
DATAHD  005204
DELAY = 104413
DEVADR  004370
DEVTAB  003010
DH1     035760
DH2     036021
DH3     036057
DH4     036100
DH5     036142
DH6     036203
DISPLA  001200
DISPRE  000174
DMACTV  001306
DMCM    007320
DMCR00  001500
DMCR01  001510
DMCR02  001520
DMCR03  001530
DMCR04  001540
DMCR05  001550
DMCR06  001560
DMCR07  001570
DMCR10  001600
DMCR11  001610
DMCR12  001620
DMCR13  001630
DMCR14  001640
DMCR15  001650
DMCR16  001660
DMCR17  001670
DMCSR   001404
DMCSRH  001406
DMCTL   001410
DMNUM   001310
DMP04   001412
DMP06   001414
DMRLVL  001376
DMRVEC  001374
DMS100  001502
DMS101  001512
DMS102  001522
DMS103  001532
DMS104  001542
DMS105  001552
DMS106  001562
DMS107  001572
DMS110  001602
DMS111  001612
DMS112  001622
DMS113  001632
DMS114  001642
DMS115  001652
DMS116  001662
DMS117  001672
DMS200  001504
DMS201  001514
DMS202  001524
DMS203  001534
DMS204  001544
DMS205  001554
DMS206  001564
DMS207  001574
DMS210  001604
DMS211  001614
DMS212  001624
DMS213  001634
DMS214  001644
DMS215  001654
DMS216  001664
DMS217  001674
DMS300  001506
DMS301  001516
DMS302  001526
DMS303  001536
DMS304  001546
DMS305  001556
DMS306  001566
DMS307  001576
DMS310  001606
DMS311  001616
DMS312  001626
DMS313  001636
DMS314  001646
DMS315  001656
DMS316  001666
DMS317  001676
DMTLVL  001402
DMTVEC  001400
DM.END  001700
DM.MAP  001500
DONE    003734
DT1     036240
DT2     036252
DT3     036270
DT4     036302
DT5     036320
DT6     036336
DT7     036350
EM1     035072
EM10    035371
EM11    035435
EM12    035447
EM13    035471
EM14    035503
EM15    035515
EM16    035541
EM17    035571
EM2     035137
EM20    035617
EM21    035652
EM22    035721
EM3     035201
EM4     035227
EM5     035271
EM6     035313
EM7     035335
ERCT00  001704
ERCT01  001710
ERCT02  001714
ERCT03  001720
ERCT04  001724
ERCT05  001730
ERCT06  001734
ERCT07  001740
ERCT10  001744
ERCT11  001750
ERCT12  001754
ERCT13  001760
ERCT14  001764
ERCT15  001770
ERCT16  001774
ERCT17  002000
ERR     002700
ERRCNT  001232
ERRFLG  001325
ERRMSG  005172
ERRPC   002770
ERTABO  005322
EXIT  = 000205
EXITER  005252
FLOAT   002536
FY      002566
HALTS   005222
HILIM   004366
ICOUNT  001222
INBUF   007502
INCHAR  010020
INIFLG  001324
INSTER= 104404
INSTR = 104403
INSTR2  004166
INTTY   012266
KMCM    007330
LIMITS  004314
LINE    007016
LOBITS  004372
LOCK    001220
LOKFLG  001326
LOLIM   004364
LPCNT   001224
LSTERR  001234
MASKX   001244
MASTEK  006142
MCRLF   005672
MCSRX   006072
MDATA   007544
MEMDAT  035052
MEMLD   034726
MEMLIM  001304
MEPASS  005733
MERRPC  006217
MERRX   006117
MERR2   005760
MERR3   006005
MILK    001322
MLOCK   006043
MNEW    006144
MODU    006704
MPASSX  006106
MPFAIL  005675
MQM     005666
MR      005755
MRESET= 004000
MSTCLR= 104412
MTITLE  001000
MTSTN   006130
MTSTPC  006031
MVECX   006100
NEXT    001216
NOACT   007154
NODEV   002674
NPRSET  034664
NUM     006450
OK      002646
ONE     001302
PACT00  001702
PACT01  001706
PACT02  001712
PACT03  001716
PACT04  001722
PACT05  001726
PACT06  001732
PACT07  001736
PACT10  001742
PACT11  001746
PACT12  001752
PACT13  001756
PACT14  001762
PACT15  001766
PACT16  001772
PACT17  001776
PARAM = 104405
PARAM1  004234
PARBIT= 040000
PARERR  004310
PASCNT  001230
PERFOR= 004537
PFTAB   005430
POPR0 = 012600
POP1SP= 005726
POP2SP= 022626
PRIO    006547
PS    = 177776
PUSHR0= 010046
PUSH1S= 005746
PUSH2S= 024646
QV.FLG  001327
RESREG  005220
RESTAR  005350
RESTRT  003534
RES05 = 104407
RETURN  001214
ROMCLK= 104414
RUN     001316
SAVACT  001312
SAVNUM  001314
```

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SYMBOL TABLE

SAVPC   001276          SW11  = 004000          TST122  031106          TST43   017610          WRKO.F  005174
SAVRO   001260          SW12  = 010000          TST123  031262          TST44   017764          XBX     005000
SAVR1   001262          SW13  = 020000          TST124  031436          TST45   020140          XCSR    003546
SAVR2   001264          SW14  = 040000          TST125  031612          TST46   020314          XERR    003570
SAVR3   001266          SW15  = 100000          TST126  031766          TST47   020470          XHEAD   006224
SAVR4   001270          TDATA   024542          TST127  032142          TST5    012704          XLOC    003022
SAVR5   001272          TEMP    001416          TST13   013470          TST50   020644          XPASS   003562
SAVSP   001274          TEMP1   001246          TST130  032316          TST51   021072          XSTATQ  007454
SAVO5 = 104406          TEMP2   001250          TST131  032472          TST52   021242          XTSTN   005330
SCOPE = 104400          TEMP3   001252          TST132  032646          TST53   021510          XVEC    003554
SCOP1 = 104401          TEMP4   001254          TST133  033022          TST54   021732          ZERO    001300
SETC    035040          TEMP5   001256          TST134  033176          TST55   022026          $CRAP = 177777
SETVEC  034642          TIMER = 104416          TST135  033352          TST56   022120          $ENDAD  003522
SKIP    002632          TKCSR   001204          TST136  033544          TST57   022240          $N    = 000137
SOFTSW  010052          TKDBR   001206          TST137  033766          TST6    013002          $S    = 000141
SPACNT= 004713          TLAST = 033766          TST14   013566          TST60   022404          $Y    = 000017
SPDAT   035062          TPCSR   001210          TST15   013664          TST61   022510          .BEGIN  003152
SPEED   007340          TPDBR   001212          TST16   013762          TST62   022624          .CNVRT  004472
SPLD    034762          TRPOK   004730          TST17   014060          TST63   022726          .CONVR  004466
STACK = 001200          TSTNO   001226          TST2    012426          TST64   023064          .DATAC  005552
STAT    001240          TST1    012320          TST20   014156          TST65   023210          .DELAY  005436
STAT1   001366          TST10   013176          TST21   014254          TST66   023320          .EOP    003364
STAT2   001370          TST100  025256          TST22   014352          TST67   023426          .ERRTA  036362
STAT3   001372          TST101  025432          TST23   014450          TST7    013100          .HLT    004750
STRTSW  001236          TST102  025606          TST24   014546          TST70   023624          .INSTE  004154
SV05    004402          TST103  025762          TST25   014672          TST71   023752          .INSTR  004050
SWFLG   010016          TST104  026136          TST26   015016          TST72   024104          .INST1  004070
SWMES   007205          TST105  026312          TST27   015146          TST73   024304          .MSG    004072
SWMES1  007215          TST106  026466          TST3    012456          TST74   024440          .MSTCL  005466
SWR     001202          TST107  026642          TST30   015306          TST75   024552          .PARAM  004174
SWREG   000176          TST11   013274          TST31   015450          TST76   024726          .PFAIL  005336
SW00  = 000001          TST110  027016          TST32   015534          TST77   025102          .RES05  004434
SW01  = 000002          TST111  027172          TST33   015734          TTST    003612          .ROMCL  005504
SW02  = 000004          TST112  027346          TST34   016134          TWOSYN= 010000          .SAV05  004374
SW03  = 000010          TST113  027522          TST35   016310          TYPDAT  005206          .SCOPE  003576
SW04  = 000020          TST114  027676          TST36   016464          TYPE  = 104402          .SCOP1  003736
SW05  = 000040          TST115  030052          TST37   016664          TYPMSG  005106          .START  002002
SW06  = 000100          TST116  030226          TST4    012606          VEC     006526          .TIMER  005616
SW07  = 000200          TST117  030402          TST40   017104          VECMAP  012010          .TRPSR  004716
SW08  = 000400          TST12   013372          TST41   017260          WHICH   012002          .TRPTA  001330
SW09  = 001000          TST120  030556          TST42   017434          WRDCNT  004710          .TYPE   003766
SW10  = 002000          TST121  030732

. ABS.  036566      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  53760 WORDS  ( 210 PAGES)
DYNAMIC MEMORY AVAILABLE FOR  71 PAGES
CZDMCD.BIN,CZDMCD.SEQ=CZDMCD.P11
```