UDC11

CONTROL TEST

MD-11-DZUDB-B

EP-DZUDB-B-DL

FICHE 1 OF 1

JUN 1978

digital

MADE IN USA

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DZUDB-B-D
PRODUCT NAME:	UDC11 CONTROL TEST
DATE CREATED:	JANUARY 1973
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	R.WHITTON

```
                                                                        PAGE  I


                1.      ABSTRACT

                        UDC11 CONTROL TEST TESTS VIRTUALLY ALL OF THE CONTROL LOGIC
                        UP TO THE UDC BUS. MAINTENANCE LOGIC IS USED TO GENERATE UDC
                        INTERRUPTS AND TO SINGLE STEP THE SCAN REGISTER. NOTE: THE UDC
                        BUS CABLE TO THE SYSTEM UNITS CAN BE REMOVED FROM THE CONTROL
                        WHILE THIS TEST IS RUN IF ERRORS  RESULT DUE TO INTERRUPT
                        MODULES GENERATING INTERRUPTS. IF THE MODULES GENERATING
                        INTERRUPTS ARE IN THE FIRST FOUR ADDRESSES (000-006),
                        THE MODULES MUST BE REMOVED SINCE REMOVING THE BUS CABLE
                        WILL NOT DISCONNECT THESE MODULES FROM THE UDC BUS.

                        A POWER FAIL TEST IS INCLUDED. STARTING ADDRESS=000264.
                        THIS TEST WILL TYPE A MESSAGE THAT IT IS WAITING FOR A
                        POWER FAILURE AND WILL TYPE WHICH ONE OF TWO TYPES OF
                        FAILURES OCCUR (UDC DC POWER OR PDP11)WHEN AND IF
                        THEY HAPPEN.


                2.      REQUIREMENTS

                2.1     EQUIPMENT

                        A.  PDP-11
                        B.  ASR33/35 TELETYPE.
                        C.  UDC11 CONTROL

                        THE PROCESSOR AND TELETYPE MUST BE IN OPERATING CONDITION.

                        THE TELETYPE AND UDC11 CONTROL MUST HAVE THEIR STANDARD PERIPHERAL
                        ADDRESSES, INTERRUPT LEVELS, AND INTERRUPT VECTOR ADDRESSES.
                        REFER TO SECTION 7.2  IF YOUR SYSTEM DOES NOT HAVE STANDARD
                        PERIPHERAL ADDRESSES.

                2.2     STORAGE

                        THIS PROGRAM USES LOCATIONS 000000 THROUGH 012710.

                3.      LOADING PROCEDURE

                        THIS PROGRAM'S OBJECT TAPE IS PUNCHED IN ABSOLUTE FORMAT.
                        THE ABS LOADER IS USED TO LOAD THE PROGRAM.
```

```
                                4.      USE PROCEDURE

                                        A.  UDC BUS CABLE MAY BE UNPLUGED FROM CONTROL
                                        B.  LOAD EITHER ADDRESS 200 FOR CONTROL DIAGNOSTIC
                                            OR ADDRESS 204 FOR POWER FAIL TEST.
                                        C.  PRESS START.
                                        D.  THE PROGRAM IDENTIFIES ITSELF, TYPES SETUP INSTRUCTIONS,
                                            SR OPTIONS MESSAGE, AND HALTS.
                                        E.  PERFORM SETUP ISTEPS A AND B), AND SELECT DESIRED SR OPTIONS,
                                            IF ANY. NORMAL SR SETTING IS 000000.

                                            THIS PROGRAM'S SR OPTIONS ARE:

                                                SR15 = 1        HALT ON ERROR
                                                SR14 = 1        ENTER SCOPE MODE
                                                SR13 = 1        INHIBIT ERROR PRINTOUT
                                                SR11 = 1        INHIBIT ITERATION
                                                SR10 = 1        HALT AT END OF TEST CURRENTLY EXECUTING
                                                SR9  = 1        SELECT THE TEST SPECIFIED BY SR7 THROUGH SR0
                                                SR7 THROUGH SR0 = NUMBER OF TEST TO BE SELECTED

                                            SECTION 7.I GIVES A COMPLETE EXPLANATION OF SR OPTIONS.

                                        F.  PRESS CONT. THE PROGRAM BEGINS EXECUTION.
                                        G.  AT THE END OF EACH PASS THE TELETYPE BELL RINGS ONCE, AND
                                           "END" IS TYPED.
                                        H.  REFER TO SECTION 6.2  IF ERROR PRINTOUTS OCCUR.

                                        EXECUTION TIME:

                                        A.  ONE NORMAL ERROR FREE PASS TAKES APPROXIMATELY 1 MINUTES.
                                        B.  ONE SINGLE ITERATION PASS (SR11=1) TAKES ABOUT 10 SECONDS.

                                                      ******NOTE******

                                        THE SINGLE ITERATION PASS IS A CONVENIENT WAY TO QUICKLY
                                        DETERMINE IF ANY SOLID PROBLEMS EXIST. FOR A THOROUGH TEST,
                                        THE NORMAL ITERATION PASS SHOULD BE RUN.


                                4.1     RESTART PROCEDURE

                                        TO RESTART THE PROGRAM WITHOUT GENERATING THE INITIAL PRINTOUTS
                                        PROCEED AS FOLLOWS:

                                        A.  LOAD ADDRESS 000210
                                        B.  PERFORM STEP E OF PREVIOUS PROCEDURE.
                                        C.  PRESS START.
```

5. PROGRAM AND/OR OPERATOR ACTION

5.1 NORMAL HALTS

LOC 001656 COMMON HALT. THIS HALT IS CONTAINED IN A SUBROUTINE THAT IS CALLED BY THOSE PARTS OF THE PROGRAM THAT REQUIRE THAT THE PROCESSOR STOP. THIS HALT NORMALLY OCCURS UPON COMPLETION OF NON-ERROR PRINTOUTS. THE CONSOLE DATA LIGHTS DISPLAY THE ADDRESS OF INSTRUCTION THAT GENERATED THE HALT REQUEST.

LOC 001330 ROUTINE END HALT. THIS HALT OCCURS UPON COMPLETION OF THE CURRENT TEST ROUTINE IF SR10 IS SET. THE CONSOLE DATA LIGHTS DISPLAY THE NUMBER OF THE TEST JUST COMPLETED.

5.2 NORMAL PRINTOUTS

ALL NON-ERROR PRINTOUTS ARE NORMAL PRINTOUTS. INSTRUCTION, TITLE, AND USER ERROR PRINTOUTS ARE NORMAL PRINTOUTS.

6. ERRORS

ERRORS ARE REPORTED IN THIS PROGRAM BY THE FOLLOWING METHODS:

A. UNCONDITIONAL ERROR HALTS, OR
B. ERROR PRINTOUT FOLLOWED BY OPTIONAL ERROR HALT.

6.1 UNCONDITIONAL ERROR HALTS

AN UNCONDITIONAL ERROR HALT WILL OCCUR AT THE ADDRESSES LISTED BELOW IF THROUGH HARDWARE OR SOFTWARE FAILURE, PROGRAM CONTROL IS TRANSFERRED TO AN UNEXPECTED AREA BETWEEN 000000 AND 000376.

000002 RESERVED AREA
000006 ERROR TRAP
000012 RESERVED INSTRUCTION TRAP
000016 DEBUG TRAP
000022 IOT TRAP
000026 POWER FAIL TRAP
000040 THROUGH 000376 - SYSTEM SOFTWARE AND INTERRUPT VECTOR AREA, EXCEPT FOR UDC11 AND TTY VECTORS.

TO FIND OUT WHERE THE PROGRAM WAS AT THE TIME THE FAILURE OCCURRED,

A. EXAMINE CONTENTS OF REGISTER 6. (ADDRESS 177706).
B. TRANSFER THE CONTENTS OF REG 6 TO THE SR, LOAD ADDRESS AND EXAMINE.
C. THE DATA SHOWN IN THE DATA LIGHTS IS THE VALUE OF THE PC WHEN THE FAILURE OCCURRED.
D. LOCATE IN PROGRAM LISTING THE DISPLAYED PC VALUE.

(6.1 CONT'D)

E. THE INSTRUCTION THAT IMMEDIATELY PRECEDES THE ONE REFERENCED
    BY THE DISPLAYED PC VALUE IS THE INSTRUCTION THAT WAS/WAS BEING
    EXECUTED WHEN THE FAILURE OCCURRED.

AN UNCONDITIONAL ERROR HALT FAILURE IS AN ABNORMAL CONDITION
INDICATING A HARDWARE FAILURE, OR MOST UNLIKELY, A PROGRAM FAILURE.
THIS PROGRAM ASSUMES THAT THE PROCESSOR IS IN OPERATING CONDITION IN
ORDER TO PERFORM ITS TESTS, AND FURTHER STEPS REQUIRED TO DIAGNOSE AN
AN UNCONDITIONAL ERROR HALT ARE NOT WITHIN THE SCOPE OF THIS PROGRAM.

6.2 ERROR PRINTOUTS

ERROR PRINTOUTS ARE GENERATED BY THE "ERRN" SUBROUTINE. THE
"ERRN" SUBROUTINE IS CALLED BY AN "ERRORN" STATEMENT IN THE
PROGRAM LISTING. AN ERROR PRINTOUT LOOKS AS FOLLOWS:

```
TXXX  PC=YYYYY  ICNT=ZZZZ.  ADDITIONAL ERROR INFORMATION
```

WHERE:

TXXX IS THE NUMBER OF FAILING ROUTINE (OCTAL).

PC=YYYYY IS THE ADDRESS OF ERROR CALL.

ICNT=ZZZZ. IS THE ITERATION COUNT AT TIME OF FAILURE.

THE ADDITIONAL ERROR INFORMATION FURTHER DESCRIBES THE ERROR.
THIS WILL USUALLY BE THE CONTROL AND STATUS REGISTERS.
UDCR=XXXXXX UDSR=XXXXXX

AFTER THE PRINTOUT IS COMPLETED, THE PROGRAM WILL HALT AT
COMMON ERROR HALT AT LOC 002442 IF SR15 IS SET.

WHEN AN ERROR PRINTOUT OCCURS:

A. LOOK UP THE ADDRESS REFERENCED BY PC BYYYYY IN THE LISTING.
B. OPPOSITE THE PC VALUE IN "ERROR" STATEMENT WILL BE FOUND, AND
    IN THE COMMENTS SECTION, A DESCRIPTION OF THE ERROR.
C. AT THE BEGINNING OF THE TEST ROUTINE A DESCRIPTION OF THE TEST
    WILL BE FOUND.

7. MISCELLANEOUS

7.1 SR OPTIONS

THE STANDARD SR OPTIONS ARE DESCRIBED HERE.

SR15 HALT ON ERROR. WITH SR15 SET TO A 1, THE PROGRAM WILL HALT AFTER AN ERROR OCCURS. PRESSING CONT WILL CAUSE PROGRAM TO RESUME OPERATION.

SR14 SCOPE. THIS OPTION CAUSES THE PROGRAM TO REMAIN IN THE CURRENT TEST ROUTINE. WHEN THE OPTION IS REMOVED, THE PROGRAM WILL COMPLETE THE CURRENT ROUTINE, AND WILL THEN GO ON TO THE NEXT ROUTINE.

SR13 INHIBIT ERROR PRINTOUT. THIS OPTION IF SET, WILL REMOVE ALL ERROR PRINTOUTS.

•••••NOTE•••••

SCOPE MODE OPERATION IS ACHIEVED BY LOCKING THE PROGRAM IN THE CURRENT ROUTINE, INHIBITING ERROR PRINTOUTS, AND BYPASSING ERROR HALTS.

SR11 INHIBIT ITERATION. SETTING THIS OPTION WILL CAUSE THE PROGRAM TO EXECUTE EACH TEST ONLY ONCE, INSTEAD OF THE NORMAL NUMBER OF ITERATIONS SELECTED FOR EACH TEST. TWO POSSIBLE USES OF THIS OPTION ARE:

A. QUICK PASS. EACH TEST IS RUN ONLY ONCE.
B. TO SKIP OVER A FAILING ROUTINE.

SR10 HALT AT END OF CURRENT ROUTINE. WITH THE OPTION SET, THE PROGRAM WILL HALT AT THE END OF EACH TEST, AND DISPLAY IN DATA LIGHTS THE NUMBER OF THE TEST JUST COMPLETED. THREE POSSIBLE USES OF THIS OPTION ARE:

A. TO STEP THROUGH THE PROGRAM ONE ROUTINE AT A TIME.
B. WHEN THE PROGRAM HAS BEEN RUNNING FOR A WHILE, TO FIND OUT HOW FAR IT HAS PROGRESSED.
C. IN CASE OF A BLOW UP, ETC., TO STEP THROUGH ONE TEST AT A TIME UNTIL THE FAILURE REOCCURS. THE ROUTINE FOLLOWING THE PREVIOUSLY COMPLETED ROUTINE WOULD BE THE FAILING ROUTINE.

SR9 SELECT ROUTINE. WITH SR9 SET, THE PROGRAM WILL GO AND EXECUTE THE ROUTINE INDICATED BY SR7 THROUGH SR8, AFTER THE CURRENT ROUTINE HAS BEEN COMPLETED. IF THE OPTION IS REMOVED, THE PROGRAM WILL PROCEED TO EXECUTE THE ROUTINES FOLLOWING THE SELECTED ROUTINE.

7.2 TESTING UDC11 AT NON-STANDARD ADDRESSES AND/OR VECTORS

THIS PROGRAM CAN TEST THE UDC11 AT NON-STANDARD ADDRESSES AND VECTORS PROVIDED THOSE ADDRESSES AND VECTORS ARE PROVIDED TO THE PROGRAM AS FOLLOWS:

A. AFTER LOADING PROGRAM REFER TO PROGRAM LISTING AND CHANGE LOCATIONS 001210 THROUGH 001244 TO REFLECT THE NEW UDC11 ADDRESSES AND VECTORS.

B. IF THE TELETYPE IS ALSO AT NON STANDARD ADDRESSES, CHANGE LOCATIONS 001200 THRU 001216 ALSO.

C. PROCEED TO USE THE PROGRAM; OR

D. USING STANDARD DUMP ROUTINES, DUMP OUT THE ENTIRE PROGRAM IN ABSOLUTE FORMAT TO HAVE AN OBJECT TAPE THAT REFLECTS YOUR SYSTEM, OR

E. DUMP OUT ONLY LOCATIONS 001210 THROUGH 001244 IN ABSOLUTE FORMAT, AND LOAD IT ALSO AFTER LOADING THE MAIN PROGRAM.

8. DESCRIPTION

THIS PROGRAM IS ORGANIZED INTO THREE MAIN SECTIONS:

A. CONTROL ROUTINE.
B. TEST ROUTINES.
C. COMMON SUBROUTINES

8.1 CONTROL ROUTINE

THE CONTROL ROUTINE ASSUMES CONTROL WHEN THE PROGRAM IS STARTED. IT HAS THE FOLLOWING FUNCTIONS:

A. CONTROLS SEQUENCE OF TEST ROUTINES.
B. HONORS AND ACTS ON SR OPTIONS.

THE CONTROL ROUTINE IS CALLED FROM A TEST ROUTINE BY THE "SCOPE" STATEMENT.

```
                                                                    PAGE  7


                8.2     TEST ROUTINES

                        THE ACTUAL TESTING IS PERFORMED BY A SET OF TEST ROUTINES THAT
                        ARE NUMBERED SEQUENTIALLY FROM 0 TO 100 (OCTAL). EACH TEST
                        ROUTINE IS PRECEDED BY A TEST HEADER THAT IS USED BY THE CONTROL
                        ROUTINE IN ORDER TO PROPERLY SEQUENCE THROUGH THE TESTS. THE HEADER
                        LOOKS AS FOLLOWS: (EXAMPLE)

                        ;*************************************************************
                        T201    20              ;ROUTINE NUMBER 20.                 *
                                T21             ;ADDRESS OF NEXT ROUTINE            *
                                100.            ;TEST ITERATION COUNT               *
                                BAGA            ;SCOPE ENTRY POINT                  *
                        ;*************************************************************

                        THE FIRST 3 ITEMS ARE SELF EXPLANATORY. THE TEST ITERATION COUNT
                        INDICATES TO THE CONTROL ROUTINE THE NUMBER OF TIMES THE TEST
                        SHOULD BE PERFORMED BEFORE GOING ON TO THE NEXT ROUTINE.

                        THE SCOPE ENTRY POINT INDICATES TO THE CONTROL ROUTINE THE ADDRESS
                        IT SHOULD RETURN TO AFTER THE FIRST ITERATION. THE ADDRESS MAY
                        NOT NECCESARILY POINT TO THE FIRST INSTRUCTION OF THE TEST.

                8.3     COMMON SUBROUTINES

                        ALL SUBROUTINES NEEDED BY EITHER THE CONTROL ROUTINE OR TEST
                        ROUTINES ARE GROUPED TOGETHER. THE MOST SIGNIFICANT SUBROUTINE
                        IS THE "ERR" SUBROUTINE, WHICH IS CALLED BY AN "ERROR" STATEMENT
                        AND TYPES THE TEST NUMBER AND PC VALUE WHEN A FAILURE OCCURS.


                10.0    LISTING

```

```
                                        .ENDR
                                        .TITLE  DZUDB-B CONTROL TEST
                                        .ABS

                                ;UDC-11 CONTROL TEST
                                ;MAINDEC-11-DZUDB-B
                                ;COPYRIGHT 1971, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
                                ;       REVISED: JAN, 1973
                                ;       ROBERT A. WHITTON
                                ;
                                ;STANDARD SR SWITCH OPTION (SWITCH SET TO A 1)
                                ;
                                ;
                                ;SR15 = HALT ON ERROR
                                ;SR14 = SCOPE
                                ;SR13 = INHIBIT ERROR PRINTOUT
                                ;SR12 = INHIBIT TRACE
                                ;SR11 = INHIBIT ITERATIONS
                                ;SR10 = HALT AT END OF CURRENT TEST
                                ;SR9 = SELECT ROUTINE SPECIFIED BY SR7 THROUGH SR8
                                ;SR7 THROUGH SR8 = NUMBER OF TEST ROUTINE TO BE SELECTED
                                ;SYMBOL DEFINITIONS
                                ;
000001                          BIT0=1                  ;SR BIT DEFINITIONS
000002                          BIT1=2
000004                          BIT2=4
000010                          BIT3=10
000020                          BIT4=20
000040                          BIT5=40
000100                          BIT6=100
000200                          BIT7=200
000400                          BIT8=400
001000                          BIT9=1000
002000                          BIT10=2000
004000                          BIT11=4000
010000                          BIT12=10000
020000                          BIT13=20000
040000                          BIT14=40000
100000                          BIT15=100000
                                ;
000412                          BIT0!BIT1!BIT3!BIT8     ;MAINT,DEF INT,DEF SCAN EN
000402                          BIT1!BIT8               ;MAINT,DEF INT
000424                          BIT2!BIT4!BIT8          ;MAINT,IMM INT, IMM SCAN EN
000404                          BIT2!BIT8               ;MAINT,IMM INT
001412                          BIT0!BIT1!BIT9          ;CI+STOP X
003412                          BIT0!BIT1!BIT9!BIT10    ;CI+STOP X&Y
001424                          BIT0!BIT3!BIT9          ;CS+STOP X
003424                          BIT0!BIT3!BIT9!BIT10    ;CS+STOP X&Y
007000                          BIT0!BIT9!BIT10!BIT11   ;STOP X+Y+WD
```

```
                                ;
                        000000  PRTY0=0                 ;PRIORITY LEVEL DEFINITIONS
                        000040  PRTY1=40
                        000100  PRTY2=100
                        000140  PRTY3=140
                        000200  PRTY4=200
                        000240  PRTY5=240
                        000300  PRTY6=300
                        000340  PRTY7=340
                                ;
                        177570  SR=177570               ;PROCESSOR REGISTER DEFINITIONS
                        177776  PS=177776
                        000027  PC=%7
                        000006  SP=%6
                                ;
                        005726  POPSP=005726            ;POP STACK, SAME AS TST (6)+
                        022626  POPSP2=022626           ;POP STACK TWICE, SAME AS CMP (6)+,(6)+
                        005746  PUSH=005746             ;PUSH STACK, SAME AS TST -(6)
                        024646  PUSH2=024646            ;PUSH STACK TWICE, SAME AS CMP -(6),-(6)
                        000240  NOP=000240
                        000300  OPEN=300
                        177777  X=-1
                        000000  EMTX=0
                        177777  TLAST=-1
                                ;
                                ;
                        000000          .=0
000000  000002                  .+2                     ;UNASSIGNED TRAP
000002  000000                  HALT
000004  000004  MACHERI  .+2                     ;SP OVERFLOW, BUS ERROR TRAP
000006  000000                  HALT
000010  000012          .+2                     ;RESERVED INSTRUCTION TRAP
000012  000000                  HALT
000014  000016          .+2                     ;TRACE TRAP
000016  000000                  HALT
000020  000022          .+2                     ;TRAP TO CALL IOX
000022  000000                  HALT
000024  002432  PWRFLI  PWRDN                   ;POWER FAIL TRAP
000026  000340                  PRTY7
000030  002650  EMTVI    EMTINT                  ;EMT TRAP
000032  000340                  PRTY7
000034  000036  TRAPVI   .+2                     ;TRAP TRAP
000036  000000                  HALT
```

```
672                                     !
676  000040  000042                             .+2
(1)  000042  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000044  000046                             .+2
(1)  000046  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000050  000052                             .+2
(1)  000052  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000054  000056                             .+2
(1)  000056  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000060  000062                             .+2
(1)  000062  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000064  000066                             .+2
(1)  000066  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000070  000072                             .+2
(1)  000072  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000074  000076                             .+2
(1)  000076  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000100  000102                             .+2
(1)  000102  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000104  000106                             .+2
(1)  000106  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000110  000112                             .+2
(1)  000112  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000114  000116                             .+2
(1)  000116  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000120  000122                             .+2
(1)  000122  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000124  000126                             .+2
(1)  000126  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000130  000132                             .+2
(1)  000132  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000134  000136                             .+2
(1)  000136  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000140  000142                             .+2
(1)  000142  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000144  000146                             .+2
(1)  000146  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000150  000152                             .+2
(1)  000152  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000154  000156                             .+2
(1)  000156  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000160  000162                             .+2
(1)  000162  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000164  000166                             .+2
(1)  000166  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000170  000172                             .+2
(1)  000172  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000174  000176                             .+2
(1)  000176  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000200  000202                             .+2
(1)  000202  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000204  000206                             .+2
(1)  000206  000000                             HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000210  000212                             .+2
```

```
(1)  000212  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000214  000216          .+2
(1)  000216  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000220  000222          .+2
(1)  000222  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000224  000226          .+2
(1)  000226  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000230  000232          .+2
(1)  000232  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000234  000236          .+2
(1)  000236  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000240  000242          .+2
(1)  000242  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000244  000246          .+2
(1)  000246  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000250  000252          .+2
(1)  000252  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000254  000256          .+2
(1)  000256  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000260  000262          .+2
(1)  000262  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000264  000266          .+2
(1)  000266  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000270  000272          .+2
(1)  000272  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000274  000276          .+2
(1)  000276  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000300  000302          .+2
(1)  000302  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000304  000306          .+2
(1)  000306  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000310  000312          .+2
(1)  000312  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000314  000316          .+2
(1)  000316  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000320  000322          .+2
(1)  000322  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000324  000326          .+2
(1)  000326  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000330  000332          .+2
(1)  000332  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000334  000336          .+2
(1)  000336  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000340  000342          .+2
(1)  000342  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000344  000346          .+2
(1)  000346  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000350  000352          .+2
(1)  000352  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000354  000356          .+2
(1)  000356  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000360  000362          .+2
(1)  000362  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000364  000366          .+2
```

```
(1)  000366  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000370  000372                .+2
(1)  000372  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000374  000376                .+2
(1)  000376  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000400  000402                .+2
(1)  000402  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000404  000406                .+2
(1)  000406  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000410  000412                .+2
(1)  000412  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000414  000416                .+2
(1)  000416  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000420  000422                .+2
(1)  000422  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000424  000426                .+2
(1)  000426  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000430  000432                .+2
(1)  000432  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000434  000436                .+2
(1)  000436  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000440  000442                .+2
(1)  000442  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000444  000446                .+2
(1)  000446  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000450  000452                .+2
(1)  000452  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000454  000456                .+2
(1)  000456  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000460  000462                .+2
(1)  000462  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000464  000466                .+2
(1)  000466  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000470  000472                .+2
(1)  000472  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000474  000476                .+2
(1)  000476  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000500  000502                .+2
(1)  000502  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000504  000506                .+2
(1)  000506  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000510  000512                .+2
(1)  000512  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000514  000516                .+2
(1)  000516  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000520  000522                .+2
(1)  000522  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000524  000526                .+2
(1)  000526  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000530  000532                .+2
(1)  000532  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000534  000536                .+2
(1)  000536  000000                HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000540  000542                .+2
```

```
(1)  002542  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002544  000546          .+2
(1)  002546  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002550  000552          .+2
(1)  002552  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002554  000556          .+2
(1)  002556  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002560  000562          .+2
(1)  002562  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002564  000566          .+2
(1)  000566  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002570  000572          .+2
(1)  002572  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002574  000576          .+2
(1)  000576  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002600  000602          .+2
(1)  000602  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002604  000606          .+2
(1)  000606  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002610  000612          .+2
(1)  002612  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002614  000616          .+2
(1)  002616  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002620  000622          .+2
(1)  002622  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002624  000626          .+2
(1)  000626  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000630  000632          .+2
(1)  002632  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  002634  000636          .+2
(1)  000636  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000640  000642          .+2
(1)  000642  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000644  000646          .+2
(1)  000646  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000650  000652          .+2
(1)  000652  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000654  000656          .+2
(1)  000656  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000660  000662          .+2
(1)  000662  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000664  000666          .+2
(1)  000666  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000670  000672          .+2
(1)  000672  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000674  000676          .+2
(1)  000676  000020          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000700  000702          .+2
(1)  000702  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000704  000706          .+2
(1)  000706  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000710  000712          .+2
(1)  000712  000000          HALT                ;TRAPPED TO PREVIOUS ADDRESS
(1)  000714  000716          .+2
```

```
(1)  000716  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000720  000722                    .+2
(1)  000722  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000724  000726                    .+2
(1)  000726  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000730  000732                    .+2
(1)  000732  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000734  000736                    .+2
(1)  000736  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000740  000742                    .+2
(1)  000742  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000744  000746                    .+2
(1)  000746  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000750  000752                    .+2
(1)  000752  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000754  000756                    .+2
(1)  000756  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000760  000762                    .+2
(1)  000762  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000764  000766                    .+2
(1)  000766  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000770  000772                    .+2
(1)  000772  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
(1)  000774  000776                    .+2
(1)  000776  000000                    HALT                    ;TRAPPED TO PREVIOUS ADDRESS
```

```
                000200
000200  000167  001044                    .=200
                                    JMP     START           ;GO TO START OF PROGRAM
                                    ;
                000204
000204  000167  002256                    .=204
                                    JMP     PWRTST          ;POWER FAIL TEST
                                    ;
                000210
000210  000167  001064                    .=210
                                    JMP     GETRDY          ;BYPASS INITIAL TYPEOUTS
                000000                  R0=%0
```

```
687
(1)                                     ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
(1)           001100                            .=1100
(1)
(1)                                     ;ROUTINE TO TYPE ASCII MESSAGE, MESSAGE MUST TERMINATE WITH A 0 BYTE.
(1)                                     ;THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
(1)                                     ;NOTE1: $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
(1)                                     ;NOTE2: $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
(1)
(1)                                     ;CALL:
(1)                                     ;1) USING A TRAP INSTRUCTION
(1)                                     ;       TYPE    ,MESADR         ;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
(1)                                     ;OR
(1)                                     ;       TYPE
(1)                                     ;       MESADR
(1)
(1)                                     ;2) USING A JSR INSTRUCTION
(1)                                     ;       MOV     PSW,-(SP)       ;PUSH PROCESSOR STATUS WORD ON THE STACK
(1)                                     ;       JSR     PC,$TYPE        ;CALL TYPE ROUTINE
(1)                                     ;       MESADDR                 ;FIRST ADRESS OF MESSAGE
(1)
(1)  001100  010046                     $TYPE:  MOV     R0,-(SP)        ;SAVE R0
(1)  001102  016600  000002                     MOV     @2(SP),R0       ;GET ADDRESS OF ASCIZ STRING
(1)  001106  062766  000002  000002             ADD     #2,2(SP)        ;ADJUST RETURN PC
(1)  001114  112046                     1$:     MOVB    (R0)+,-(SP)     ;PUSH CHARACTER TO BE TYPED ONTO STACK
(1)  001116  001003                             BNE     2$              ;BR IF IT ISN'T THE TERMINATOR
(1)  001120  005726                             TST     (SP)+           ;IF TERMINATOR POP IT OFF THE STACK
(1)  001122  012600                             MOV     (SP)+,R0        ;RESTORE R0
(1)  001124  000002                             RTI                     ;RETURN
(1)  001126  004767  000026             2$:     JSR     PC,3$           ;GO TYPE THIS CHARACTER
(1)  001132  122726  000012             3$:     CMPB    #12,(SP)+       ;CHECK IF THE CHAR. TYPED WAS A  LINE FEED
(1)  001136  001366                             BNE     1$              ;GO GET NEXT CHAR, IF NOT LINE FEED
(1)  001140  016746  000034                     MOV     $NULL,-(SP)     ;GET # OF FILLER CHARS. NEEDED
(1)                                             ;AND THE NULL CHAR.
(1)  001144  105366  000001             4$:     DECB    1(SP)           ;DOES A NULL NEED TO BE TYPED?
(1)  001150  002770                             BLT     3$              ;BR IF NO--GO POP THE NULL OFF OF STACK
(1)  001152  004767  000002                     JSR     PC,3$           ;GO TYPE A NULL
(1)  001156  000772                             BR      4$              ;LOOP
(1)  001160  105777  177022             5$:     TSTB    @TPS            ;WAIT UNTIL PRINTER IS READY
(1)  001164  100375                             BPL     5$
(1)  001166  116677  000002  000014             MOVB    2(SP),@TPB      ;LOAD CHAR TO BE TYPED INTO DATA REG.
(1)  001174  000207                             RTS     PC
(1)
688           001200                            .=1200
689                                     ;
690                                     ;VECTOR ASSIGNMENTS
691                                     ;
692  001200     000                     $NULL:  .BYTE   0
693  001201     002                     $FILLS: .BYTE   2
694  001202  177560                     TKS:    177560                  ;TTY KEYBOARD STATUS
695  001204  177562                     TKB:    177562                  ;TTY KEYBOARD BUFFER
696  001206  177564                     TPS:    177564                  ;TTY PRINTER STATUS
697  001210  177566                     TPB:    177566                  ;TTY PRINTER BUFFER
698  001212  171776                     UDCR:   171776                  ;UDC11 CONTROL REGISTER
```

```
699  001214  171774          UDSR:   171774          ;UBCI1 SCAN REGISTER
700  001216  000234          UTV:    234             ;UBCI1 TRAP VECTOR
701  001220  000236          UPL:    236             ;UBCI1 PRIORITY LEVEL
702  001222  171772          MCLK:   171772          ;UBCI1 MAINTENANCE CLOCK
703  001224  171770          UMOD:   171770          ;UBCI1 RESERVED MODULE ADDRESS
704  001226  171000          UDCA1:  171000          ;UBCI1 RESERVED MODULE ADDRESS, CLASS 000
705  001230  171002          UDCA2:  171002          ;CLASS 002
706  001232  171004          UDCA3:  171004          ;CLASS 004
707  001234  171010          UDCA4:  171010          ;CLASS 010
708  001236  171020          UDCA5:  171020          ;CLASS 020
709  001240  171040          UDCA6:  171040          ;CLASS 040
710  001242  171100          UDCA7:  171100          ;CLASS 100
711  001244  171200          UDCA8:  171200          ;CLASS 200
712  001246  171400          UDCA9:  171400          ;CLASS 400
```

```
                                        ;
                                        ;START OF TEST CONTROLLER
                                        ;
001250  012706  001100          START:  MOV     #1100,SP        ;SET BOTTOM OF SP STACK
001254  005067  002650                  CLR     RTNNO
001260  104000                          TYPE                    ;TYPE TITLE
001262  003376                          MTIT
001264  005737  000042                  TST     @#42            ;MONITOR LOAD
001270  001003                          BNE     GETRDY          ;YES, SKIP NEXT MESSAGE
001272  104000                          TYPE
001274  003264                          MSETSR
001276  104003                          CHALT
001300  012767  004142  002624  GETRDY: MOV     #TB,NXTST       ;ADDRESS OF FIRST ROUTINE
001306  012767  000006  176478  GTRDYX: MOV     #6,MACHER       ;RESET MACHER TRAP
001314  012767  000340  176454          MOV     #PRTY7,PS       ;SET PRIORITY 7
001322  016777  177672  177666          MOV     UPL,@UTV        ;RESET TRAP
001330  005077  177664                  CLR     @UPL
001334  012706  001100                  MOV     #1100,SP        ;SET BOTTOM OF STACK
001340  104004                          SRESET                  ;ISSUE RESET
001342  004767  000236          GTRDYA: JSR     PC,FORWD        ;ROLL FORWARD TO NEXT ROUTINE
001346  032767  001000  176214          BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH SET
001354  001002                          BNE     GTRDYC          ;BRANCH IF SELECT ROUTINE SWITCH SET
001356  000177  002552                  JMP     @CURTST         ;GO RUN CURRENT ROUTINE
001362  016700  176202          GTRDYC: MOV     SR,R0           ;GET (SR)
001366  042700  177400                  BIC     #177400,R0      ;MASK UNDESIRED BITS
001372  126700  002532                  CMPB    RTNNO,R0        ;COMPARE RTNNO TO (R0)
001376  001002                          BNE     GTRDYD          ;BRANCH IF ROUTINE NOT FOUND YET
001400  000177  002530                  JMP     @CURTST         ;GO RUN ROUTINE
001404  022767  177777  002520  GTRDYD: CMP     #-1,NXTST       ;NO, CHECK FOR LAST ROUTINE
001412  001353                          BNE     GTRDYA          ;BRANCH IF NOT LAST ROUTINE
001414  104000                          TYPE                    ;TYPE INCORRECT RTN SELECTED
001416  003356                          MINCRT
001420  104003                          CHALT                   ;COMMON HALT
001422  000726                          BR      GETRDY          ;START OVER
```

```
                                        ;
                                        ;SCOPE LOOP AND TEST EXIT HANDLER
                                        ;
000424  012767  000340  177444  CHAINN: MOV     #PRTY7,177776
000432  005077  177554                  CLR     @UDCR
000436  016767  002464  177438          MOV     SCOPTR,177776
000444  012706  001074                  MOV     #1074,SP
000450  005267  002450                  INC     ICNT            ;INCREMENT ICNT
000454  001002                          BNE     CHNAC           ;BR IF RESULT NOT 0
000456  005167  002442                  COM     ICNT            ;RESET ICNT TO -1
000462  032767  040000  176100  CHNAC:  BIT     #BIT14,SR       ;CHECK FOR SCOPE OPTION
000470  001403                          BEQ     CHNA            ;BRANCH IF SCOPE SWR NOT SET
000472  016716  002430          CHNAB:  MOV     SCOPTR,(SP)     ;SET UP RETURN TO ROUTINE
000476  000002                          RTI
                                        ;
000500  032767  004000  176062  CHNA:   BIT     #BIT11,SR       ;TEST INHIBIT ITERATION SWITCH
000506  001003                          BNE     CHNAA           ;BRANCH IF INHIBIT ITERATION SW SET
000510  005367  002406                  DEC     ICTR            ;DECREMENT ITERATION COUNT
000514  001366                          BNE     CHNAB           ;BRANCH IF COUNT NOT 0
000516  022626                  CHNAA:  POPSP2                  ;POP STACK POINTER TWICE
000520  032767  002000  176042          BIT     #BIT10,SR       ;IS ROUTINE END HALT SW SET?
000526  001403                          BEQ     CHNB            ;BRANCH IF NOT SET
000530  016700  002374                  MOV     RTNNO,R0
000534  000000                          HALT                    ;ROUTINE END HALT, TEST #IN LIGHTS.
000536  032767  001000  176024  CHNB:   BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
000544  001255                          BNE     GETRDY          ;BRANCH IF SELECT RTN SW SET
000546  022767  177777  002356          CMP     #-1,NXTST       ;LIST TEST ?
000554  001254                          BNE     GTRDYX          ;BRANCH IF NOT LAST TEST
000556  104000                          TYPE                    ;TYPE PROGRAM END BELL
000560  000451                          MPGEND
000562  013705  000042                  MOV     @#42,R5         ;LINK TO MONITOR
000566  001644                          BEQ     GETRDY          ;NO, REPEAT PROGRAM
000570  000005                          RESET
000572  004715                  LOBIC:  JSR     R7,(R5)
000574  000240                          NOP
000576  000240                          NOP
000600  000240                          NOP
000602  000636                          BR      GETRDY          ;GO REPEAT PROGRAM
                                        ;
                                        ;TEST CONTROLLER
                                        ;
001604  016705  002322          FORWD:  MOV     NXTST,R5        ;ADDRESS OF NEXT ROUTINE
001610  012567  002314                  MOV     (R5)+,RTNNO     ;GET NEXT ROUTINE NUMBER    "
001614  012567  002312                  MOV     (R5)+,NXTST     ;GET ADDRESS ON NEXT "NEXT" ROUTINE
001620  012567  002276                  MOV     (R5)+,ICTR      ;GET ITERATION COUNT
001624  012567  002276                  MOV     (R5)+,SCOPTR    ;GET SCOPE LOOP ENTRY POINTER
001630  010567  002300                  MOV     R5,CURTST       ;ADDR OF NOW CURRENT TEST TO CURTST
001634  012767  000001  002262          MOV     #1,ICNT         ;PRESET ICNT TO 1
001642  000207                          RTS     PC
```

G2

```
                                        ;
                                        ;ERROR HANDLER
                                        ;
001644  017767  177342  002264  ERRST:  MOV     @UDCR,UDCRT     ;SAVE CONTENTS OF UDCR
001652  017767  177336  002260          MOV     @UDSR,UDSRT     ;SAVE CONTENTS OF UDSR
001660  012767  003223  000166          MOV     #MSTR,ERRB
001666  005067  000200                  CLR     ERRE
001672  004567  000240                  JSR     %5,DACNV        ;CONVERT TO ASCII
001676  004136                          UDCRT
001700  003233                          MUDCR
001702  000006                          6
001704  004567  000226                  JSR     %5,DACNV        ;CONVERT TO ASCII
001710  004140                          UDSRT
001712  003251                          MUDSR
001714  000006                          6
001716  000421                          BR      ERRA-6
001720  012767  177777  000126  ERR:   MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL
001726  012767  000240  000122          MOV     #240,ERRB+2
001734  005067  000132                  CLR     ERRE
001740  000413                          BR      ERRA
001742  011667  000106          ERR1:   MOV     (SP),ERRB       ;DEVELOP ADDITIONAL MESSAGE ADDR.
001746  017767  000102  000100          MOV     @ERRB,ERRB
001754  012767  000002  000110          MOV     #2,ERRE
001762  012767  177777  000066          MOV     #-1,ERRB+2
001770  032767  020000  175572  ERRA:   BIT     #BIT13,SR       ;INHIBIT ERROR PRINT ?
001776  001030                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT
002000  011667  000064                  MOV     (SP),ERRD       ;DEVELOP CALLING ADDR.
002004  162767  000002  000056          SUB     #2,ERRD
002012  004567  000120                  JSR     %5,DACNV        ;CONVERT TEST # TO ASCII
002016  004138                          RTNNO
002020  003161                          MTNUM
002022  000003                          3
002024  004567  000106                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT
002030  002070                          ERRD                    ;SOURCE ADDRESS
002032  003174                          MPC                     ;DESTINATION ADDRESS
002034  000006                          6                       ;# OF DIGITS TO CONVERT
002036  004567  000162                  JSR     %5,BDCNV        ;CONVERT ICNT TO DECIMAL ASCII
002042  004124                          ICNT
002044  003212                          MICNT
002046  000005                          5
002050  104001                          TYPES                   ;TYPE
002052  003160                          MEB                     ;ERROR HEADER
002054  000000          ERRB:   OPEN                            ;ADDITIONAL ERROR MESSAGE IF ANY
002056  177777                          -1
002060  104017          ERRC:   EMALT                           ;GO ERR HALT IF DESIRED
002062  066716  000004                  ADD     ERRE,(SP)
002066  000002                          RTI
002070  000000          ERRD:   OPEN
002072  000000          ERRE:   OPEN
```

```
                                        ;
                                        ;CONDITIONAL ERROR HALT ROUTINE
                                        ;
002074  005767  175478          EHLT:   TST     SR              ;CHECK FOR HALT ON ERROR
002100  100001                          BPL     EHLTA           ;BRANCH IF NO HALT DESIRED
002102  000000                          HALT
002104  000002                  EHLTA:  RTI
                                        ;
                                        ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPES PRINTER
                                        ;
002106  104015                  TYPS:   SAVESS
002110  012567  000016                  MOV     (5)+,TYPSB      ;GET ADDRESS OF MESSAGE TO TYPSB
002114  022767  177777  000010          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
002122  001002                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR
002124  104014                          RSTSS
002126  000002                          RTI                     ;TERMINATOR REACHED, EXIT
002130  104000                  TYPSA:  TYPE                    ;CALL ON TYP SUBROUTINE TO TYPE MESSAGE
002132  000000                  TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
002134  000765                          BR      TYPS+2          ;GO PROCESS NEXT MESSAGE
```

```
                                        ;
                                        ;SUBROUTINE FOR OCTAL TO ASCII CONVERSION
                                        ;
002136  104011                  OACNV:  SAV84
002140  013567  000056                  MOV     @(5)+,OACNVX    ;GET OCTAL VALUE
002144  012501                          MOV     (5)+,R1         ;GET DESTINATION ADDRESS
002146  012502                          MOV     (5)+,R2         ;GET CONVERT COUNT
002150  060201                          ADD     R2,R1           ;DEVELOP ADDR TO STORE 1ST CHAR.
002152  016703  000044          OACNVA: MOV     OACNVX,R3
002156  042703  177770                  BIC     #177770,R3      ;ISOLATE LEAST SIGNIFICANT DIGIT
002162  062703  000060                  ADD     #60,R3          ;CONVERT DIGIT TO ASCII
002166  110341                          MOVB    R3,-(R1)        ;STORE ASCII CHARACTER
002170  042767  000007  000024          BIC     #7,OACNVX
002176  006067  000020                  ROR     OACNVX
002202  006067  000014                  ROR     OACNVX
002206  006067  000010                  ROR     OACNVX
002212  005302                          DEC     R2              ;DONE ALL DIGITS?
002214  001356                          BNE     OACNVA          ;BRANCH IF NOT DONE
002216  104012                          RST84
002220  000205                          RTS     R5              ;DONE, EXIT
002222  000000                  OACNVX: OPEN
                                        ;
                                        ;SUBROUTINE FOR BINARY TO DECIMAL ASCII CONVERSION
                                        ;
002224  104011                  BDCNV:  SAV84                   ;SAVE REGS
002226  012708  002402                  MOV     #DECVAL,R0      ;SET UP ADDR TO STORE DECIMAL ASCII
002232  013501                          MOV     @(5)+,R1        ;BINARY VALUE TO R1
002234  012567  000052                  MOV     (5)+,BDCNVC     ;DESTINATION ADDR TO BDCNVC
002240  012567  000050                  MOV     (5)+,BDCNVB     ;CHARACTER COUNT TO BDCNVD
002244  012702  002370                  MOV     #ADTENP,R2      ;ADDR OF TEN POWER STRING
002250  012767  000005  000104          MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS
002256  012267  000104          BDCNVA: MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE
002262  004767  000034                  JSR     PC,SUBTEN       ;PERFORM CONVERSION
002266  005367  000070                  DEC     CNVCTR          ;DONE 5 CONVERSIONS?
002272  001371                          BNE     BDCNVA          ;BRANCH IF NOT YET
002274  166700  000014                  SUB     BDCNVD,R0
002300  010067  000004                  MOV     R0,BDCNVB
002304  004567  000100                  JSR     R5,BMOVE
002310  000000          BDCNVB: OPEN
002312  000000          BDCNVC: OPEN
002314  000000          BDCNVD: OPEN
002316  104012                          RST84           ;RESTORE REGS AND EXIT
002320  000205                          RTS     R5
```

```
                                        ;
002322  005067  000036          SUBTEN: CLR     DIGIT
002326  166701  000034          SUBTNA: SUB     TENPWR,R1       ;SUBTRACT TEN POWER FROM BINARY VALUE
002332  103403                          BCS     SUBTNB          ;BRANCH IF UNSUCESSFUL SUBTRACTION
002334  005267  000024                  INC     DIGIT
002340  000772                          BR      SUBTNA
002342  066701  000020          SUBTNB: ADD     TENPWR,R1       ;RESTORE SUBTRACTED VALUE.
002346  062767  000060  000010          ADD     #60.,DIGIT      ;CONVERT (DIGIT) TO ASCII
002354  116720  000004                  MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD
002360  000207                          RTS     PC              ;EXIT
002362  000000                  CNVCTR: .WORD
002364  000000                  DIGIT:  .WORD
002366  000000                  TENPWR: .WORD
002370  023420                  ADTENP: 10000.
002372  001750                          1000.
002374  000144                          100.
002376  000012                          10.
002400  000001                          1.
002402    040     040     040   DECVAL: .BYTE   040,040,040,040,040,040
002405    040     040     040
                                        ;
                                        ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES
                                        ;
002410  104411                  BMOVE:  SAV84                   ;SAVE REGS
002412  012501                          MOV     (5)+,R1         ;GET FROM ADDRESS
002414  012502                          MOV     (5)+,R2         ;GET TO ADDRESS
002416  012503                          MOV     (5)+,R3         ;GET COUNT
002420  112122                  BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
002422  005303                          DEC     R3              ;DECREMENT COUNT
002424  001375                          BNE     BMOVA           ;BRANCH IF NOT DONE
002426  104012                          RST84                   ;RESTORE REGS AND EXIT
002430  000205                          RTS     R5
                                        ;
                                        ;UNEXPECTED POWER FAIL SERVICE
                                        ;
002432  012767  002442  175364  PWRDN:  MOV     #PWRUP,PWRPL    ;SET UP FOR POWER UP
002440  000000                          HALT
002442  012706  001100          PWRUP:  MOV     #1100,SP        ;RESTORE STACK POINTER
002446  012767  002432  175350          MOV     #PWRDN,PWRPL    ;SET UP FOR POWER DOWN
002454  000005                          RESET
002456  104000                          TYPE                    ;TYPE RECOVERY MESSAGE
002460  003532                          MPWRF
002462  000167  176612                  JMP     GETRDYX         ;GO TO NEXT TEST
```

K2

```
                                        ;
                                        ;POWER FAIL TEST
                                        ;
002466  012706  001100          PWRTST: MOV     #1100,SP        ;SET UP SP AND STATUS
002472  012767  002566  175324          MOV     #PWRDT,PWRVL    ;SET UP FOR POWER DOWN
002500  012777  002620  176510          MOV     #PWFDC,@UTV
002506  012777  000300  176504          MOV     #PRTY8,@UPL
002514  104000                          TYPE
002516  003453                          MPWRT
002520  012706  001100          PWUDC:  MOV     #1100,SP
002524  012777  000036  176460          MOV     #36,@UDCR       ;SET UP UDC CONTROL
002532  012767  000000  175236          MOV     #PRTY8,PS
002540  032777  040000  176444  PWUDCA: BIT     #BIT14,@UDCR    ;TEST POWER FAIL BIT
002546  001774                          BEQ     PWUDCA          ;BRANCH IF CLEAR
002550  000240                          NOP                     ;ALLOW TRAP TO START
002552  000240                          NOP
002554  104000                          TYPE
002556  003571                          MPUDC                   ;ERROR; POWER FAIL BIT SET + NO TRAP
002560  000001                          WAIT
002562  000005                          RESET
002564  000755                          BR      PWUDC
002566  012767  002576  175238  PWRDT:  MOV     #PWRUT,PWRVL    ;SET UP FOR POWER UP
002574  000000                          HALT
002576  012767  002566  175228  PWRUT:  MOV     #PWRDT,PWRVL
002604  012706  001100                  MOV     #1100,SP
002610  000005                          RESET
002612  104000                          TYPE
002614  003532                          MPWRF
002616  000740                          BR      PWUDC
002620  032777  040000  176364  PWFDC:  BIT     #BIT14,@UDCR
002626  001404                          BEQ     PWFDCX
002630  104000                          TYPE
002632  003645                          MPUDOK
002634  000005                          RESET
002636  000730                          BR      PWUDC
002640  104000                  PWFDCX: TYPE
002642  003721                          MPUDNG
002644  000005                          RESET
002646  000724                          BR      PWUDC
```

```
 996                                    ;
 997                                    ;EMT HANDLER
 998                                    ;
 999  002650  016646                    EMTINT: MOV     (SP),-(SP)      ;GET SAVED PC
1000  002652  162716  000002                    SUB     #2,(SP)         ;DECREMENT PC BY 2
1001  002656  017616  000000                    MOV     @(SP),(SP)
1002  002662  126667  001232                    CMPB    (SP),EMTLIM     ;CHECK IF CALL WITHIN LIMITS
1003  002666  103402                          BLOS    EMTA
1004  002670  000000                          HALT                    ;CALL IS NOT WITHIN LIMITS
1005  002672  000776                          BR      .-2
1006  002674  006116                    EMTA:   ROL     (SP)            ;EMT ARG X 2
1007  002676  042716  177001                  BIC     #177001,(SP)    ;REMOVE 7 MSB
1008  002702  062716  004060                  ADD     #EMTTAB,(SP)    ;FORM EMT RTN ADDRESS
1009  002706  017616  000000                  MOV     @(SP),(SP)
1010  002712  000136                          JMP     @(SP)+          ;GO TO EMT RETURN
1011                                    ;
1012                                    ;SUBROUTINE FOR COMMON HALTS
1013                                    ;
1014  002714  104015                    CHLT:   SAVDSS
1015  002716  013500                          MOV     %5,%0           ;DEVELOP ADDRESS OF CALLER
1016  002720  005740                          TST     -(0)
1017  002722  000000                          HALT                    ;HALT,ADDRESS OF CALL INSTRUCTION
1018  002724  104014                          RSTDSS
1019  002726  000002                          RTI                     ;IN DATA LIGHTS
1020                                    ;
1021                                    ;SUBROUTINE TO ISSUE RESET
1022                                    ;
1023  002730  104013                    SRESET: SAVDSS
1024  002732  012700  052525                  MOV     #52525,%0       ;DATA TO R0
1025  002736  005100                          COM     %0
1026  002740  010067  177770                  MOV     %0,SRESET+2
1027  002744  000005                          RESET                   ;ISSUE RESET, R0 IS DISPLAYED
1028  002746  104016                          RSTDSS
1029  002750  000002                          RTI
1030                                    ;
1031                                    ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
1032                                    ;
1033  002752  104015                    DLY:    SAVDSS
1034  002754  012500                          MOV     (5)+,%0         ;DELAY COUNTER TO R0
1035  002756  012701  177742                  MOV     #-36,%1         ;CONSTANT FOR TRAP TIME
1036  002762  062701  000300            DLYA: ADD     #300,%1         ;1 MSEC COUNT TO R1
1037  002766  005301                    DLYB: DEC     %1              ;DECREMENT 1 MSEC COUNT
1038  002770  001376                          BNE     DLYB            ;BRANCH IF NOT 0
1039  002772  005300                          DEC     %0              ;DECREMENT IT
1040  002774  001372                          BNE     DLYA            ;BRANCH IF NOT DONE DELAYING
1041  002776  104014                          RSTDSS
1042  003000  000002                          RTI                     ;EXIT
```

```
1044                                    ;
1045                                    ;SUBROUTINE TO SAVE REGS 0-4
1046                                    ;
1047  003002  012666  177764           SV04:   MOV     (SP)+,-12.(SP)  ;MOVE PC-PS UP STACK
1048  003006  012666  177764                   MOV     (SP)+,-12.(SP)
1049  003012  012767  000002  000046           MOV     #RTI,SV05C
1050  003020  000414                           BR      SV25B
1051                                    ;
1052                                    ;SUBROUTINE TO SAVE REGS 0-5 AND PLACE EMT PC IN R5
1053                                    ;
1054  003022  012767  000240  000036   SV05S:  MOV     #NOP,SV05C
1055  003030  000403                           BR      SV05A
1056                                    ;
1057                                    ;SUBROUTINE TO SAVE REGS 0-5
1058                                    ;
1059  003032  012767  000002  000026   SV05:   MOV     #RTI,SV05C      ;MOVE PC-PS UP STACK
1060  003040  012666  177762           SV05A:  MOV     (SP)+,-14.(SP)
1061  003044  012666  177762                   MOV     (SP)+,-14.(SP)
1062  003050  010546                           MOV     %5,-(SP)
1063  003052  010446                   SV05B:  MOV     %4,-(SP)
1064  003054  010346                           MOV     %3,-(SP)
1065  003056  010246                           MOV     %2,-(SP)
1066  003060  010146                           MOV     %1,-(SP)
1067  003062  010046                           MOV     %0,-(SP)
1068  003064  024646                           PUSH2
1069  003066  000002                   SV05C:  RTI                     ;RTI OR NOP
1070  003070  016625  000020                   MOV     16.(SP),%5      ;EMT PC TO R5
1071  003074  000002                           RTI
1072                                    ;
1073                                    ;SUBROUTINE TO RESTORE REGS 0-4
1074                                    ;
1075  003076  022626                   RS04:   POPSP2
1076  003100  012600                           MOV     (SP)+,%0
1077  003102  012601                           MOV     (SP)+,%1
1078  003104  012602                           MOV     (SP)+,%2
1079  003106  012603                           MOV     (SP)+,%3
1080  003110  012604                           MOV     (SP)+,%4
1081  003112  016646  177764                   MOV     -12.(SP),-(SP)  ;MOVE PC-PS DOWN STACK
1082  003116  016646  177764                   MOV     -12.(SP),-(SP)
1083  003122  000002                           RTI
1084                                    ;
1085  003124  010566  000020           RS05S:  MOV     %5,16.(SP)      ;SET EMT PC TO R5
1086                                    ;
1087                                    ;SUBROUTINE TO RESTORE REGS 0-5
1088                                    ;
1089  003130  022626                   RS05:   POPSP2
1090  003132  012600                           MOV     (SP)+,%0
1091  003134  012601                           MOV     (SP)+,%1
1092  003136  012602                           MOV     (SP)+,%2
1093  003140  012603                           MOV     (SP)+,%3
1094  003142  012604                           MOV     (SP)+,%4
1095  003144  012605                           MOV     (SP)+,%5
1096  003146  016646  177762                   MOV     -14.(SP),-(SP)  ;MOVE PC-PS DOWN STACK
1097  003152  016646  177762                   MOV     -14.(SP),-(SP)
```

```
                                        RTI
                                ;
                                ;ASCII MESSAGES
                                ;
003160  124                     MEB:    .ASCII  /T/
003161  040  020040  020040     MTNUM:  .ASCII  /       PC= /
003166  020040  041520  020075
003174  020040  020040  020040  MPC:    .ASCII  /       ICNT= /
003202  020040  041511  052116
003210  020075
003212  020040  020040  027040  MICNT:  .ASCII  /    ;/<15><12>
003220  000015  000
003223  040  052440  041504     MSTR:   .ASCII  /  UDCR= /
003230  036522  040
003233  040  020040  020040     MUDCR:  .ASCII  /       UDSR= /
003240  020040  052440  051504
003246  036522  040
003251  040  020040  020040     MUDSR:  .ASCII  /       /<15><12>
003256  020040  006440  000012
003264  042523  020124  051123  MSETSR:  .ASCII  /SET SR OPTIONS', NORMAL SR = 000005,/
003272  047440  052120  047511
003300  051516  020056  047516
003306  046522  046101  051440
003314  020122  020075  030060
003322  030060  030060  054
003327  040  044124  047105          .ASCII  / THEN PRESS CONTINUE/<15><12>
003334  050040  042522  051523
003342  041440  047117  044524
003350  051516  006505  000012
003356  047111  040526  044514  MINCRT:  .ASCII  /INVALID TEST',/<15><12>
003364  020104  042524  052123
003372  006456  000012
003376  000015  042125  026503  MTITL:  .ASCII  <15><12>/UDC-11 CONTROL TEST - MAINDEC-11-DZUDB-A/<15><12>
003404  030461  041440  047117
003412  051124  046117  052040
003420  051505  020124  020055
003426  040515  047111  042504
003434  026503  030461  042055
003442  052532  041104  040455
003450  000015  000
003453  015  050012  053517  MPWRT:  .ASCII  <15><12>/POWER FAIL TEST: WAITING FOR POWER FAILURE/<15><12>
003460  051105  043040  044501
003466  020114  042524  052123
003474  020073  040527  052111
003502  047111  020107  047506
003510  020122  047520  042527
003516  020122  040506  046111
003524  051125  006505  000012
003532  042522  047503  042526  MPWRF:  .ASCII  /RECOVERED FROM POWER FAILURE/<15><12>
003540  042522  020104  051106
003546  046517  050040  053517
003554  051105  043040  044501
003562  052514  042522  000015
003570  000
```

```
 1115  003571     125  041504  050040  MPUDC1  .ASCIZ  /UDC POWER FAIL BIT SET, NO TRAP INITIATED/<15><12>
       003576  053517  051105  043040
       003604  044501  020114  044502
       003612  020124  042523  020124
       003620  047040  020117  051124
       003626  050101  044440  044516
       003634  044524  052101  042105
       003642  000015     000
 1116  003645     122  041505  053117  MPUDOK1 .ASCIZ  /RECOVERED FROM UDC EXPANDER POWER FAILURE/<15><12>
       003652  051105  042105  043040
       003660  047522  020115  042125
       003666  020103  054105  040520
       003674  042116  051105  050040
       003702  053517  051105  043040
       003710  044501  052514  042522
       003716  000015     000
 1117  003721     124  040522  050120  MPUDNG1 .ASCII  /TRAPPED DUE TO UDC EXPANDER POWER FAILURE; /<15><12>
       003726  042105  042040  042525
       003734  052040  020117  042125
       003742  020103  054105  040520
       003750  042116  051105  050040
       003756  053517  051105  043040
       003764  044501  052514  042522
       003772  020054  005015
 1118  003776  047510  042527  042526          .ASCII  /HOWEVER ERROR BIT NOT SET IN STATUS WORD/<15><12>
       004004  020122  051105  047522
       004012  020122  044502  020124
       004020  047516  020124  042523
       004026  020124  047111  051440
       004034  040524  052524  020123
       004042  047527  042122  005015
       004050     000
 1119  004051     007                      MPGEND1 .BYTE   007
 1120  004052  047105  000504  000012              .ASCIZ  /END/<15><12>
 1121                                              .EVEN
 1122                                      ;
 1123                                      ;EMT DEFINITIONS AND ASSIGNMENTS
 1124                                      ;
 1125  004060                              EMTTAB:
 1126          104000                              TYPE=EMT+EMTX
 1127  004060  001100                              .WORD   STYPE
 1128          000001                              EMTX=EMTX+1
 1129          104001                              TYPES=EMT+EMTX
 1130  004062  002106                              .WORD   TYPS
 1131          000002                              EMTX=EMTX+1
 1132          104002                              ERROR=EMT+EMTX
 1133  004064  001720                              .WORD   ERR
 1134          000003                              EMTX=EMTX+1
 1135          104003                              CHALT=EMT+EMTX
 1136  004066  002714                              .WORD   CHLT
 1137          000004                              EMTX=EMTX+1
 1138          104004                              SRESET=EMT+EMTX
 1139  004070  002730                              .WORD   SRSET
 1140          000005                              EMTX=EMTX+1
```

```
1141                104005                          $COPE=EMT+EMTX
1142  004072  001424                                .WORD   CHAINN
1143                000006                          EMTX=EMTX+1
1144                104006                          ERROR1=EMT+EMTX
1145  004074  001742                                .WORD   ERR1
1146                000007                          EMTX=EMTX+1
1147                104007                          ERRORS=EMT+EMTX
1148  004076  001644                                .WORD   ERRST
1149                000010                          EMTX=EMTX+1
1150                104010                          DELAY=EMT+EMTX
1151  004100  002752                                .WORD   DLY
1152                000011                          EMTX=EMTX+1
1153                104011                          SAV84=EMT+EMTX
1154  004102  003002                                .WORD   SV84
1155                000012                          EMTX=EMTX+1
1156                104012                          RST84=EMT+EMTX
1157  004104  003076                                .WORD   RS84
1158                000013                          EMTX=EMTX+1
1159                104013                          SAV85=EMT+EMTX
1160  004106  003032                                .WORD   SV85
1161                000014                          EMTX=EMTX+1
1162                104014                          RST85=EMT+EMTX
1163  004110  003124                                .WORD   RS85
1164                000015                          EMTX=EMTX+1
1165                104015                          SAV85=EMT+EMTX
1166  004112  003022                                .WORD   SV85
1167                000016                          EMTX=EMTX+1
1168                104016                          RST85=EMT+EMTX
1169  004114  003136                                .WORD   RS85
1170                000017                          EMTX=EMTX+1
1171                104020                          EHALT=EMT+EMTX
1172  004116  002074                                .WORD   EHLT
1173                000020                          EMTX=EMTX+1
1174  004120  000017                EMTLIM: EMTX-1
1175                                ;
1176                                ;STORAGE
1177                                ;
1178  004122  000000                ;CTR:   OPEN                    ;CURRENT ITERATION COUNT
1179  004124  000000                ;CNT:   OPEN                    ;ACCUMULATED ITERATION COUNT
1180  004126  000000                SCOPTR: OPEN                    ;CURRENT SCOPE POINTER
1181  004130  000000                RTNNO:  OPEN
1182  004132  000000                NXTST:  OPEN
1183  004134  000000                CURTST: OPEN
1184  004136  000000                UDCRT:  OPEN
1185  004140  000000                UDBRT:  OPEN
```

```
1187                                    ;
1188                                    ;START OF TEST ROUTINES
1189                                    ;
1190                                    ;
1191                                    ;*****************************************************************
1192  004142  000000                    T0:     0                       ;ROUTINE NUMBER 0                 *
1193  004144  004174                            T1                      ;ADDRESS OF NEXT ROUTINE          *
1194  004146  001750                            1000.                   ;TEST ITERATION COUNT             *
1195  004150  004152                            A1A                     ;SCOPE ENTRY POINT                *
1196          000000                            X=X+1                   ;                                 *
1197                                    ;*****************************************************************
1198                                    ;TEST ABILITY TO REFERENCE UDCR WITHOUT TRAPPING
1199  004152  012767  004166  173624    A1A:    MOV     #A1B,MACHER     ;SET UP BUS TRAP ERROR
1200  004160  005777  175826                    TST     @UDCR           ;REFERENCE UDCR
1201  004164  104405                            SCOPE                   ;OR IF NO TRAP OCCURS
1202  004166  104002                    A1B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCR
1203  004170  022626                            POPSP2
1204  004172  104405                            SCOPE
1205                                    ;
1206                                    ;*****************************************************************
1207  004174  000001                    T1:     1                       ;ROUTINE NUMBER 1                 *
1208  004176  004226                            T2                      ;ADDRESS OF NEXT ROUTINE          *
1209  004200  001750                            1000.                   ;TEST ITERATION COUNT             *
1210  004202  004204                            A2A                     ;SCOPE ENTRY POINT                *
1211          000001                            X=X+1                   ;                                 *
1212                                    ;*****************************************************************
1213                                    ;TEST ABILITY TO REFERENCE UDSR WITHOUT TRAPPING
1214  004204  012767  004220  173572    A2A:    MOV     #A2B,MACHER     ;SET UP BUS TRAP ERROR
1215  004212  005777  174776                    TST     @UDSR           ;REFERENCE UDSR
1216  004216  104405                            SCOPE                   ;OR IF NO TRAP OCCURS
1217  004220  104002                    A2B:    ERROR                   ;TRAPPED WHEN REFERENCING UDSR
1218  004222  022626                            POPSP2
1219  004224  104405                            SCOPE
1220                                    ;
1221                                    ;*****************************************************************
1222  004226  000002                    T2:     2                       ;ROUTINE NUMBER 2                 *
1223  004230  004260                            T3                      ;ADDRESS OF NEXT ROUTINE          *
1224  004232  001750                            1000.                   ;TEST ITERATION COUNT             *
1225  004234  004236                            A3A                     ;SCOPE ENTRY POINT                *
1226          000002                            X=X+1                   ;                                 *
1227                                    ;*****************************************************************
1228                                    ;TEST ABILITY TO REFERENCE UDCA1 WITHOUT TRAPPING
1229  004236  012767  004252  173548    A3A:    MOV     #A3B,MACHER     ;SET UP BUS TRAP ERROR
1230  004244  005777  174756                    TST     @UDCA1          ;REFERENCE UDCA1
1231  004250  104405                            SCOPE                   ;OR IF NO TRAP OCCURS
1232  004252  104002                    A3B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA1
1233  004254  022626                            POPSP2
1234  004256  104405                            SCOPE
1235                                    ;
1236                                    ;*****************************************************************
1237  004260  000003                    T3:     3                       ;ROUTINE NUMBER 3                 *
1238  004262  004312                            T4                      ;ADDRESS OF NEXT ROUTINE          *
1239  004264  001750                            1000.                   ;TEST ITERATION COUNT             *
1240  004266  004270                            A4A                     ;SCOPE ENTRY POINT                *
```

```
1241            000003                          X=X+1                   ;
1242                                    ;*******************************************************************
1243                                    ;TEST ABILITY TO REFERENCE UDCA2 WITHOUT TRAPPING
1244   004270   012767   004304  173586 A4A:    MOV     #A4B,MACHER     ;SET UP BUS TRAP ERROR
1245   004276   005777   174726          A4:     TST     @UDCA2          ;REFERENCE UDCA2
1246   004302   104005                          SCOPE                   ;OR IF NO TRAP OCCURS
1247   004304   104002                  A4B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA2
1248   004306   022626                          POPSP2
1249   004310   104005                          SCOPE
1250                                    ;
1251                                    ;*******************************************************************
1252   004312   000004                  T4:     4                       ;ROUTINE NUMBER 4
1253   004314   004344                          T5                      ;ADDRESS OF NEXT ROUTINE
1254   004316   001750                          1000.                   ;TEST ITERATION COUNT
1255   004320   004322                          A5A                     ;SCOPE ENTRY POINT
1256            000004                         X=X+1                   ;
1257                                    ;*******************************************************************
1258                                    ;TEST ABILITY TO REFERENCE UDCA3 WITHOUT TRAPPING
1259   004322   012767   004336  173454 A5A:    MOV     #A5B,MACHER     ;SET UP BUS TRAP ERROR
1260   004330   005777   174676          A5:     TST     @UDCA3          ;REFERENCE UDCA3
1261   004334   104005                          SCOPE                   ;OR IF NO TRAP OCCURS
1262   004336   104002                  A5B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA3
1263   004340   022626                          POPSP2
1264   004342   104005                          SCOPE
1265                                    ;
1266                                    ;*******************************************************************
1267   004344   000005                  T5:     5                       ;ROUTINE NUMBER 5
1268   004346   004376                          T6                      ;ADDRESS OF NEXT ROUTINE
1269   004350   001750                          1000.                   ;TEST ITERATION COUNT
1270   004352   004354                          A6A                     ;SCOPE ENTRY POINT
1271            000005                         X=X+1                   ;
1272                                    ;*******************************************************************
1273                                    ;TEST ABILITY TO REFERENCE UDCA4 WITHOUT TRAPPING
1274   004354   012767   004370  173422 A6A:    MOV     #A6B,MACHER     ;SET UP BUS TRAP ERROR
1275   004362   005777   174646          A6:     TST     @UDCA4          ;REFERENCE UDCA4
1276   004366   104005                          SCOPE                   ;OR IF NO TRAP OCCURS
1277   004370   104002                  A6B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA4
1278   004372   022626                          POPSP2
1279   004374   104005                          SCOPE
1280                                    ;
1281                                    ;*******************************************************************
1282   004376   000006                  T6:     6                       ;ROUTINE NUMBER 6
1283   004400   004430                          T7                      ;ADDRESS OF NEXT ROUTINE
1284   004402   001750                          1000.                   ;TEST ITERATION COUNT
1285   004404   004406                          A7A                     ;SCOPE ENTRY POINT
1286            000006                         X=X+1                   ;
1287                                    ;*******************************************************************
1288                                    ;TEST ABILITY TO REFERENCE UDCA5 WITHOUT TRAPPING
1289   004406   012767   004422  173378 A7A:    MOV     #A7B,MACHER     ;SET UP BUS TRAP ERROR
1290   004414   005777   174616          A7:     TST     @UDCA5          ;REFERENCE UDCA5
1291   004420   104005                          SCOPE                   ;OR IF NO TRAP OCCURS
1292   004422   104002                  A7B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA5
1293   004424   022626                          POPSP2
1294   004426   104005                          SCOPE
```

```
1295                                    ;
1296                                    ;*****************************************************************
1297  004430  000007                    T7:     7                       ;ROUTINE NUMBER 7                 *
1298  004432  004462                            T10                     ;ADDRESS OF NEXT ROUTINE          *
1299  004434  001750                            1000.                   ;TEST ITERATION COUNT             *
1300  004436  004440                            A8A                     ;SCOPE ENTRY POINT                *
1301          000007                            X=X+1                   ;                                 *
1302                                    ;*****************************************************************
1303                                    ;TEST ABILITY TO REFERENCE UDCA6 WITHOUT TRAPPING
1304  004440  012767  004454  173336    A8A:    MOV     #A8B,MACHER     ;SET UP BUS TRAP ERROR
1305  004446  005777  174566                    TST     @UDCA6          ;REFERENCE UDCA6
1306  004452  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1307  004454  104002                    A8B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA6
1308  004456  022626                            POPSP2
1309  004460  104005                            SCOPE
1310                                    ;
1311                                    ;*****************************************************************
1312  004462  000010                    T10:    10                      ;ROUTINE NUMBER 10                *
1313  004464  004514                            T11                     ;ADDRESS OF NEXT ROUTINE          *
1314  004466  001750                            1000.                   ;TEST ITERATION COUNT             *
1315  004470  004472                            A9A                     ;SCOPE ENTRY POINT                *
1316          000010                            X=X+1                   ;                                 *
1317                                    ;*****************************************************************
1318                                    ;TEST ABILITY TO REFERENCE UDCA7 WITHOUT TRAPPING
1319  004472  012767  004506  173304    A9A:    MOV     #A9B,MACHER     ;SET UP BUS TRAP ERROR
1320  004500  005777  174536                    TST     @UDCA7          ;RFERENCE UDCA7
1321  004504  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1322  004506  104002                    A9B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA7
1323  004510  022626                            POPSP2
1324  004512  104005                            SCOPE
1325                                    ;
1326                                    ;*****************************************************************
1327  004514  000011                    T11:    11                      ;ROUTINE NUMBER 11                *
1328  004516  004546                            T12                     ;ADDRESS OF NEXT ROUTINE          *
1329  004520  001750                            1000.                   ;TEST ITERATION COUNT             *
1330  004522  004524                            A10A                    ;SCOPE ENTRY POINT                *
1331          000011                            X=X+1                   ;                                 *
1332                                    ;*****************************************************************
1333                                    ;TEST ABILITY TO REFERENCE UDCA8 WITHOUT TRAPPING
1334  004524  012767  004540  173252    A10A:   MOV     #A10B,MACHER    ;SET UP BUS TRAP ERROR
1335  004532  005777  174506                    TST     @UDCA8          ;REFERENCE UDCA8
1336  004536  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1337  004540  104002                    A10B:   ERROR                   ;TRAPPED WHEN REFERENCING UDCA8
1338  004542  022626                            POPSP2
1339  004544  104005                            SCOPE
1340                                    ;
1341                                    ;*****************************************************************
1342  004546  000012                    T12:    12                      ;ROUTINE NUMBER 12                *
1343  004550  004600                            T13                     ;ADDRESS OF NEXT ROUTINE          *
1344  004552  001750                            1000.                   ;TEST ITERATION COUNT             *
1345  004554  004556                            A11A                    ;SCOPE ENTRY POINT                *
1346          000012                            X=X+1                   ;                                 *
1347                                    ;*****************************************************************
1348                                    ;TEST ABILITY TO REFERENCE UDCA9 WITHOUT TRAPPING
```

```
1349  004556  012767  004572  173220  A11A1   MOV     #A11B,MACHER    ;SET UP BUS TRAP ERROR
1350  004564  005777  174456          1$:     TST     @UDCA9          ;REFERENCE UDCA9
1351  004570  104005                          SCOPE                   ;OK IF NO TRAP OCCURS
1352  004572  104002                  A11B1:  ERROR                   ;TRAPPED WHEN REFERENCING UDCA9
1353  004574  022626                          POPSP2
1354  004576  104005                          SCOPE
1355                                  ;
1356                                  ;.....................................................................
1357  004600  000013                  T13:    13                      ;ROUTINE NUMBER 13                  .
1358  004602  004704                          T14                     ;ADDRESS OF NEXT ROUTINE            .
1359  004604  000144                          100.                    ;TEST ITERATION COUNT               .
1360  004606  004610                          B1A                     ;SCOPE ENTRY POINT                  .
1361          000013                          X=X+1                   ;                                   .
1362                                  ;.....................................................................
1363                                  ;TEST THAT UDCR BIT 0 CAN BE SET AND CLEARED
1364  004610  005077  174376          B1A1:   CLR     @UDCR           ;CLEAR UDCR
1365  004614  052777  000001  174370          BIS     #BIT0,@UDCR     ;SET UDCR BIT 0
1366  004622  032777  000001  174362          BIT     #BIT0,@UDCR     ;SEE IF BIT IS SET
1367  004630  001002                          BNE     .+6             ;BRANCH IF SET
1368  004632  104002                          ERROR                   ;BIT 0 FAILED TO SET
1369  004634  104005                          SCOPE
1370  004636  042777  000001  174346          BIC     #BIT0,@UDCR     ;CLEAR UDCR BIT 0
1371  004644  032777  000001  174340          BIT     #BIT0,@UDCR     ;SEE IF BIT HAS CLEARED
1372  004652  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1373  004654  104002                          ERROR                   ;BIT 0 DID NOT CLEAR
1374  004656  052777  000001  174326          BIS     #BIT0,@UDCR     ;SET UDCR BIT 0 (RIF)
1375  004664  005777  174356          1$:     TST     @UDCA9          ;ADDRESS MODULE
1376  004670  032777  000001  174314          BIT     #BIT0,@UDCR
1377  004676  001001                          BNE     .+4
1378  004700  104002                          ERROR                   ;RIF CLEARED BIT 0
1379  004702  104005                          SCOPE
1380                                  ;
1381                                  ;.....................................................................
1382  004704  000014                  T14:    14                      ;ROUTINE NUMBER 14                  .
1383  004706  004764                          T15                     ;ADDRESS OF NEXT ROUTINE            .
1384  004710  000144                          100.                    ;TEST ITERATION COUNT               .
1385  004712  004714                          B2A                     ;SCOPE ENTRY POINT                  .
1386          000014                          X=X+1                   ;                                   .
1387                                  ;.....................................................................
1388                                  ;TEST THAT UDCR BIT 1 CAN BE SET AND CLEARED
1389  004714  005077  174272          B2A1:   CLR     @UDCR           ;CLEAR UDCR
1390  004720  052777  000002  174264          BIS     #BIT1,@UDCR     ;SET UDCR BIT 1
1391  004726  032777  000002  174256          BIT     #BIT1,@UDCR     ;SEE IF BIT IS SET
1392  004734  001002                          BNE     .+6             ;BRANCH IF SET
1393  004736  104002                          ERROR                   ;UDCR BIT 1 FAILED TO SET
1394  004740  104005                          SCOPE
1395  004742  042777  000002  174242          BIC     #BIT1,@UDCR     ;CLEAR UDCR BIT 1
1396  004750  032777  000002  174234          BIT     #BIT1,@UDCR     ;SEE IF BIT IS CLEAR
1397  004756  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1398  004760  104002                          ERROR                   ;UDCR BIT 1 FAILED TO CLEAR
1399  004762  104005                          SCOPE
1400                                  ;
1401                                  ;.....................................................................
1402  004764  000015                  T15:    15                      ;ROUTINE NUMBER 15                  .
```

```
1403  004766  000044                        T16                     ;ADDRESS OF NEXT ROUTINE                    *
1404  004770  000144                        100.                    ;TEST ITERATION COUNT                       *
1405  004772  004774                        BSA                     ;SCOPE ENTRY POINT                          *
1406          000015                        X=X+1                   ;                                           *
1407                                ;*****************************************************************
1408                                ;TEST THAT UDCR BIT 2 CAN BE SET AND CLEARED
1409  004774  000077  174212       B3A:    CLR     @UDCR           ;CLEAR UDCR
1410  005000  052777  000004 174204        BIS     #BIT2,@UDCR     ;SET UDCR BIT 2
1411  005006  032777  000004 174176        BIT     #BIT2,@UDCR     ;SEE IF BIT IS SET
1412  005014  001002                        BNE     .+6             ;BRANCH IF SET
1413  005016  104002                        ERROR                   ;UDCR BIT 2 FAILED TO SET
1414  005020  104005                        SCOPE
1415  005022  042777  000004 174162        BIC     #BIT2,@UDCR     ;CLEAR UDCR BIT 2
1416  005030  032777  000004 174154        BIT     #BIT2,@UDCR     ;SEE IF BIT IS CLEAR
1417  005036  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1418  005040  104002                        ERROR                   ;UDCR BIT 2 FAILED TO CLEAR
1419  005042  104005                        SCOPE
1420                                ;
1421                                ;*****************************************************************
1422  005044  000016                T16:    16                      ;ROUTINE NUMBER 16                          *
1423  005046  000124                        T17                     ;ADDRESS OF NEXT ROUTINE                    *
1424  005050  000144                        100.                    ;TEST ITERATION COUNT                       *
1425  005052  000054                        B4A                     ;SCOPE ENTRY POINT                          *
1426          000016                        X=X+1                   ;                                           *
1427                                ;*****************************************************************
1428                                ;TEST THAT UDCR BIT 3 CAN BE SET AND CLEARED
1429  005054  000077  174132       B4A:    CLR     @UDCR           ;CLEAR UDCR
1430  005060  052777  000010 174124        BIS     #BIT3,@UDCR     ;SET UDCR BIT 3
1431  005066  032777  000010 174116        BIT     #BIT3,@UDCR     ;SEE IF BIT IS SET
1432  005074  001002                        BNE     .+6             ;BRANCH IF SET
1433  005076  104002                        ERROR                   ;UDCR BIT 3 FAILED TO SET
1434  005100  104005                        SCOPE
1435  005102  042777  000010 174102        BIC     #BIT3,@UDCR     ;CLEAR UDCR BIT 3
1436  005110  032777  000010 174074        BIT     #BIT3,@UDCR     ;SEE IF BIT IS CLEAR
1437  005116  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1438  005120  104002                        ERROR                   ;UDCR BIT 3 FAILED TO CLEAR
1439  005122  104005                        SCOPE
1440                                ;
1441                                ;*****************************************************************
1442  005124  000017                T17:    17                      ;ROUTINE NUMBER 17                          *
1443  005126  000204                        T20                     ;ADDRESS OF NEXT ROUTINE                    *
1444  005130  000144                        100.                    ;TEST ITERATION COUNT                       *
1445  005132  000134                        B5A                     ;SCOPE ENTRY POINT                          *
1446          000017                        X=X+1                   ;                                           *
1447                                ;*****************************************************************
1448                                ;TEST THAT UDCR BIT 4 CAN BE SET AND CLEARED
1449  005134  000077  174052       B5A:    CLR     @UDCR           ;CLEAR UDCR
1450  005140  052777  000020 174044        BIS     #BIT4,@UDCR     ;SET UDCR BIT 4
1451  005146  032777  000020 174036        BIT     #BIT4,@UDCR     ;SEE IF BIT IS SET
1452  005154  001002                        BNE     .+6             ;BRANCH IF SET
1453  005156  104002                        ERROR                   ;UDCR BIT 4 FAILED TO SET
1454  005160  104005                        SCOPE
1455  005162  042777  000020 174022        BIC     #BIT4,@UDCR     ;CLEAR UDCR BIT 4
1456  005170  032777  000020 174014        BIT     #BIT4,@UDCR     ;SEE IF BIT IS CLEAR
```

```
1457  005176  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1458  005200  104002                        ERROR                   ;UDCR BIT 4 FAILED TO CLEAR
1459  005202  104005                        SCOPE
1460                                  ;
1461                                  ;*****************************************************************
1462  005204  000020                  T20:  20                      ;ROUTINE NUMBER 20
1463  005206  005264                        T21                     ;ADDRESS OF NEXT ROUTINE                *
1464  005210  000144                        100.                    ;TEST ITERATION COUNT                   *
1465  005212  005214                        B6A                     ;SCOPE ENTRY POINT                      *
1466           000020                       X=X+1                   ;                                       *
1467                                  ;*****************************************************************
1468                                  ;TEST THAT UDCR BIT 8 CAN BE SET AND CLEARED
1469  005214  005077  173772          B6A:  CLR     @UDCR             ;CLEAR UDCR
1470  005220  052777  000400  173764        BIS     #BIT8,@UDCR     ;SET UDCR BIT 8
1471  005226  032777  000400  173756        BIT     #BIT8,@UDCR     ;SEE IF BIT IS SET
1472  005234  001002                        BNE     .+6             ;BRANCH IF SET
1473  005236  104002                        ERROR                   ;UDCR BIT 8 FAILED TO SET
1474  005240  104005                        SCOPE
1475  005242  042777  000400  173742        BIC     #BIT8,@UDCR     ;CLEAR UDCR BIT 8
1476  005250  032777  000400  173734        BIT     #BIT8,@UDCR     ;SEE IF BIT IS CLEAR
1477  005256  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1478  005260  104002                        ERROR                   ;UDCR BIT 8 FAILED TO CLEAR
1479  005262  104005                        SCOPE
1480                                  ;
1481                                  ;*****************************************************************
1482  005264  000021                  T21:  21                      ;ROUTINE NUMBER 21                      *
1483  005266  005344                        T22                     ;ADDRESS OF NEXT ROUTINE                *
1484  005270  000144                        100.                    ;TEST ITERATION COUNT                   *
1485  005272  005274                        B7A                     ;SCOPE ENTRY POINT                      *
1486           000021                       X=X+1                   ;                                       *
1487                                  ;*****************************************************************
1488                                  ;TEST THAT UDCR BIT 9 CAN BE SET AND CLEARED
1489  005274  005077  173712          B7A:  CLR     @UDCR             ;CLEAR UDCR
1490  005300  052777  001000  173704        BIS     #BIT9,@UDCR     ;SET UDCR BIT 9
1491  005306  032777  001000  173676        BIT     #BIT9,@UDCR     ;SEE IF BIT IS SET
1492  005314  001002                        BNE     .+6             ;BRANCH IF SET
1493  005316  104002                        ERROR                   ;UDCR BIT 9 FAILED TO SET
1494  005320  104005                        SCOPE
1495  005322  042777  001000  173662        BIC     #BIT9,@UDCR     ;CLEAR UDCR BIT 9
1496  005330  032777  001000  173654        BIT     #BIT9,@UDCR     ;SEE IF BIT IS CLEAR
1497  005336  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1498  005340  104002                        ERROR                   ;UDCR BIT 9 FAILED TO CLEAR
1499  005342  104005                        SCOPE
1500                                  ;
1501                                  ;*****************************************************************
1502  005344  000022                  T22:  22                      ;ROUTINE NUMBER 22                      *
1503  005346  005424                        T23                     ;ADDRESS OF NEXT ROUTINE                *
1504  005350  000144                        100.                    ;TEST ITERATION COUNT                   *
1505  005352  005354                        B8A                     ;SCOPE ENTRY POINT                      *
1506           000022                       X=X+1                   ;                                       *
1507                                  ;*****************************************************************
1508                                  ;TEST THAT UDCR BIT 10 CAN BE SET AND CLEARED
1509  005354  005077  173632          B8A:  CLR     @UDCR             ;CLEAR UDCR
1510  005360  052777  002000  173624        BIS     #BIT10,@UDCR    ;SET UDCR BIT 10
```

```
1511  005366  032777  002000  173616          BIT     #BIT10,@UDCR    ;SEE IF BIT IS SET
1512  005374  001002                          BNE     .+6             ;BRANCH IF SET
1513  005376  104002                          ERROR                   ;UDCR BIT 10 FAILED TO SET
1514  005400  104005                          SCOPE
1515  005402  042777  002000  173602          BIC     #BIT10,@UDCR    ;CLEAR UDCR BIT 10
1516  005410  032777  002000  173574          BIT     #BIT10,@UDCR    ;SEE IF BIT IS CLEAR
1517  005416  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1518  005420  104002                          ERROR                   ;UDCR BIT 10 FAILED TO CLEAR
1519  005422  104005                          SCOPE
1520                                  ;
1521                                  ;*****************************************************************
1522  005424  000023                  T231:   23                      ;ROUTINE NUMBER 23                *
1523  005426  005504                          T24                     ;ADDRESS OF NEXT ROUTINE          *
1524  005430  000144                          100.                    ;TEST ITERATION COUNT             *
1525  005432  005434                          B9A                     ;SCOPE ENTRY POINT                *
1526          000023                          X=X+1                   ;                                 *
1527                                  ;*****************************************************************
1528                                  ;TEST THAT UDCR BIT 11 CAN BE SET AND CLEARED
1529  005434  005077  173552          B9A1:   CLR     @UDCR           ;CLEAR UDCR
1530  005440  052777  004000  173544          BIS     #BIT11,@UDCR    ;SET UDCR BIT 11
1531  005446  032777  004000  173536          BIT     #BIT11,@UDCR    ;SEE IF BIT IS SET
1532  005454  001002                          BNE     .+6             ;BRANCH IF SET
1533  005456  104002                          ERROR                   ;UDCR BIT 11 FAILED TO SET
1534  005460  104005                          SCOPE
1535  005462  042777  004000  173522          BIC     #BIT11,@UDCR    ;CLEAR UDCR BIT 11
1536  005470  032777  004000  173514          BIT     #BIT11,@UDCR    ;SEE IF BIT IS CLEAR
1537  005476  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1538  005500  104002                          ERROR                   ;UDCR BIT 11 FAILED TO CLEAR
1539  005502  104005                          SCOPE
1540                                  ;
1541                                  ;*****************************************************************
1542  005504  000024                  T241:   24                      ;ROUTINE NUMBER 24                *
1543  005506  005540                          T25                     ;ADDRESS OF NEXT ROUTINE          *
1544  005510  000005                          5.                      ;TEST ITERATION COUNT             *
1545  005512  005514                          C1A                     ;SCOPE ENTRY POINT                *
1546          000024                          X=X+1                   ;                                 *
1547                                  ;*****************************************************************
1548                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 0
1549  005514  052777  000001  173470  C1A1:   BIS     #BIT0,@UDCR     ;SET  UDCR BIT 0
1550  005522  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1551  005524  032777  000001  173460          BIT     #BIT0,@UDCR     ;SEE IF BIT IS CLEAR
1552  005532  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1553  005534  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 0
1554  005536  104005                          SCOPE
1555                                  ;
1556                                  ;*****************************************************************
1557  005540  000025                  T251:   25                      ;ROUTINE NUMBER 25                *
1558  005542  005574                          T26                     ;ADDRESS OF NEXT ROUTINE          *
1559  005544  000005                          5.                      ;TEST ITERATION COUNT             *
1560  005546  005550                          C2A                     ;SCOPE ENTRY POINT                *
1561          000025                          X=X+1                   ;                                 *
1562                                  ;*****************************************************************
1563                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 1
1564  005550  052777  000002  173434  C2A1:   BIS     #BIT1,@UDCR     ;SET  UDCR BIT 1
```

```
1565  005556  104404                          RESET                   ;ISSUE RESET TO CLEAR BIT
1566  005560  032777  000002  173424          BIT     #BIT1,@UDCR     ;SEE IF BIT IS CLEAR
1567  005566  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1568  005570  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 1
1569  005572  104005                          SCOPE
1570                                  ;
1571                                  ;*****************************************************************
1572  005574  000026                  T26:    26                      ;ROUTINE NUMBER 26                *
1573  005576  005638                          T27                     ;ADDRESS OF NEXT ROUTINE          *
1574  005600  000005                          5.                      ;TEST ITERATION COUNT             *
1575  005602  005604                          C3A                     ;SCOPE ENTRY POINT                *
1576          000026                          X=X+1                   ;                                 *
1577                                  ;*****************************************************************
1578                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 2
1579  005604  052777  000004  173400  C3A:    BIS     #BIT2,@UDCR     ;SET  UDCR BIT 2
1580  005612  104404                          RESET                   ;ISSUE RESET TO CLEAR BIT
1581  005614  032777  000004  173370          BIT     #BIT2,@UDCR     ;SEE IF BIT IS CLEAR
1582  005622  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1583  005624  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 2
1584  005626  104005                          SCOPE
1585                                  ;
1586                                  ;*****************************************************************
1587  005630  000027                  T27:    27                      ;ROUTINE NUMBER 27                *
1588  005632  005664                          T30                     ;ADDRESS OF NEXT ROUTINE          *
1589  005634  000005                          5.                      ;TEST ITERATION COUNT             *
1590  005636  005640                          C4A                     ;SCOPE ENTRY POINT                *
1591          000027                          X=X+1                   ;                                 *
1592                                  ;*****************************************************************
1593                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 3
1594  005640  052777  000010  173344  C4A:    BIS     #BIT3,@UDCR     ;SET  UDCR BIT 3
1595  005646  104404                          RESET                   ;ISSUE RESET TO CLEAR BIT
1596  005650  032777  000010  173334          BIT     #BIT3,@UDCR     ;SEE IF BIT IS CLEAR
1597  005656  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1598  005660  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 3
1599  005662  104005                          SCOPE
1600                                  ;
1601                                  ;*****************************************************************
1602  005664  000030                  T30:    30                      ;ROUTINE NUMBER 30                *
1603  005666  005720                          T31                     ;ADDRESS OF NEXT ROUTINE          *
1604  005670  000005                          5.                      ;TEST ITERATION COUNT             *
1605  005672  005674                          C5A                     ;SCOPE ENTRY POINT                *
1606          000030                          X=X+1                   ;                                 *
1607                                  ;*****************************************************************
1608                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 4
1609  005674  052777  000020  173310  C5A:    BIS     #BIT4,@UDCR     ;SET  UDCR BIT 4
1610  005702  104404                          RESET                   ;ISSUE RESET TO CLEAR BIT
1611  005704  032777  000020  173300          BIT     #BIT4,@UDCR     ;SEE IF BIT IS CLEAR
1612  005712  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1613  005714  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 4
1614  005716  104005                          SCOPE
1615                                  ;
1616                                  ;*****************************************************************
1617  005720  000031                  T31:    31                      ;ROUTINE NUMBER 31                *
1618  005722  005754                          T32                     ;ADDRESS OF NEXT ROUTINE          *
```

```
1619  005724  000005                          5;                      ;TEST ITERATION COUNT                    .
1620  005726  005730                          C6A                     ;SCOPE ENTRY POINT                       .
1621          000031                          X=X+1                   ;                                        .
1622                                  ;*****************************************************************
1623                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 5
1624  005730  052777  000040  173254  C6A1:   BIS     #BIT5,@UDCA     ;SET  UDCA BIT 5
1625  005736  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1626  005740  032777  000040  173244          BIT     #BIT5,@UDCA     ;SEE IF BIT IS CLEAR
1627  005746  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1628  005750  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCA BIT 5
1629  005752  104005                          SCOPE
1630                                  ;
1631                                  ;*****************************************************************
1632  005754  000032                  T32:    32                      ;ROUTINE NUMBER 32                       .
1633  005756  006010                          T33                     ;ADDRESS OF NEXT ROUTINE                 .
1634  005760  000005                          5;                      ;TEST ITERATION COUNT                    .
1635  005762  005764                          C7A                     ;SCOPE ENTRY POINT                       .
1636          000032                          X=X+1                   ;                                        .
1637                                  ;*****************************************************************
1638                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 6
1639  005764  052777  000100  173220  C7A1:   BIS     #BIT6,@UDCA     ;SET  UDCA BIT 6
1640  005772  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1641  005774  032777  000100  173210          BIT     #BIT6,@UDCA     ;SEE IF BIT IS CLEAR
1642  006002  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1643  006004  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCA BIT 6
1644  006006  104005                          SCOPE
1645                                  ;
1646                                  ;*****************************************************************
1647  006010  000033                  T33:    33                      ;ROUTINE NUMBER 33                       .
1648  006012  006044                          T34                     ;ADDRESS OF NEXT ROUTINE                 .
1649  006014  000005                          5;                      ;TEST ITERATION COUNT                    .
1650  006016  006020                          C8A                     ;SCOPE ENTRY POINT                       .
1651          000033                          X=X+1                   ;                                        .
1652                                  ;*****************************************************************
1653                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 7
1654  006020  052777  000200  173164  C8A1:   BIS     #BIT7,@UDCA     ;SET  UDCA BIT 7
1655  006026  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1656  006030  032777  000200  173154          BIT     #BIT7,@UDCA     ;SEE IF BIT IS CLEAR
1657  006036  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1658  006040  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCA BIT 7
1659  006042  104005                          SCOPE
1660                                  ;
1661                                  ;*****************************************************************
1662  006044  000034                  T34:    34                      ;ROUTINE NUMBER 34                       .
1663  006046  006100                          T35                     ;ADDRESS OF NEXT ROUTINE                 .
1664  006050  000005                          5;                      ;TEST ITERATION COUNT                    .
1665  006052  006054                          C9A                     ;SCOPE ENTRY POINT                       .
1666          000034                          X=X+1                   ;                                        .
1667                                  ;*****************************************************************
1668                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 8
1669  006054  052777  000400  173130  C9A1:   BIS     #BIT8,@UDCA     ;SET  UDCA BIT 8
1670  006062  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1671  006064  032777  000400  173120          BIT     #BIT8,@UDCA     ;SEE IF BIT IS CLEAR
1672  006072  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
```

```
1673  006074  104022                        ERROR                   ;RPSET FAILED TO CLEAR UDCR BIT 8
1674  006076  104035                        SCOPE
1675                                  ;
1676                                  ;*****************************************************************
1677  006100  000035                 *35:    35                      ;ROUTINE NUMBER 35                *
1678  006102  006134                         T36                     ;ADDRESS OF NEXT ROUTINE          *
1679  006104  000005                         5.                      ;TEST ITERATION COUNT             *
1680  006106  006110                         C10A                    ;SCOPE ENTRY POINT                *
1681          000035                         X=X+1                   ;                                 *
1682                                  ;*****************************************************************
1683                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 9
1684  006110  052777  001000  173074 C10A1:  BIS     #BIT9,@UDCR     ;SET  UDCR BIT 9
1685  006116  104024                         SRESET                  ;ISSUE RESET TO CLEAR BIT
1686  006120  032777  001000  173064         BIT     #BIT9,@UDCR     ;SEE IF BIT IS CLEAR
1687  006126  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1688  006130  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 9
1689  006132  104035                         SCOPE
1690                                  ;
1691                                  ;*****************************************************************
1692  006134  000036                 *36:    36                      ;ROUTINE NUMBER 36                *
1693  006136  006170                         T37                     ;ADDRESS OF NEXT ROUTINE          *
1694  006140  000005                         5.                      ;TEST ITERATION COUNT             *
1695  006142  006144                         C11A                    ;SCOPE ENTRY POINT                *
1696          000036                         X=X+1                   ;                                 *
1697                                  ;*****************************************************************
1698                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 10
1699  006144  052777  002000  173040 C11A1:  BIS     #BIT10,@UDCR    ;SET  UDCR BIT 10
1700  006152  104024                         SRESET                  ;ISSUE RESET TO CLEAR BIT
1701  006154  032777  002000  173030         BIT     #BIT10,@UDCR    ;SEE IF BIT IS CLEAR
1702  006162  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1703  006164  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 10
1704  006166  104035                         SCOPE
1705                                  ;
1706                                  ;*****************************************************************
1707  006170  000037                 *37:    37                      ;ROUTINE NUMBER 37                *
1708  006172  006224                         T40                     ;ADDRESS OF NEXT ROUTINE          *
1709  006174  000005                         5.                      ;TEST ITERATION COUNT             *
1710  006176  006200                         C12A                    ;SCOPE ENTRY POINT                *
1711          000037                         X=X+1                   ;                                 *
1712                                  ;*****************************************************************
1713                                  ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 11
1714  006200  052777  004000  173004 C12A1:  BIS     #BIT11,@UDCR    ;SET  UDCR BIT 11
1715  006206  104024                         SRESET                  ;ISSUE RESET TO CLEAR BIT
1716  006210  032777  004000  172774         BIT     #BIT11,@UDCR    ;SEE IF BIT IS CLEAR
1717  006216  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1718  006220  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 11
1719  006222  104035                         SCOPE
1720                                  ;
1721                                  ;*****************************************************************
1722  006224  000040                 *40:    40                      ;ROUTINE NUMBER 40                *
1723  006226  006260                         T41                     ;ADDRESS OF NEXT ROUTINE          *
1724  006230  000005                         5.                      ;TEST ITERATION COUNT             *
1725  006232  006234                         C13A                    ;SCOPE ENTRY POINT                *
1726          000040                         X=X+1                   ;                                 *
```

```
1727                                    ;*****************************************************************
1728                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 12
1729  006234  052777  010000  172750  C13A1:  BIS     #BIT12,@UDCR    ;SET  UDCR BIT 12
1730  006242  104004                        RESET                   ;ISSUE RESET TO CLEAR BIT
1731  006244  032777  010000  172740        BIT     #BIT12,@UDCR    ;SEE IF BIT IS CLEAR
1732  006252  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1733  006254  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 12
1734  006256  104005                        SCOPE
1735                                    ;
1736                                    ;*****************************************************************
1737  006260  000041                    T41:    41                      ;ROUTINE NUMBER 41                  *
1738  006262  006314                            T42                     ;ADDRESS OF NEXT ROUTINE            *
1739  006264  000005                            5.                      ;TEST ITERATION COUNT               *
1740  006266  006270                            C14A                    ;SCOPE ENTRY POINT                  *
1741           000041                            X=X+1                   ;                                   *
1742                                    ;*****************************************************************
1743                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 13
1744  006270  052777  020000  172714  C13A1:  BIS     #BIT13,@UDCR    ;SET  UDCR BIT 13
1745  006276  104004                        RESET                   ;ISSUE RESET TO CLEAR BIT
1746  006300  032777  020000  172704        BIT     #BIT13,@UDCR    ;SEE IF BIT IS CLEAR
1747  006306  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1748  006310  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 13
1749  006312  104005                        SCOPE
1750                                    ;
1751                                    ;*****************************************************************
1752  006314  000042                    T42:    42                      ;ROUTINE NUMBER 42                  *
1753  006316  006336                            T43                     ;ADDRESS OF NEXT ROUTINE            *
1754  006320  000005                            5.                      ;TEST ITERATION COUNT               *
1755  006322  006324                            C15A                    ;SCOPE ENTRY POINT                  *
1756           000042                            X=X+1                   ;                                   *
1757                                    ;*****************************************************************
1758                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 14
1759  006324  052777  040000  172660  C15A1:  BIS     #BIT14,@UDCR    ;SET  UDCR BIT 14
1760  006332  104004                        RESET                   ;ISSUE RESET TO CLEAR BIT
1761  006334  032777  040000  172650        BIT     #BIT14,@UDCR    ;SEE IF BIT IS CLEAR
1762  006342  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1763  006344  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 14
1764  006346  104005                        SCOPE
1765                                    ;
1766                                    ;*****************************************************************
1767  006350  000043                    T43:    43                      ;ROUTINE NUMBER 43                  *
1768  006352  006404                            T44                     ;ADDRESS OF NEXT ROUTINE            *
1769  006354  000005                            5.                      ;TEST ITERATION COUNT               *
1770  006356  006360                            C16A                    ;SCOPE ENTRY POINT                  *
1771           000043                            X=X+1                   ;                                   *
1772                                    ;*****************************************************************
1773                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 15
1774  006360  052777  100000  172624  C16A1:  BIS     #BIT15,@UDCR    ;SET  UDCR BIT 15
1775  006366  104004                        RESET                   ;ISSUE RESET TO CLEAR BIT
1776  006370  032777  100000  172614        BIT     #BIT15,@UDCR    ;SEE IF BIT IS CLEAR
1777  006376  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1778  006400  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 15
1779  006402  104005                        SCOPE
1780                                    ;
```

```
1781                                    ;*****************************************************************
1782  006404  000044                    T441:   44                      ;ROUTINE NUMBER 44                      *
1783  006406  006430                            T45                     ;ADDRESS OF NEXT ROUTINE                *
1784  006410  000012                            10.                     ;TEST ITERATION COUNT                   *
1785  006412  006414                            C17A                    ;SCOPE ENTRY POINT                      *
1786          000044                            X=X+1                   ;                                       *
1787                                    ;*****************************************************************
1788                                    ;TEST THAT INIT CLEARS SCAN REGISTER
1789  006414  104004                    C17A1:  SRESET
1790  006416  105777  172572                    TSTB    @UDSR           ;TEST IF SCAN REGISTER = 0
1791  006422  001401                            BEQ     .+4             ;BRANCH IF REGISTER = 0
1792  006424  104007                            ERRORS
1793  006426  104005                            SCOPE
1794                                    ;
1795                                    ;*****************************************************************
1796  006430  000045                    T451:   45                      ;ROUTINE NUMBER 45                      *
1797  006432  006454                            T46                     ;ADDRESS OF NEXT ROUTINE                *
1798  006434  000062                            50.                     ;TEST ITERATION COUNT                   *
1799  006436  006440                            D1A                     ;SCOPE ENTRY POINT                      *
1800          000045                            X=X+1                   ;                                       *
1801                                    ;*****************************************************************
1802                                    ;TEST THAT X SCAN REG COUNTS CORRECTLY USING MAINT CLOCK
1803  006440  104004                    D1A1:   SRESET                  ;CLEAR SCAN REGISTER
1804  006442  005777  172554                    TST     @MCLK           ;GENERATE STROBE
1805  006446  127727  172542  000040          CMPB    @UDSR,#40       ;CHECK COUNT
1806  006454  001402                            BEQ     .+6             ;BRANCH IF COUNT CORRECT
1807  006456  104007                            ERRORS                  ;XBIB NOT COUNT TO 1
1808  006460  104005                            SCOPE
1809  006462  005777  172534                    TST     @MCLK
1810  006466  127727  172522  000100          CMPB    @UDSR,#100
1811  006474  001402                            BEQ     .+6
1812  006476  104007                            ERRORS                  ;X DID NOT COUNT TO 2
1813  006500  104005                            SCOPE
1814  006502  005777  172514                    TST     @MCLK
1815  006506  127727  172502  000140          CMPB    @UDSR,#140
1816  006514  001402                            BEQ     .+6
1817  006516  104007                            ERRORS                  ;X DID NOT COUNT TO 3
1818  006520  104005                            SCOPE
1819  006522  005777  172474                    TST     @MCLK
1820  006526  127727  172462  000200          CMPB    @UDSR,#200
1821  006534  001402                            BEQ     .+6
1822  006536  104007                            ERRORS                  ;X DID NOT COUNT TO 4
1823  006540  104005                            SCOPE
1824  006542  005777  172454                    TST     @MCLK
1825  006546  127727  172442  000240          CMPB    @UDSR,#240
1826  006554  001402                            BEQ     .+6
1827  006556  104007                            ERRORS                  ;X DID NOT COUNT TO 5
1828  006560  104005                            SCOPE
1829  006562  005777  172434                    TST     @MCLK
1830  006566  127727  172422  000300          CMPB    @UDSR,#300
1831  006574  001402                            BEQ     .+6
1832  006576  104007                            ERRORS                  ;X DID NOT COUNT TO 6
1833  006600  104005                            SCOPE
1834  006602  005777  172414                    TST     @MCLK
```

```
1835  006606  127727  172402  000340          CMPB    @UDSR,#340
1836  006614  001402                          BEQ     .+6
1837  006616  104007                          ERROR5                  ;X DID NOT COUNT TO 7
1838  006620  104005                          SCOPE
1839  006622  005777  172364                  TST     @UDCR
1840  006626  001402                          BEQ     .+6             ;BRANCH IF CONT REG CLEAR
1841  006630  104007                          ERROR5
1842  006632  104005                          SCOPE
1843  006634  005777  172362                  TST     @MCLK
1844  006640  027727  172346  100000          CMP     @UDCR,#BIT15    ;ONLY SCAN ERROR SHOULD BE SET
1845  006646  001401                          BEQ     .+4
1846  006650  104007                          ERROR5
1847  006652  104005                          SCOPE
1848                                  ;
1849                                  ;*****************************************************************
1850  006654  000046                  T461    46                      ;ROUTINE NUMBER 46                *
1851  006656  007118                          T47                     ;ADDRESS OF NEXT ROUTINE          *
1852  006660  000002                          50.                     ;TEST ITERATION COUNT             *
1853  006662  006664                          D2A                     ;SCOPE ENTRY POINT                *
1854            000046                        X=X+1                   ;                                 *
1855                                  ;*****************************************************************
1856                                  ;TEST THAT Y SCAN REG COUNTS CORRECTLY USING MAINT CLOCK
1857  006664  104004                  D2A1    $RESET                  ;CLEAR SCAN REGISTER
1858  006666  012777  001400  172316          MOV     #BIT9!BIT8,@UDCR        ;SET STOP X+MAINT
1859  006674  005777  172322                  TST     @MCLK           ;GENERATE STROBE
1860  006700  127727  172318  000004          CMPB    @UDSR,#4        ;CHECK COUNT
1861  006706  001402                          BEQ     .+6             ;BRANCH IF COUNT CORRECT
1862  006710  104007                          ERROR5                  ;Y DID NOT COUNT TO 1
1863  006712  104005                          SCOPE
1864  006714  005777  172302                  TST     @MCLK
1865  006720  127727  172270  000010          CMPB    @UDSR,#10
1866  006726  001402                          BEQ     .+6
1867  006730  104007                          ERROR5                  ;Y DID NOT COUNT TO 2
1868  006732  104005                          SCOPE
1869  006734  005777  172262                  TST     @MCLK
1870  006740  127727  172250  000014          CMPB    @UDSR,#14
1871  006746  001402                          BEQ     .+6
1872  006750  104007                          ERROR5                  ;Y DID NOT COUNT TO 3
1873  006752  104005                          SCOPE
1874  006754  005777  172242                  TST     @MCLK
1875  006760  127727  172230  000020          CMPB    @UDSR,#20
1876  006766  001402                          BEQ     .+6
1877  006770  104007                          ERROR5                  ;Y DID NOT COUNT TO 4
1878  006772  104005                          SCOPE
1879  006774  005777  172222                  TST     @MCLK
1880  007000  127727  172210  000024          CMPB    @UDSR,#24
1881  007006  001402                          BEQ     .+6
1882  007010  104007                          ERROR5                  ;Y DID NOT COUNT TO 5
1883  007012  104005                          SCOPE
1884  007014  005777  172202                  TST     @MCLK
1885  007020  127727  172170  000030          CMPB    @UDSR,#30
1886  007026  001402                          BEQ     .+6
1887  007030  104007                          ERROR5                  ;Y DID NOT COUNT TO 6
1888  007032  104005                          SCOPE
```

```
1889  007034  005777  172162                  TST     @MCLK
1890  007040  127727  172150  000034          CMPB    @UDSR,#34
1891  007046  001402                          BEQ     .+6
1892  007050  104007                          ERRORS                  ;Y DID NOT COUNT TO 7
1893  007052  104005                          SCOPE
1894  007054  027727  172132  001400          CMP     @UDCR,#BIT9!BIT8        ;BR IF ONLY STOP X+MAINT SET
1895  007062  001402                          BEQ     .+6
1896  007064  104007                          ERRORS
1897  007066  104005                          SCOPE
1898  007070  005777  172126                  TST     @MCLK           ;STROBE TO ERROR
1899  007074  027727  172112  101400          CMP     @UDCR,#BIT15!BIT9!BIT8  ;ONLY SCAN ERR,STP X,MAINT SET
1900  007102  001401                          BEQ     .+4
1901  007104  104007                          ERRORS
1902  007106  104005                          SCOPE
1903                                  ;
1904                                  ;.....................................................................
1905  007110  000047                  T49:    47                      ;ROUTINE NUMBER 47                  .
1906  007112  007244                          T50                     ;ADDRESS OF NEXT ROUTINE            .
1907  007114  000002                          50.                     ;TEST ITERATION COUNT               .
1908  007116  007120                          DSA                     ;SCOPE ENTRY POINT                  .
1909          000047                          X=X+1                   ;                                   .
1910                                  ;.....................................................................
1911                                  ;TEST THAT WD SCAN REG COUNTS CORRECTLY USING MAINT CLK
1912  007120  104004                  DSA:    $RESET                  ;CLEAR SCAN REGISTER
1913  007122  012777  003400  172062          MOV     #BIT8!BIT9!BIT10,@UDCR  ;SET STP X+Y+MAINT
1914  007130  005777  172066                  TST     @MCLK           ;GENERATE STROBE
1915  007134  127727  172054  000001          CMPB    @UDSR,#1        ;CHECK COUNT
1916  007142  001402                          BEQ     .+6             ;BRANCH IF COUNT CORRECT
1917  007144  104007                          ERRORS                  ;WD DID NOT COUNT TO 1
1918  007146  104005                          SCOPE
1919  007150  005777  172046                  TST     @MCLK
1920  007154  127727  172034  000002          CMPB    @UDSR,#2
1921  007162  001402                          BEQ     .+6
1922  007164  104007                          ERRORS                  ;WD DID NOT COUNT TO 2
1923  007166  104005                          SCOPE
1924  007170  005777  172026                  TST     @MCLK
1925  007174  127727  172014  000003          CMPB    @UDSR,#3
1926  007202  001402                          BEQ     .+6
1927  007204  104007                          ERRORS                  ;WD DID NOT COUNT TO 3
1928  007206  104005                          SCOPE
1929  007210  027727  171776  003400          CMP     @UDCR,#BIT8!BIT9!BIT10
1930  007216  001402                          BEQ     .+6             ;BRANCH IF ONLY STP X+Y+MAINT SET
1931  007220  104007                          ERRORS
1932  007222  104005                          SCOPE
1933  007224  005777  171772                  TST     @MCLK           ;STROBE TO ERROR
1934  007230  027727  171756  103400          CMP     @UDCR,#BIT15!BIT8!BIT9!BIT10
1935  007236  001401                          BEQ     .+4             ;BR IF ONLY SCAN ERROR,STP X+Y,MAINT SET
1936  007240  104007                          ERRORS
1937  007242  104005                          SCOPE
1938                                  ;
1939                                  ;.....................................................................
1940  007244  000050                  T50:    50                      ;ROUTINE NUMBER 50                  .
1941  007246  007334                          T51                     ;ADDRESS OF NEXT ROUTINE            .
1942  007250  000144                          100.                    ;TEST ITERATION COUNT               .
```

```
1943  007252  007254                          E1A                     ;SCOPE ENTRY POINT                      *
1944          000050                          X=X+1                   ;                                       *
1945                                  ;*****************************************************************
1946                                  ;TEST THAT DEF INT CAN BE GENERATED BY MAINT + DEF INT EN
1947  007254  012777  000402  171730  E1A1:   MOV     #BIT2,@UDCR     ;SET MAINT+DEF INT EN
1948  007262  032777  010000  171722          BIT     #BIT12,@UDCR    ;CHECK DEF INT BEING GENERATED
1949  007270  001002                          BNE     .+6             ;BRANCH IF SET
1950  007272  104007                          ERRORS
1951  007274  104005                          SCOPE
1952  007276  032777  020000  171706          BIT     #BIT13,@UDCR    ;CHECK IF IMM INT SET
1953  007304  001402                          BEQ     .+6             ;BRANCH IF CLEAR
1954  007306  104007                          ERRORS
1955  007310  104005                          SCOPE
1956  007312  042777  000400  171672          BIC     #BIT8,@UDCR     ;CLEAR MAINT FLOP
1957  007320  032777  010000  171664          BIT     #BIT12,@UDCR    ;CHECK IF DEF INT CLEAR
1958  007326  001401                          BEQ     .+4             ;BRANCH IF CLEAR
1959  007330  104007                          ERRORS
1960  007332  104005                          SCOPE
1961                                  ;
1962                                  ;*****************************************************************
1963  007334  000051                  T51:    51                      ;ROUTINE NUMBER 51                      *
1964  007336  007442                          T52                     ;ADDRESS OF NEXT ROUTINE                *
1965  007340  000012                          10.                     ;TEST ITERATION COUNT                   *
1966  007342  007344                          E2A                     ;SCOPE ENTRY POINT                      *
1967          000051                          X=X+1                   ;                                       *
1968                                  ;*****************************************************************
1969                                  ;TEST THAT DEF SCAN STARTS AND SETS SCAN ERROR, NO TRAP @S67
1970  007344  104004                  E2A1:   SRESET
1971  007346  012777  000412  171636          MOV     #BITC1,@UDCR    ;SET MAINT,DEF INT,DEF SCAN EN
1972  007354  104010                          DELAY
1973  007356  000001                          1                       ;WAIT 1 MS
1974  007360  032777  100000  171624          BIT     #BIT15,@UDCR    ;DID SCAN ERROR SET?
1975  007366  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
1976  007370  104007                          ERRORS
1977  007372  104005                          SCOPE
1978  007374  032777  000040  171610          BIT     #BIT5,@UDCR     ;DID SCAN ERROR SET DEF DONE?
1979  007402  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
1980  007404  104007                          ERRORS
1981  007406  104005                          SCOPE
1982  007410  104004                          SRESET
1983  007412  032777  100000  171572          BIT     #BIT15,@UDCR    ;DID SCAN ERROR CLEAR?
1984  007420  001402                          BEQ     .+6             ;BRANCH IF CLEAR
1985  007422  104007                          ERRORS
1986  007424  104005                          SCOPE
1987  007426  032777  000040  171556          BIT     #BIT5,@UDCR     ;DID DEF SCAN DONE CLEAR?
1988  007434  001401                          BEQ     .+4             ;BRANCH IF CLEAR
1989  007436  104007                          ERRORS
1990  007440  104005                          SCOPE
1991                                  ;
1992                                  ;*****************************************************************
1993  007442  000052                  T52:    52                      ;ROUTINE NUMBER 52                      *
1994  007444  007516                          T53                     ;ADDRESS OF NEXT ROUTINE                *
1995  007446  000012                          10.                     ;TEST ITERATION COUNT                   *
1996  007450  007452                          E2BA                    ;SCOPE ENTRY POINT                      *
```

```
                000052                                  X=X+1                           ;                               *
                                                ;*********************************************************************
                                                ;TEST THAT RIF DOES NOT SET WITH DEF START SCAN
        007452  104004                          E20A:   $RESET                          ;INITIALIZE CONTROL
        007454  012777  000412  171530                  MOV     #BITC1,@UDCR            ;SET MAINT,DEF INT,DEF SCAN EN
        007462  032777  000001  171522                  BIT     #BIT0,@UDCR             ;DID RIF SET WITH START SCAN
        007470  001402                                  BEQ     .+6                     ;BRANCH IF RIF CLEAR
        007472  104007                                  ERRORS
        007474  104005                                  SCOPE
        007476  104010                                  DELAY                           ;WAIT FOR SCAN DONE
        007500  000001                                  1
        007502  022777  120452  171502                  CMP     #120452,@UDCR           ;SCAN ERR,DEF INT,MAINT,DEF SCAN DONE
        007510  001001                                  BNE     .+4                     ;DEF SCAN EN,DEF INT EN
        007512  104007                                  ERRORS                          ;SHOULD ALL BE SET
        007514  104005                                  SCOPE
                                                ;
                                                ;*********************************************************************
        007516  000053                          T53:    53                              ;ROUTINE NUMBER 53              *
        007520  007572                                  T54                             ;ADDRESS OF NEXT ROUTINE        *
        007522  000012                                  10.                             ;TEST ITERATION COUNT           *
        007524  007526                                  E2CA                            ;SCOPE ENTRY POINT              *
                000053                                  X=X+1                           ;                               *
                                                ;*********************************************************************
                                                ;TEST THAT RIF DOES NOT CLEAR WITH DEF START SCAN
        007526  104004                          E2CA:   $RESET                          ;INITIALIZE CONTROL
        007530  012777  000413  171454                  MOV     #BITC1!BIT0,@UDCR               ;SET MAINT,DEF INT,DEF SCAN,RIF
        007536  032777  000001  171446                  BIT     #BIT0,@UDCR             ;DID RIF CLEAR WITH START SCAN
        007544  001002                                  BNE     .+6                     ;BRANCH IF RIF SET
        007546  104007                                  ERRORS
        007550  104005                                  SCOPE
        007552  104010                                  DELAY
        007554  000001                                  1
        007556  022777  120453  171426                  CMP     #120453,@UDCR           ;SCAN ERR,D INT,MAINT,D SCAN DONE
        007564  001001                                  BNE     .+4                     ;D SCAN EN,D INT EN ALL SET
        007566  104007                                  ERRORS
        007570  104005                                  SCOPE
                                                ;
                                                ;*********************************************************************
        007572  000054                          T54:    54                              ;ROUTINE NUMBER 54              *
        007574  007646                                  T55                             ;ADDRESS OF NEXT ROUTINE        *
        007576  000012                                  10.                             ;TEST ITERATION COUNT           *
        007600  007602                                  E3A                             ;SCOPE ENTRY POINT              *
                000054                                  X=X+1                           ;                               *
                                                ;*********************************************************************
                                                ;TEST THAT SCAN ERROR SETS SCAN VALUE TO ALL ONES
        007602  104004                          E3A:    $RESET
        007604  012777  000416  171400                  MOV     #BITC1!BIT2,@UDCR               ;SET MAINT,DEF INT,DEF SCAN EN,IMM EN
        007612  104010                                  DELAY                           ;WAIT 1 MS
        007614  000001                                  1
        007616  127727  171372  000377                  CMPB    @UDSR,#377              ;CHECK IF SCAN VALUE 377
        007624  001402                                  BEQ     .+6                     ;BRANCH IF SCAN = 377
        007626  104007                                  ERRORS
        007630  104005                                  SCOPE
        007632  104004                                  $RESET
```

```
 2051  007634  105777  171354          TSTB    @UDSR           ;DID RESET CLEAR SCAN REGISTER?
 2052  007640  001401                  BEQ     .+4             ;BRANCH IF CLEARED
 2053  007642  104007                  ERRORS
 2054  007644  104005                  SCOPE
 2055                                  ;
 2056                                  ;*****************************************************************
 2057  007646  000055                  T59:    55                      ;ROUTINE NUMBER 55                      *
 2058  007650  007736                          T56                     ;ADDRESS OF NEXT ROUTINE                *
 2059  007652  000144                          100.                    ;TEST ITERATION COUNT                   *
 2060  007654  007656                          E4A                     ;SCOPE ENTRY POINT                      *
 2061          000055                          X=X+1                   ;                                       *
 2062                                  ;*****************************************************************
 2063                                  ;TEST THAT DEF SCAN START CLEARS SCAN ERROR + DEF SCAN DONE
 2064  007656  012777  000412  171326  E4A1:   MOV     #BIT0,@UDCR     ;SET MAINT,DEF INT+SCAN EN
 2065  007664  104010                  DELAY                           ;WAIT UNTIL ERROR AND DONE SETS
 2066  007666  000001                  1
 2067  007670  042777  000012  171314          BIC     #BIT1!BIT3,@UDCR        ;SET DEF INT EN LOW+HIGH+CLEAR DEF SCAN EN
 2068  007676  052777  000002  171306          BIS     #BIT1,@UDCR     ;TO CLEAR SCAN EN+DONE
 2069  007704  000240                  NOP                             ;WAIT FOR DLY CLEAR DONE
 2070  007706  032777  100000  171276          BIT     #BIT15,@UDCR    ;DID SCAN ERROR CLEAR?
 2071  007714  001402                  BEQ     .+6             ;BRANCH IF CLEAR
 2072  007716  104007                  ERRORS
 2073  007720  104005                  SCOPE
 2074  007722  032777  000040  171262          BIT     #BIT5,@UDCR     ;DID DEF SCAN DONE CLEAR?
 2075  007730  001401                  BEQ     .+4             ;BRANCH IF CLEAR
 2076  007732  104007                  ERRORS
 2077  007734  104005                  SCOPE
 2078                                  ;
 2079                                  ;*****************************************************************
 2080  007736  000056                  T56:    56                      ;ROUTINE NUMBER 56                      *
 2081  007740  010064                          T57                     ;ADDRESS OF NEXT ROUTINE                *
 2082  007742  000144                          100.                    ;TEST ITERATION COUNT                   *
 2083  007744  007746                          E5A                     ;SCOPE ENTRY POINT                      *
 2084          000056                          X=X+1                   ;                                       *
 2085                                  ;*****************************************************************
 2086                                  ;TEST THAT DEF SCAN ENABLE WILL INHIBIT SCAN + RIP CLEARS DONE
 2087  007746  012777  000403  171236  E5A1:   MOV     #BIT2!BIT0,@UDCR        ;SET MAINT,RIP+DEF INT
 2088  007754  104010                  DELAY                           ;WAIT, SCAN SHOULD NOT START
 2089  007756  000001                  1
 2090  007760  032777  000040  171224          BIT     #BIT5,@UDCR     ;CHECK IF DEF SCAN DONE CLEAR
 2091  007766  001402                  BEQ     .+6             ;BRANCH IF CLEAR
 2092  007770  104007                  ERRORS
 2093  007772  104005                  SCOPE
 2094  007774  052777  000014  171210          BIS     #BIT3!BIT2,@UDCR        ;SET DEF SCAN EN,IMM INT
 2095  010002  104010                  DELAY                           ;WAIT FOR ERROR+DONE
 2096  010004  000001                  1
 2097  010006  042777  000400  171176          BIC     #BIT8,@UDCR     ;CLEAR TO PREVENT NEW SCAN
 2098  010014  032777  000001  171170          BIT     #BIT0,@UDCR     ;DID RIP STAY SET?
 2099  010022  001002                  BNE     .+6             ;BRANCH IF SET
 2100  010024  104007                  ERRORS
 2101  010026  104005                  SCOPE
 2102  010030  005777  171264          TST     @UDCA6          ;ADDRESS MOD TO RIP
 2103  010034  000240                  NOP                             ;WAIT FOR DEL CLR DONE
 2104  010036  032777  100040  171146          BIT     #BIT15!BIT5,@UDCR       ;DID RIP CLEAR ERROR+DONE?
```

```
 2105  010044  001401                        BEQ     .+4             ;BRANCH IF CLEAR
 2106  010046  104007                        ERRORS
 2107  010050  032777  000001  171134        BIT     #BIT0,@UDCA     ;IS RIP STILL SET?
 2108  010056  001001                        BNE     .+4             ;BRANCH IF SET
 2109  010060  104027                        ERRORS                  ;CLEARED IN ERROR
 2110  010062  104005                        SCOPE
 2111                                  ;
 2112                                  ;*****************************************************************
 2113  010064  000057                  T59:  57                      ;ROUTINE NUMBER 57                 *
 2114  010066  010146                        T60                     ;ADDRESS OF NEXT ROUTINE           *
 2115  010070  001750                        1000.                   ;TEST ITERATION COUNT              *
 2116  010072  010074                        E6A                     ;SCOPE ENTRY POINT                 *
 2117          000057                        X=X+1                   ;                                  *
 2118                                  ;*****************************************************************
 2119                                  ;TEST THAT Y FAULT CAN BE GENERATED IN DEF MODE,NO TRAPS PS=?
 2120  010074  012777  001412  171110  E6A:   MOV     #BITC5,@UDCR    ;SET MAINT,DEF INT=SCAN,STOP Y
 2121  010102  104010                        DELAY                   ;WAIT 1MS
 2122  010104  000001                        1
 2123  010106  032777  100000  171076        BIT     #BIT15,@UDCR    ;TEST IF SCAN ERROR SET
 2124  010114  001002                        BNE     .+6             ;BRANCH IF SET
 2125  010116  104007                        ERRORS
 2126  010120  104005                        SCOPE
 2127  010122  032777  000040  171062        BIT     #BIT5,@UDCA     ;TEST IF DEF DONE SET
 2128  010130  001002                        BNE     .+6             ;BRANCH IF SET
 2129  010132  104007                        ERRORS
 2130  010134  104005                        SCOPE
 2131  010136  042777  000001  171046        BIC     #BIT0,@UDCA     ;GENERATE RIP
 2132  010144  104005                        SCOPE
 2133                                  ;
 2134                                  ;*****************************************************************
 2135  010146  000060                  T60:  60                      ;ROUTINE NUMBER 60                 *
 2136  010150  010230                        T61                     ;ADDRESS OF NEXT ROUTINE           *
 2137  010152  001750                        1000.                   ;TEST ITERATION COUNT              *
 2138  010154  010156                        E7A                     ;SCOPE ENTRY POINT                 *
 2139          000060                        X=X+1                   ;                                  *
 2140                                  ;*****************************************************************
 2141                                  ;TEST THAT WD FAULT CAN BE GENERATED IN DEF MODE,NO TRAPS PS=?
 2142  010156  012777  003412  171026  E7A:   MOV     #BITC6,@UDCR    ;SET MAINT,DEF INT=SCAN,STOP WD
 2143  010164  104010                        DELAY                   ;WAIT 1MS
 2144  010166  000001                        1
 2145  010170  032777  100000  171014        BIT     #BIT15,@UDCR    ;TEST IF SCAN ERROR SET
 2146  010176  001002                        BNE     .+6             ;BRANCH IF SET
 2147  010200  104007                        ERRORS
 2148  010202  104005                        SCOPE
 2149  010204  032777  000040  171000        BIT     #BIT5,@UDCA     ;TEST IF DEF DONE SET
 2150  010212  001002                        BNE     .+6             ;BRANCH IF SET
 2151  010214  104007                        ERRORS
 2152  010216  104005                        SCOPE
 2153  010220  042777  000001  170764        BIC     #BIT0,@UDCA     ;GENERATE RIP
 2154  010226  104005                        SCOPE
 2155                                  ;
 2156                                  ;*****************************************************************
 2157  010230  000061                  T61:  61                      ;ROUTINE NUMBER 61                 *
 2158  010232  010310                        T62                     ;ADDRESS OF NEXT ROUTINE           *
```

```
2159  010234  001750                        1000.                   ;TEST ITERATION COUNT                    .
2160  010236  010240                        E8A                     ;SCOPE ENTRY POINT                       .
2161          000001                        X=X+1                   ;                                        .
2162                                ;*****************************************************************
2163                                ;TEST THAT DEF INT WITH STOP X,Y,WD SET WILL NOT SET ERROR
2164  010240  012777  007402  170744 E8A1:  MOV     #BITC2!BIT09,@UDCR      ;SET MAINT,DEF INT EN,STOP X+Y+WD
2165  010246  052777  000010  170736        BIS     #BIT3,@UDCR             ;SET DEF SCAN EN
2166  010254  104010                        DELAY                           ;WAIT FOR SCAN DONE
2167  010256  000001                        1
2168  010260  032777  100000  170724        BIT     #BIT15,@UDCR            ;CHECK THAT SCAN ERR DID NOT SET
2169  010266  001402                        BEQ     .+6                     ;BRANCH IF CLEAR
2170  010270  104007                        ERRORS
2171  010272  104005                        SCOPE
2172  010274  032777  000040  170710        BIT     #BIT5,@UDCR             ;CHECK IF DEF SCAN DONE SET
2173  010302  001001                        BNE     .+4                     ;BRANCH IF DONE SET
2174  010304  104007                        ERRORS
2175  010306  104005                        SCOPE
2176                                ;
2177                                ;*****************************************************************
2178  010310  000062                T62:    62                      ;ROUTINE NUMBER 62                       .
2179  010312  010366                        T63                     ;ADDRESS OF NEXT ROUTINE                 .
2180  010314  001750                        1000.                   ;TEST ITERATION COUNT                    .
2181  010316  010320                        E9A                     ;SCOPE ENTRY POINT                       .
2182          000062                        X=X+1                   ;                                        .
2183                                ;*****************************************************************
2184                                ;TEST THAT DEF INT WITH STOP X,Y,WD SET WILL SCAN TO ADR 0
2185  010320  012777  007402  170664 E9A1:  MOV     #BITC2!BIT09,@UDCR      ;SET MAINT,DEF INT,STP X,Y,WD
```

```
2197  010326  052777  000010  170656          BIS     #BIT3,@UDCR     ;SET DEF SCAN EN
2198  010334  104010                          DELAY                   ;WAIT FOR DONE
2199  010336  000001                          1
2200  010340  105777  170650                  *STB    @UDSR           ;TEST FOR SCAN OF 0
2201  010344  001402                          BEQ     .+6
2202  010346  104007                          ERRORS
2203  010350  104005                          SCOPE
2204  010352  022777  017452  170632          CMP     #17452,@UDCR    ;DEF INT,STP X,Y,WD,MAINT,DEF DONE
2205  010360  001401                          BEQ     .+4             ;DEF SCAN EN,DEF INT
2206  010362  104007                          ERRORS
2207  010364  104005                          SCOPE
2208                                  ;
2209                                  ;*****************************************************************
2210  010366  000063                  T63:    63                      ;ROUTINE NUMBER 63                *
2211  010370  010456                          T64                     ;ADDRESS OF NEXT ROUTINE          *
2212  010372  000144                          100.                    ;TEST ITERATION COUNT             *
2213  010374  010376                          F1A                     ;SCOPE ENTRY POINT                *
2214          000063                          X=X+1                   ;                                 *
2215                                  ;*****************************************************************
2216                                  ;TEST THAT IMM INT CAN BE GENERATED BY MAINT+IMM INT EN
2217  010376  012777  000404  170606  F1A:    MOV     #BIT04,@UDCR    ;SET MAINT+IMM INT EN
2218  010404  032777  020000  170600          BIT     #BIT13,@UDCR    ;CHECK IMM INT BEING GENERATED
2219  010412  001002                          BNE     .+6             ;BRANCH IF SET
2220  010414  104007                          ERRORS
2221  010416  104005                          SCOPE
2222  010420  032777  010000  170564          BIT     #BIT12,@UDCR    ;CHECK IF DEF INT SET
2223  010426  001402                          BEQ     .+6             ;BRANCH IF CLEAR
2224  010430  104007                          ERRORS
2225  010432  104005                          SCOPE
2226  010434  042777  000400  170550          BIC     #BIT8,@UDCR     ;CLEAR MAINT
2227  010442  032777  020000  170542          BIT     #BIT13,@UDCR    ;CHECK IF IMM INT CLEAR
2228  010450  001401                          BEQ     .+4             ;BRANCH IF CLEAR
2229  010452  104007                          ERRORS
2230  010454  104005                          SCOPE
2231                                  ;
2232                                  ;*****************************************************************
2233  010456  000064                  T64:    64                      ;ROUTINE NUMBER 64                *
2234  010460  010564                          T69                     ;ADDRESS OF NEXT ROUTINE          *
2235  010462  000012                          10.                     ;TEST ITERATION COUNT             *
2236  010464  010466                          F2A                     ;SCOPE ENTRY POINT                *
2237          000064                          X=X+1                   ;                                 *
2238                                  ;*****************************************************************
2239                                  ;TEST THAT IMM SCAN STARTS AND SETS SCAN ERROR, NO TRAP PS=7
2240  010466  104004                  F2A:    $RESET
2241  010470  012777  000424  170514          MOV     #BITC3,@UDCR    ;SET MAINT,IMM INT,IMM SCAN EN
2242  010476  104010                          DELAY                   ;WAIT 1MS
2243  010500  000001                          1
2244  010502  032777  100000  170502          BIT     #BIT15,@UDCR    ;DID SCAN ERROR SET?
2245  010510  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
2246  010512  104007                          ERRORS
2247  010514  104005                          SCOPE
2248  010516  032777  000200  170466          BIT     #BIT7,@UDCR     ;DID SCAN ERROR SET IMM DONE?
2249  010524  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
2250  010526  104007                          ERRORS
```

```
2251  010530  104005                    SCOPE
2252  010532  104004                    SRESET
2253  010534  032777  100000  170450    BIT     #BIT15,@UDCR    ;DID SCAN ERROR CLEAR?
2254  010542  001402                    BEQ     .+6             ;BRANCH IF CLEAR
2255  010544  104027                    ERRORS
2256  010546  104005                    SCOPE
2257  010550  032777  000200  170434    BIT     #BIT7,@UDCR     ;DID IMM SCAN DONE CLEAR?
2258  010556  001401                    BEQ     .+4             ;BRANCH IF CLEAR
2259  010560  104007                    ERRORS
2260  010562  104005                    SCOPE
2261                                ;
2262                                ;.....
2263  010564  000065                T65$:   65                      ;ROUTINE NUMBER 65                  .
2264  010566  010640                        T66                     ;ADDRESS OF NEXT ROUTINE            .
2265  010570  000012                        10.                     ;TEST ITERATION COUNT               .
2266  010572  010574                        F2BA                    ;SCOPE ENTRY POINT                  .
2267          000065                        X=X+1                   ;                                   .
2268                                ;.....
2269                                ;TEST THAT RIF DOES NOT SET WITH IMM START SCAN
2270  010574  104004                F2BA:   SRESET                  ;INITIALIZE CONTROL
2271  010576  012777  000424  170406        MOV     #BITC3,@UDCR    ;SET MAINT DEF INT,DEF SCAN EN
2272  010604  032777  000001  170400        BIT     #BIT0,@UDCR     ;DID RIF SET WITH START SCAN
2273  010612  001402                        BEQ     .+6
2274  010614  104007                        ERRORS                  ;RIF SET IN ERROR
2275  010616  104005                        SCOPE
2276  010620  104010                        DELAY                   ;WAIT FOR SCAN DONE
2277  010622  000001                        1
2278  010624  022777  120624  170368        CMP     #120624,@UDCR   ;SCAN ERR,IMM INT,MAINT,IMM SCAN DONE
2279  010632  001401                        BEQ     .+4             ;IMM SCAN EN, DEF INT EN
2280  010634  104007                        ERRORS
2281  010636  104005                        SCOPE
2282                                ;
2283                                ;.....
2284  010640  000066                T66:    66                      ;ROUTINE NUMBER 66                  .
2285  010642  010730                        T67                     ;ADDRESS OF NEXT ROUTINE            .
2286  010644  000144                        100.                    ;TEST ITERATION COUNT               .
2287  010646  010650                        F3A                     ;SCOPE ENTRY POINT                  .
2288          000066                        X=X+1                   ;                                   .
2289                                ;.....
2290                                ;TEST THAT IMM SCAN START CLEARS SCAN ERROR + IMM SCAN DONE
2291  010650  012777  000424  170334 F3A:    MOV     #BITC3,@UDCR    ;SET MAINT,IMM INT+SCAN EN
2292  010656  104010                        DELAY                   ;WAIT UNTIL ERROR AND DONE SETS
2293  010660  000001                        1
2294  010662  042777  000004  170322        BIC     #BIT2,@UDCR     ;SET IMM INT EN LOW+HIGH
2295  010670  052777  000004  170314        BIS     #BIT2,@UDCR     ;TO CLEAR SCAN ERROR+DONE
2296  010676  000240                        NOP                     ;WAIT FOR DLY CLEAR DONE
2297  010700  017700  170306                MOV     @UDCR,R0
2298  010704  032700  100000                BIT     #BIT15,R0       ;DID SCAN ERROR CLEAR
2299  010710  001402                        BEQ     .+6             ;BRANCH IF CLEAR
2300  010712  104005                        SCOPE
2301  010714  104007                        ERRORS
2302  010716  032700  000100                BIT     #BIT6,R0        ;DID IMM SCAN DONE CLEAR?
2303  010722  001401                        BEQ     .+4             ;BRANCH IF CLEAR
2304  010724  104007                        ERRORS
```

```
2305  010726  104005                        SCOPE
2306                                  ;
2307                                  ;*****************************************************************
2308  010730  000067                  T67:  67                        ;ROUTINE NUMBER 67                *
2309  010732  011050                        T70                       ;ADDRESS OF NEXT ROUTINE          *
2310  010734  000144                        100.                      ;TEST ITERATION COUNT             *
2311  010736  010740                        P4A                       ;SCOPE ENTRY POINT                *
2312          000067                        X=X+1                     ;                                 *
2313                                  ;*****************************************************************
2314                                  ;TEST THAT IMM SCAN ENABLE WILL INHIBIT SCAN & RIF CLEARS DONE
2315  010740  012777  000404  170244  P4A1: MOV     #BIT2,@UDCR       ;SET MAINT+IMM INT
2316  010746  104010                        DELAY                     ;WAIT SCAN SHOULD NOT START
2317  010750  000001                        1
2318  010752  032777  000100  170232        BIT     #BIT6,@UDCA       ;CHECK IF IMM SCAN DONE CLEAR
2319  010760  001402                        BEQ     .+6               ;BRANCH IF CLEAR
2320  010762  104007                        ERRORS
2321  010764  104005                        SCOPE
2322  010766  052777  000020  170216        BIS     #BIT4,@UDCA       ;SET IMM SCAN ENABLE
2323  010774  104010                        DELAY                     ;WAIT FOR ERROR AND DONE
2324  010776  000001                        1
2325  011000  042777  000400  170204        BIC     #BIT8,@UDCA       ;CLEAR TO PREVENT NEW SCAN
2326  011006  052777  000001  170176        BIS     #BIT0,@UDCA       ;SET RIF
2327  011014  032777  100200  170170        BIT     #BIT15!BIT9,@UDCA       ;IS ERROR & DONE STILL SET?
2328  011022  001001                        BNE     .+4               ;BRANCH IF SET
2329  011024  104007                        ERRORS                    ;SETTING RIF FLOP CLEARED ERROR OR DONE
2330  011026  005777  170210               TST     @UDCA7            ;ADDRESS MODULE TO RIF
2331  011032  000240                        NOP                       ;WAIT FOR DEL CLEAR DONE
2332  011034  032777  100200  170150        BIT     #BIT15!BIT9,@UDCA       ;DID RIF CLEAR ERROR & DONE
2333  011042  001401                        BEQ     .+4               ;BRANCH IF CLEAR
2334  011044  104007                        ERRORS
2335  011046  104005                        SCOPE
2336                                  ;
2337                                  ;*****************************************************************
2338  011050  000070                  T70:  70                        ;ROUTINE NUMBER 70                *
2339  011052  011132                        T71                       ;ADDRESS OF NEXT ROUTINE          *
2340  011054  001750                        1000.                     ;TEST ITERATION COUNT             *
2341  011056  011060                        P5A                       ;SCOPE ENTRY POINT                *
2342          000070                        X=X+1                     ;                                 *
2343                                  ;*****************************************************************
2344                                  ;TEST THAT Y FAULT CAN BE GENERATED IN IMM MODE,NO TRAPS PS=?
2345  011060  012777  001424  170124  P5A1: MOV     #BIT7,@UDCR       ;SET MAINT,IMM INT&SCAN,STOP Y
2346  011066  104010                        DELAY                     ;WAIT 1MS
2347  011070  000001                        1
2348  011072  032777  100000  170112        BIT     #BIT15,@UDCR      ;TEST IF SCAN ERROR SET
2349  011100  001002                        BNE     .+6               ;BRANCH IF SET
2350  011102  104007                        ERRORS
2351  011104  104005                        SCOPE
2352  011106  032777  000200  170076        BIT     #BIT7,@UDCA       ;TEST IF IMM DONE SET
2353  011114  001002                        BNE     .+6               ;BRANCH IF SET
2354  011116  104007                        ERRORS
2355  011120  104005                        SCOPE
2356  011122  042777  000001  170062        BIC     #BIT0,@UDCA       ;GENERATE RIF
2357  011130  104005                        SCOPE
2358                                  ;
```

```
2359                                    ;*****************************************************************
2360  011132  000071                    T71:    71                      ;ROUTINE NUMBER 71                *
2361  011134  011214                            T72                     ;ADDRESS OF NEXT ROUTINE          *
2362  011136  001750                            1000.                   ;TEST ITERATION COUNT             *
2363  011140  011142                            F6A                     ;SCOPE ENTRY POINT                *
2364          000071                            X=X+1                   ;                                 *
2365                                    ;*****************************************************************
2366                                    ;TEST THAT NO FAULT CAN BE GENERATED IN IMM MODE,NO TRAPS PS=7
2367  011142  012777  003424  170042    F6A:    MOV     #BIT8,@UDCR     ;SET MAINT,IMM INT=SCAN,STOP NO
2368  011150  104010                            DELAY                   ;WAIT IMS
2369  011152  000021                            1
2370  011154  032777  100000  170030            BIT     #BIT15,@UDCR    ;TEST IF SCAN ERROR SET
2371  011162  001002                            BNE     .+6             ;BRANCH IF SET
2372  011164  104007                            ERRORS
2373  011166  104005                            SCOPE
2374  011170  032777  000200  170014            BIT     #BIT7,@UDCR     ;TEST IF IMM DONE SET
2375  011176  001002                            BNE     .+6             ;BRANCH IF SET
2376  011200  104007                            ERRORS
2377  011202  104005                            SCOPE
2378  011204  042777  000001  170000            BIC     #BIT0,@UDCR     ;GENERATE RIF
2379  011212  104005                            SCOPE
2380                                    ;
2381                                    ;*****************************************************************
2382  011214  000072                    T72:    72                      ;ROUTINE NUMBER 72                *
2383  011216  011274                            T73                     ;ADDRESS OF NEXT ROUTINE          *
2384  011220  001750                            1000.                   ;TEST ITERATION COUNT             *
2385  011222  011224                            F7A                     ;SCOPE ENTRY POINT                *
2386          000072                            X=X+1                   ;                                 *
2387                                    ;*****************************************************************
2388                                    ;TEST THAT IMM INT WITH STOP X,Y,NO SET WILL NOT SET ERROR
2389  011224  012777  007404  167760    F7A:    MOV     #BIT4!BIT9,@UDCR        ;SET MAINT,IMM INT EN,STP X=Y=NO
2390  011232  052777  000020  167752            BIS     #BIT4,@UDCR     ;SET IMM SCAN EN
2391  011240  104010                            DELAY
2392  011242  000001                            1
2393  011244  032777  100000  167740            BIT     #BIT15,@UDCR    ;CHECK THAT SCAN ERROR DID NOT SET
2394  011252  001402                            BEQ     .+6             ;BRANCH IF CLEAR
2395  011254  104007                            ERRORS
2396  011256  104005                            SCOPE
2397  011260  032777  000200  167724            BIT     #BIT7,@UDCR     ;CHECK IF IMM SCAN DONE SET
2398  011266  001001                            BNE     .+4             ;BRANCH IF DONE SET
2399  011270  104007                            ERRORS
2400  011272  104005                            SCOPE
2401                                    ;
2402                                    ;*****************************************************************
2403  011274  000073                    T73:    73                      ;ROUTINE NUMBER 73                *
2404  011276  011352                            T74                     ;ADDRESS OF NEXT ROUTINE          *
2405  011300  001750                            1000.                   ;TEST ITERATION COUNT             *
2406  011302  011304                            F8A                     ;SCOPE ENTRY POINT                *
2407          000073                            X=X+1                   ;                                 *
2408                                    ;*****************************************************************
2409                                    ;TEST THAT IMM INT WITH STOP X=Y=NO SET WILL SCAN TO 0
2410  011304  012777  007404  167708    F8A:    MOV     #BIT4!BIT9,@UDCR        ;SET MAINT,IMM INT EN,STP X=Y=NO
2411  011312  052777  000020  167672            BIS     #BIT4,@UDCR     ;SET IMM SCAN EN
2412  011320  104010                            DELAY
```

```
2413  011322  000001                        1
2414  011324  105777  167664                TSTB    @UDSR           ;TEST FOR SCAN ADR OF 0
2415  011330  001402                        BEQ     .+6
2416  011332  104007                        ERRORS
2417  011334  104005                        SCOPE
2418  011336  022777  027624  167646        CMP     #27624,@UDCR    ;DEF INT,STOP X+Y+WD,MAINT,IMM DONE
2419  011344  001401                        BEQ     .+4             ;DEF SCAN EN,DEF INT+RIF SET
2420  011346  104007                        ERRORS
2421  011350  104005                        SCOPE
2422                                ;
2423                                ;*****************************************************************
2424  011352  000074                T741:   74                      ;ROUTINE NUMBER 74                *
2425  011354  011464                        T75                     ;ADDRESS OF NEXT ROUTINE          *
2426  011356  000031                        25.                     ;TEST ITERATION COUNT             *
2427  011360  011362                        G1A                     ;SCOPE ENTRY POINT                *
2428           000074                       X=X+1                   ;                                 *
2429                                ;*****************************************************************
2430                                ;TEST THAT DEF VALID SETS
2431  011362  104004                G1A:    $RESET
2432  011364  016701  167622                MOV     UDCR,R1         ;MOVE ADDRESS INTI R0
2433  011370  012700  001000                MOV     #BIT9,R0
2434  011374  012777  006412  167610        MOV     #BIT12!BIT11!BIT10!BIT3,@UDCR   ;SET MAINT,DEF INT,SCAN EN
2435  011402  050011                        BIS     R0,(1)          ;SET STOP X
2436  011404  104010                        DELAY
2437  011406  000001                        1
2438  011410  052777  000024  167574        BIS     #BIT2!BIT4,@UDCR        ;SET IMM + SCAN EN
2439  011416  032777  100000  167570        BIT     #BIT15,@UDSR    ;DEF VALID SHOULD BE SET
2440  011424  001002                        BNE     .+6             ;BRANCH IF DEF VALID SET
2441  011426  104007                        ERRORS
2442  011430  104005                        SCOPE
2443  011432  104010                        DELAY
2444  011434  000001                        1
2445  011436  105777  167552                TSTB    @UDSR           ;IS SCAN 0?
2446  011442  001402                        BEQ     .+6             ;BRANCH IF SCAN IS 0
2447  011444  104007                        ERRORS
2448  011446  104005                        SCOPE
2449  011450  022777  039676  167534        CMP     #39676,@UDCR    ;IMM+DEF INT,STP X+Y+WD,MAINT
2450  011456  001401                        BEQ     .+4             ;IMM+DEF DONE,SCAN EN,INT EN
2451  011460  104007                        ERRORS
2452  011462  104005                        SCOPE
2453                                ;
2454                                ;*****************************************************************
2455  011464  000075                T751:   75                      ;ROUTINE NUMBER 75                *
2456  011466  011566                        T76                     ;ADDRESS OF NEXT ROUTINE          *
2457  011470  000031                        25.                     ;TEST ITERATION COUNT             *
2458  011472  011474                        G2A                     ;SCOPE ENTRY POINT                *
2459           000075                       X=X+1                   ;                                 *
2460                                ;*****************************************************************
2461                                ;TEST THAT IMM INT OVERRIDES DEF
2462  011474  104004                G2A:    $RESET
2463  011476  016701  167510                MOV     UDCR,R1         ;MOVE ADDRESS I NTO R0
2464  011502  012700  000004                MOV     #BIT2,R0
2465  011506  012777  006432  167476        MOV     #BIT12!BIT11!BIT8!BIT3,@UDCR    ;SET MAINT,DEF INT,SCAN ENABS
2466  011514  050011                        BIS     R0,(1)          ;SET IMM INT
```

B5

```
2467  011516  104010                        DELAY                   ;WAIT FOR SCAN DONE
2468  011520  000001                        1
2469  011522  032777  100000  167462        BIT     #BIT15,@UDCR    ;SCAN ERROR SHOULD BE SET
2470  011530  001002                        BNE     .+6
2471  011532  104007                        ERRORS
2472  011534  104005                        SCOPE
2473  011536  032777  000200  167446        BIT     #BIT7,@UDCR     ;IMM DONE SHOULD BE SET
2474  011544  001002                        BNE     .+6
2475  011546  104007                        ERRORS
2476  011550  104005                        SCOPE
2477  011552  032777  000040  167432        BIT     #BIT5,@UDCR     ;DEF DONE SHOULD NOT BE SET
2478  011560  001401                        BEQ     .+4
2479  011562  104007                        ERRORS
2480  011564  104005                        SCOPE
2481                                  ;
2482                                  ;*****************************************************************
2483  011566  000076                  T76:  76                      ;ROUTINE NUMBER 76                *
2484  011570  011634                        T77                     ;ADDRESS OF NEXT ROUTINE          *
2485  011572  000144                        100.                    ;TEST ITERATION COUNT             *
2486  011574  011576                        G2AA                    ;SCOPE ENTRY POINT                *
2487          000076                        X=X+1                   ;                                 *
2488                                  ;*****************************************************************
2489                                  ;TEST THAT WHEN IMM+DEF ENABLED , NO TRAPS OCCUR
2490  011576  012777  011630  167412  G2AA1:  MOV     #G2AAER,@UTV    ;PRIME FOR TRAP ERROR
2491  011604  012777  000036  167408        MOV     #36,@UDCR       ;SET IMM+DEF ENABLES
2492  011612  005067  166160                CLR     PS              ;PS=0
2493  011616  005777  167376                TST     @UDCR           ;ADDRESS CONTROL,SHOULD NOT TRAP
2494  011622  005777  167366                TST     @UDSR
2495  011626  104005                        SCOPE
2496  011630  104007                  G2AAER: ERRORS                  ;TRAPPED WITH NO INTERRUPT
2497  011632  104005                        SCOPE
2498                                  ;
2499                                  ;*****************************************************************
2500  011634  000077                  T77:  77                      ;ROUTINE NUMBER 77                *
2501  011636  011754                        T100                    ;ADDRESS OF NEXT ROUTINE          *
2502  011640  000144                        100.                    ;TEST ITERATION COUNT             *
2503  011642  011644                        G3A                     ;SCOPE ENTRY POINT                *
2504          000077                        X=X+1                   ;                                 *
2505                                  ;*****************************************************************
2506                                  ;TEST THAT IMMEDIATE INTERRUPT TRAPS TO CORRECT LOCATION
2507  011644  012777  011716  167344  G3A1:  MOV     #G3OK,@UTV      ;PRIME FOR GOOD RETURN
2508  011652  012777  000000  167340        MOV     #PRTY0,@UPL
2509  011660  012767  000000  166110        MOV     #PRTY0,PS
2510  011666  016701  167320                MOV     UDCR,R1         ;MOVE ADDRESS INTO R0
2511  011672  012700  002000                MOV     #BIT10,R0       ;PUT STOP Y INTO R0
2512  011676  012777  005424  167306        MOV     #BIT8!BIT5!BIT3!1,@UDCR ;SET MAINT,IMM INT,IMM SCAN EN
2513  011704  050011                        BIS     R0,(1)          ;SET STOP Y TO STOP SCAN
2514  011706  104010                        DELAY
2515  011710  000001                        1
2516  011712  104007                        ERRORS                  ;SHOULD TRAP BEFORE GETTING HERE
2517  011714  104005                        SCOPE
2518  011716  012777  011750  167272  G3OK1:  MOV     #G3ERRX,@UTV    ;PRIME FOR SERVICE TRAP
2519  011724  005777  167262                TST     @UDCR           ;ADDRESS CONTROL TO SEE IF TRAP CAUSED
2520  011730  005777  167260                TST     @UDSR
```

```
2521  011734  027777  027624  167258          CMP     #27624,@UDCR    ;IMM INT,STOP X+Y+WD
2522  011742  001401                          BEQ     .+4             ;MAINT,IMM DONE,IMM SCAN EN,IMM INT SE
2523  011744  104007                          ERRORS
2524  011746  104005                          SCOPE
2525  011750  104007                  G3ERRX: ERRORS                  ;TRAPPED WHILE SERVICING TRAP
2526  011752  104005                          SCOPE
2527                                  ;
2528                                  ;*****************************************************************
2529  011754  000100                  T101:   100                     ;ROUTINE NUMBER 100                     *
2530  011756  012074                          T101                    ;ADDRESS OF NEXT ROUTINE                *
2531  011760  000144                          100.                    ;TEST ITERATION COUNT                   *
2532  011762  011764                          G4A                     ;SCOPE ENTRY POINT                      *
2533          000100                          X=X+1                   ;                                       *
2534                                  *****************************************************************
2535                                  ;TEST THAT DEFERRED INTERRUPT TRAPS TO CORRECT LOCATION
2536  011764  012777  012036  167224  G4A1:   MOV     #G4OK,@UTV      ;PRIME FOR GOOD RETURN
2537  011772  012777  000000  167220          MOV     #PRTY0,@UPL
2538  012000  012767  000000  165770          MOV     #PRTY0,PS
2539  012006  016701  167200                  MOV     UDCR,R1         ;MOVE ADDRESS INTO R1
2540  012012  012700  001000                  MOV     #BIT9,R0                ;PUT STOP X IN R0
2541  012016  012777  000412  167166          MOV     #BITC1!BIT3!BIT8!BIT11!BIT0,@UDCR
2542  012024  050011                          BIS     R0,(1)          ;SET STOP X TO STOP SCAN
2543  012026  104010                          DELAY
2544  012030  000001                          1
2545  012032  104007                          ERRORS                  ;SHOULD TRAP BEFORE GETTING HERE
2546  012034  104005                          SCOPE
2547  012036  012777  012070  167152  G4OK1:  MOV     #G4ERRX,@UTV    ;PRIME FOR SERVICE TRAP
2548  012044  005777  167142                  TST     @UDCR           ;ADDRESS CONTROL TO SEE IF
2549  012050  005777  167140                  TST     @UDBR           ;TRAP CAUSES SERVICE TRAP
2550  012054  027777  017452  167130          CMP     #17452,@UDCR    ;DEF DONE,SCAN EN,INT
2551  012062  001401                          BEQ     .+4             ;STOP X+Y+WD
2552  012064  104007                          ERRORS
2553  012066  104005                          SCOPE
2554  012070  104007                  G4ERRX: ERRORS                  ;TRAPPED WHILE SERVICING TRAP
2555  012072  104005                          SCOPE
2556                                  ;
2557                                  ;*****************************************************************
2558  012074  000101                  T101:   101                     ;ROUTINE NUMBER 101                     *
2559  012076  012204                          T102                    ;ADDRESS OF NEXT ROUTINE                *
2560  012100  000144                          100.                    ;TEST ITERATION COUNT                   *
2561  012102  012104                          G5A                     ;SCOPE ENTRY POINT                      *
2562          000101                          X=X+1                   ;                                       *
2563                                  *****************************************************************
2564                                  ;TEST THAT IMM TRAPS AT CORRECT BR LEVEL
2565  012104  012777  012154  167104  G5A1:   MOV     #G5ERR,@UTV     ;PRIME FOR ERROR RETURN
2566  012112  012777  000300  167100          MOV     #PRTY6,@UPL
2567  012120  012767  000300  165650          MOV     #PRTY6,PS       ;SET PS=6
2568  012126  016701  167060                  MOV     UDCR,R1         ;MOVE ADDRESS INTO R0
2569  012132  012700  002000                  MOV     #BIT10,R0       ;PUT STOP Y IN R0
2570  012136  012777  005424  167046          MOV     #BITC3!BIT10!BIT9!BIT2,@UDCR ;SET MAINT,IMM INT,IMM SCAN EN
2571  012144  050011                          BIS     R0,(1)          ;SET STOP Y TO STOP SCAN
2572  012146  104010                          DELAY
2573  012150  000001                          1                       ;WAIT,NO TRAP SHOULD OCCUR
2574  012152  000402                          BR      .+6             ;BRANCH IF NO TRAP
```

```
2575  012154  104007                  G5ERR1  ERRORS                  ;IMM TRAP WHEN PS=6
2576  012156  104005                          SCOPE
2577  012160  012777  012202  167038          MOV     #G5OK,@UTV      ;PRIME FOR GOOD RETURN
2578  012166  012767  000240  165602          MOV     #PRTY5,PS       ;LOWER PS TO 5
2579  012174  000240                          NOP                     ;WAIT FOR TRAP
2580  012176  000240                          NOP
2581  012200  104007                          ERRORS                  ;NO TRAP PS=5
2582  012202  104005                  G5OK1   SCOPE
2583                                  ;
2584                                  ;*****************************************************************
2585  012204  000102                  T102:   102                     ;ROUTINE NUMBER 102             *
2586  012206  012314                          T103                    ;ADDRESS OF NEXT ROUTINE        *
2587  012210  000144                          100.                    ;TEST ITERATION COUNT           *
2588  012212  012214                          G6A                     ;SCOPE ENTRY POINT              *
2589          000102                          X=X+1                   ;                               *
2590                                  ;*****************************************************************
2591                                  ;TEST THAT DEF TRAPS AT CORRECT BR LEVEL
2592  012214  012777  012264  166774  G6A1:   MOV     #G6ERR,@UTV     ;PRIME FOR ERROR RETURN
2593  012222  012777  000200  166770          MOV     #PRTY4,@UPL
2594  012230  012767  000200  165546          MOV     #PRTY4,PS       ;SET PS=4
2595  012236  016701  166750                  MOV     UDCR,R1         ;MOVE ADDRESS INTO R0
2596  012242  012700  001000                  MOV     #BIT9,R0        ;PUT STOP X IN R0
2597  012246  012777  000412  166736          MOV     #BIT8!BIT3!BIT1,@UDCR   ;SET MAINT,DEF INT,SCAN EN
2598  012254  050011                          BIS     R0,(1)          ;SET STOP X TO STOP SCAN
2599  012256  104010                          DELAY                   ;WAIT,NO TRAP SHOULD OCCUR
2600  012260  000001                          1
2601  012262  000402                          BR      .+6
2602  012264  104007                  G6ERR:  ERRORS                  ;DEF TRAPPED WHEN PS=4
2603  012266  104005                          SCOPE
2604  012270  012777  012312  166720          MOV     #G6OK,@UTV      ;PRIME FOR GOOD RETURN
2605  012276  012767  000140  165472          MOV     #PRTY3,PS       ;LOWER PS TO 3
2606  012304  000240                          NOP
2607  012306  000240                          NOP
2608  012310  104007                          ERRORS                  ;NO TRAP PS=3
2609  012312  104005                  G6OK1   SCOPE
2610                                  ;
2611                                  ;*****************************************************************
2612  012314  000103                  T103:   103                     ;ROUTINE NUMBER 103             *
2613  012316  012410                          T104                    ;ADDRESS OF NEXT ROUTINE        *
2614  012320  001750                          1000.                   ;TEST ITERATION COUNT           *
2615  012322  012324                          G7A                     ;SCOPE ENTRY POINT              *
2616          000103                          X=X+1                   ;                               *
2617                                  ;*****************************************************************
2618                                  ;TEST THAT DATA TRANSFERS WILL NOT CAUSE FALSE TRAPS
2619  012324  012777  012404  166664  G7A1:   MOV     #G7ERR,@UTV     ;PRIME FOR ERROR RETURN
2620  012332  012777  000036  166652          MOV     #36,@UDCR       ;SET IMM+DEF INT+SCAN ENABS
2621  012340  012767  000000  165438          MOV     #PRTY0,PS       ;SET PS TO 0
2622  012346  012777  177777  166650          MOV     #177777,@UMOD   ;LOAD UDC BUS WITH ONES
2623  012354  005777  166644                  TST     @UMOD           ;UDC BUS SHOULD BE 0
2624  012360  001402                          BEQ     .+6
2625  012362  104007                          ERRORS
2626  012364  104005                          SCOPE
2627  012366  005077  166632                  CLR     @UMOD           ;CLEAR UDC BUS
2628  012372  005777  166626                  TST     @UMOD
```

```
2629  012376  000401                    BEQ     .+4
2630  012400  104007                    ERRORS
2631  012402  104005                    SCOPE
2632  012404  104007            G7ERR:  ERRORS                  ;DATA TRANSFERS CAUSED TRAP
2633  012406  104005                    SCOPE
2634                              ;
2635                              ;*****************************************************************
2636  012410  000104            T1041:  104                     ;ROUTINE NUMBER 104                 *
2637  012412  012506                    T105                    ;ADDRESS OF NEXT ROUTINE            *
2638  012414  001750                    1000.                   ;TEST ITERATION COUNT               *
2639  012416  012420                    G8A                     ;SCOPE ENTRY POINT                  *
2640          000104                    X=X+1                   ;                                   *
2641                              ;*****************************************************************
2642                              ;TEST THAT DATA TRANSFERS WILL NOT CAUSE FALSE TRAPS
2643  012420  012777  012502  166578 G8A:    MOV     #G8ERR,@UTV     ;PRIME FOR ERROR RETURN
2644  012426  012777  000036  166556        MOV     #36,@UDCR       ;SET IMM+DEF INT AND SCAN ENABS
2645  012434  012767  000000  165334        MOV     #PRTY0,PS       ;SET PS TO 0
2646  012442  012777  125252  166554        MOV     #125252,@UMOD   ;LOAD UDC BUS WITH PATTERN
2647  012450  005777  166550                TST     @UMOD           ;UDC BUS SHOULD BE 0
2648  012454  001402                    BEQ     .+6
2649  012456  104007                    ERRORS
2650  012460  104005                    SCOPE
2651  012462  012777  052525  166534        MOV     #52525,@UMOD    ;LOAD COMPLIMENT PATTERN
2652  012470  005777  166530                TST     @UMOD
2653  012474  001401                    BEQ     .+4
2654  012476  104007                    ERRORS
2655  012500  104005                    SCOPE
2656  012502  104007            G8ERR:  ERRORS                  ;DATA TRANSFERS CAUSED TRAP
2657  012504  104005                    SCOPE
2658                              ;
2659                              ;*****************************************************************
2660  012506  000105            T1051:  105                     ;ROUTINE NUMBER 105                 *
2661  012510  012572                    T106                    ;ADDRESS OF NEXT ROUTINE            *
2662  012512  000144                    100.                    ;TEST ITERATION COUNT               *
2663  012514  012516                    G9A                     ;SCOPE ENTRY POINT                  *
2664          000105                    X=X+1                   ;                                   *
2665                              ;*****************************************************************
2666                              ;TEST THAT DEF SCAN ERROR TRAPS AT LEVEL 6
2667                              ; AND DOES NOT TRAP WITH IMM INT DISABLED
2668  012516  012777  012566  166472 G9A:    MOV     #G9ERR,@UTV     ;PRIME FOR ERROR RETURN
2669  012524  012767  000240  165244        MOV     #PRTY5,PS       ;SET PS=5
2670  012532  012777  000412  166452        MOV     #BITC1,@UDCR    ;SET MAINT,DEF INT+SCAN EN
2671  012540  104010                    DELAY
2672  012542  000001                    1
2673  012544  012777  012570  166444        MOV     #G9OK,@UTV      ;PRIME FOR GOOD RETURN
2674  012552  052777  000004  166432        BIS     #BIT2,@UDCR     ;ENABLE IMM INT
2675  012560  104010                    DELAY
2676  012562  000001                    1
2677  012564  104007                    ERRORS                  ;NO TRAP WITH IMM INT EN
2678  012566  104007            G9ERR:  ERRORS                  ;TRAP OCCURRED WITH IMM INT DISABLED
2679  012570  104005            G9OK:   SCOPE
2680                              ;
2681                              ;*****************************************************************
2682  012572  000106            T1061:  106                     ;ROUTINE NUMBER 106                 *
```

F5

```
  2683  012574  177777                    TLAST                   ;ADDRESS OF NEXT ROUTINE                 *
  2684  012576  000001                    1                       ;TEST ITERATION COUNT                    *
  2685  012600  012602                    ZZA                     ;SCOPE ENTRY POINT                       *
  2686          000100                    X=X+1                   ;                                        *
  2687                          ;*************************************************************************
  2688                          ;DUMMY END TEST
  2689  012602  104005          ZZA1:     SCOPE
  2690          000001                    .END
```

```
ADYENP   002370        A1A      004152        A1B      004166        A1PA     004524
A10B     004540        A11A     004556        A11B     004572        A2A      004204
A2B      004220        A3A      004236        A3B      004252        A4A      004270
A4B      004304        A5A      004322        A5B      004336        A6A      004354
A6B      004370        A7A      004406        A7B      004422        A8A      004440
A8B      004454        A9A      004472        A9B      004506        BDCNV    002224
BDCNVA   002256        BDCNVB   002310        BDCNVC   002312        BDCNVD   002314
BITC1  = 000412        BITC2  = 000402        BITC3  = 000424        BITC4  = 000404
BITC5  = 001412        BITC6  = 003412        BITC7  = 001424        BITC8  = 003424
BITC9  = 007000        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        BMOVA    002420        BMOVE    002410        BUFA     004610
B2A      004714        B3A      004774        B4A      005054        B5A      005134
B6A      005214        B7A      005274        B8A      005354        B9A      005434
CHAINN   001424        CHALT  = 104003        CHLT     002714        CHNA     001500
CHNAA    001516        CHNAB    001472        CHNAC    001462        CHNB     001536
CNVCTR   002362        CURTST   004134        C1A      005514        C1PA     006110
C11A     006144        C12A     006200        C13A     006234        C14A     006270
C15A     006324        C16A     006360        C17A     006414        C2A      005550
C3A      005604        C4A      005640        C5A      005674        C6A      005730
C7A      005764        C8A      006020        C9A      006054        DECVAL   002402
DELAY  = 104010        DIBIT    002364        DLY      002752        DLYA     002762
DLYB     002766        D1A      006440        D2A      006664        D3A      007120
EMALT  = 104017        EMLT     002074        EMLTA    002104        EMTA     002674
EMTINT   002650        EMTLIM   004120        EMTTAB   004060        EMTV     000030
EMTX   = 000020        ERR      001720        ERRA     001770        ERRB     002054
ERRC     002060        ERRD     002070        ERRE     002072        ERROR  = 104002
ERRORS = 104007        ERROR1 = 104006        ERRST    001644        ERR1     001742
E1A      007254        E2A      007344        E2DA     007452        E2CA     007520
E3A      007602        E4A      007656        E5A      007746        E6A      010074
E7A      010156        E8A      010240        E9A      010320        FORWD    001604
F1A      010376        F2A      010466        F2DA     010574        F3A      010650
F4A      010740        F5A      011060        F6A      011142        F7A      011224
F8A      011304        GETRDY   001300        GTRDYA   001342        GTRDYC   001362
GTRDYD   001404        GTRDYX   001306        G1A      011302        G2A      011474
G2AA     011576        G2AAER   011630        G3A      011644        G3ERRX   011750
G3OK     011716        G4A      011764        G4ERRX   012070        G4OK     012036
G5A      012104        G5ERR    012154        G5OK     012202        G6A      012214
G6ERR    012264        G6OK     012312        G7A      012324        G7ERR    012404
G8A      012420        G8ERR    012502        G9A      012516        G9ERR    012566
G9OK     012570        ICNT     004124        ICTR     004122        LOGIC    001572
MACHER   000004        MCLK     001222        MED      003100        MICNT    003212
MINCRT   003356        MPC      003174        MPGEND   004051        MPUDC    003571
MPUDNG   003721        MPUDOK   003645        MPWRF    003532        MPWRT    003453
MSETSR   003264        MSTR     003225        MTIT     003376        MTNUM    003161
MUDCR    003233        MUDSR    003251        NOP    = 000240        NXTST    004132
OACNV    002136        OACNVA   002152        OACNVX   002222        OPEN   = 000000
PC     =X000007        POPSP  = 005726        POPSP2 = 022626        PRTY0  = 000000
PRTY1  = 000040        PRTY2  = 000100        PRTY3  = 000140        PRTY4  = 000200
PRTY5  = 000240        PRTY6  = 000300        PRTY7  = 000340        PS     = 177776
PUSH   = 005746        PUSH2  = 024646        PWFDC    002620        PWFDCX   002640
PWRDN    002432        PWRDT    002566        PWRFL    000024        PWRTST   002466
```

```
PWRUP    002442          PWRUT    002576          PWUDC    002520          PWUDCA   002540
RST04  = 104012          RST05  = 104016          RST05S = 104014          RSP4     003F76
RS05     003130          RS05S    003124          RTNNO    004130          R0     =%000000
SAV04  = 104011          SAV05  = 104013          SAV05S = 104015          SCOPF  = 104F05
SCOPTR   004126          SP     =%000006          SR     = 177570          SRESET = 104F04
SRSETT   002730          START    001250          SUBTEN   002322          SUBTNA   002326
SUBTNB   002342          SV04     003002          SV05     003032          SVPSA    003F40
SV05B    003052          SV05C    003066          SV05S    003022          TENPWR   002366
TKB      001204          TKS      001202          TLAST  = 177777          TPB      001210
TPS      001206          TRPV     000034          TYPE   = 104F00          TYPES  = 104001
TYPS     002106          TYPSA    002130          TYPSB    002132          T0       004142
T1       004174          T10      004462          T100     011754          T101     012074
T102     012204          T103     012314          T104     012410          T105     012506
T106     012572          T11      004514          T12      004546          T13      004606
T14      004704          T15      004764          T16      005044          T17      005124
T2       004226          T20      005204          T21      005264          T22      005344
T23      005424          T24      005504          T25      005540          T26      005574
T27      005630          T3       004260          T30      005664          T31      005720
T32      005754          T33      006010          T34      006044          T35      006100
T36      006134          T37      006170          T4       004312          T40      006224
T41      006260          T42      006314          T43      006350          T44      006404
T45      006430          T46      006654          T47      007110          T5       004344
T50      007244          T51      007334          T52      007442          T53      007516
T54      007572          T55      007646          T56      007736          T57      010064
T6       004376          T60      010146          T61      010230          T62      010310
T63      010366          T64      010456          T65      010504          T66      010640
T67      010730          T7       004430          T70      011050          T71      011132
T72      011214          T73      011274          T74      011352          T75      011464
T76      011566          T77      011634          UDCA1    001226          UDCA2    001230
UDCA3    001232          UDCA4    001234          UDCA5    001236          UDCA6    001240
UDCA7    001242          UDCA8    001244          UDCA9    001246          UDCR     001212
UDCRT    004136          UDSR     001214          UDSRT    004140          UMOD     001224
UPL      001220          UTV      001216          X      = 000106          [illegible]  012602
SFILLS   001201          SNULL    001200          STYPE    001100          .      = 012004
```

ERRORS DETECTED: 0

```
*,UDC11B/N-SYSMAC:SML,UDC11B.SRC
RUN-TIME:  15 28  0 SECONDS
CORE USED:  8K
```