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

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.

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                        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 SR2
                                        SR7 THROUGH SR0 = NUMBER OF TEST TO BE SELECTED

                                    SECTION 7.1 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.
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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', ANY 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=YYYYYY ICNT=ZZZZ', ADDITIONAL ERROR INFORMATION

WHERE:

TXXX   IS THE NUMBER OF FAILING ROUTINE (OCTAL),

PC=YYYYYY   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 002444 IF SR15 IS SET',

WHEN AN ERROR PRINTOUT OCCURS:

A', LOOK UP THE ADDRESS REFERENCED BY PC YYYYYY 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 SR0, 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.

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                                                                    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)

                                ;*****************************************************************
                                T20:    20              ;ROUTINE NUMBER 20.                     *
                                        T21             ;ADDRESS OF NEXT ROUTINE                *
                                        100.            ;TEST ITERATION COUNT                   *
                                        BAGA            ;SCOPE ENTRY POINT                      *
                                ;*****************************************************************

                                THE FIRST 2 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
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```
                                        .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 SR0
                                ;SR7 THROUGH SR0 = 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                          BIT<C1=BIT1!BIT3!BIT8           ;MAINT,DEF INT,DEF SCAN EN
000402                          BIT<C2=BIT1!BIT8                ;MAINT,DEF INT
000424                          BIT<C3=BIT2!BIT4!BIT8           ;MAINT,IMM INT, IMM SCAN EN
000404                          BIT<C4=BIT2!BIT8                ;MAINT,IMM INT
001412                          BIT<C5=BIT<C1!BIT9              ;CI+STOP X
003412                          BIT<C6=BIT<C1!BIT9!BIT10        ;CI+STOP X&Y
001424                          BIT<C7=BIT<C3!BIT9              ;CS+STOP X
003424                          BIT<C8=BIT<C3!BIT9!BIT10        ;CS+STOP X&Y
007000                          BIT<C9=BIT9!BIT10!BIT11         ;STOP X+Y+WD
```

```
                                        ;
000000                                  PRIY0=0                 ;PRIORITY LEVEL DEFINITIONS
000040                                  PRIY1=40
000100                                  PRIY2=100
000140                                  PRIY3=140
000200                                  PRIY4=200
000240                                  PRIY5=240
000300                                  PRIY6=300
000340                                  PRIY7=340
                                        ;
177570                                  SR=177570               ;PROCESSOR REGISTER DEFINITIONS
177776                                  PS=177776
000007                                  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
000000                                  OPEN=0
177777                                  X=-1
000000                                  EMTX=0
177777                                  TLAST=-1
                                        ;
                                        ;
000000                                          ;=0
000002                                  .+2             ;UNASSIGNED TRAP
000000                                  HALT
000006                          MACHERI .+2             ;SP OVERFLOW, BUS ERROR TRAP
000000                                  HALT
000012                                  .+2             ;RESERVED INSTRUCTION TRAP
000000                                  HALT
000016                                  .+2             ;TRACE TRAP
000000                                  HALT
000022                                  .+2             ;TRAP TO CALL IOX
000000                                  HALT
002432                          PWRFLI  PWRDN           ;POWER FAIL TRAP
000340                                  PRTY7
002658                          EMTVI   EMTINT          ;EMT TRAP
000340                                  PRTY7
000036                          TRPVI   .+2             ;TRAP TRAP
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)  002566  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002570  000572          .+2
(1)  002572  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002574  000576          .+2
(1)  002576  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002600  000602          .+2
(1)  002602  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002604  000606          .+2
(1)  002606  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002610  000612          .+2
(1)  002612  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002614  000616          .+2
(1)  002616  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002620  000622          .+2
(1)  002622  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002624  000626          .+2
(1)  002626  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002630  000632          .+2
(1)  002632  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002634  000636          .+2
(1)  002636  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002640  000642          .+2
(1)  002642  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002644  000646          .+2
(1)  002646  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002650  000652          .+2
(1)  002652  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002654  000656          .+2
(1)  002656  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002660  000662          .+2
(1)  002662  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002664  000666          .+2
(1)  002666  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002670  000672          .+2
(1)  002672  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002674  000676          .+2
(1)  002676  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002700  000702          .+2
(1)  002702  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002704  000706          .+2
(1)  002706  000020          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002710  000712          .+2
(1)  002712  000000          HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  002714  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                          .=200
000200  000167  001044                              JMP     START           ;GO TO START OF PROGRAM
                                                    ;
                    000204                          .=204
000204  000167  002256                              JMP     PWRTST          ;POWER FAIL TEST
                                                    ;
                    000210                          .=210
000210  000167  001064                              JMP     GETRDY          ;BYPASS INITIAL TYPEOUTS
                    000000                          R0=%0
```

```
(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                      $TYPE:  MOV     R0,-(SP)           ;SAVE R0
(1)  001102  017600  000002                      MOV     @2(SP),R0          ;GET ADDRESS OF ASCIZ STRING
(1)  001106  062766  000002  000002              ADD     #2,2(SP)           ;ADJUST RETURN PC
(1)  001114  112046                      1$:     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$:     JSR     PC,5$              ;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,5$              ;GO TYPE A NULL
(1)  001156  000772                              BR      4$                 ;LOOP
(1)  001160  105777  0-0022              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)
             001200                               .=1200
                                         ;
                                         ;VECTOR ASSIGNMENTS
                                         ;
     001200     000                      $NULL:  .BYTE   0
     001201     002                      $FILLS: .BYTE   2
     001202  177560                      TKS:    177560                     ;TTY KEYBOARD STATUS
     001204  177562                      TKB:    177562                     ;TTY KEYBOARD BUFFER
     001206  177564                      TPS:    177564                     ;TTY PRINTER STATUS
     001210  177566                      TPB:    177566                     ;TTY PRINTER BUFFER
     001212  171776                      UDCR:   171776                     ;UDC11 CONTROL REGISTER
```

D2

```
   699  001214  171774                UDSR:  171774          ;UDC11 SCAN REGISTER
   700  001216  000234                UTV:   234             ;UDC11 TRAP VECTOR
   701  001220  000236                UPL:   236             ;UDC11 PRIORITY LEVEL
   702  001222  171772                MCLK:  171772          ;UDC11 MAINTENANCE CLOCK
   703  001224  171770                UMOD:  171770          ;UDC11 RESERVED MODULE ADDRESS
   704  001226  171000                UDCA1:  171000         ;UDC11 RESERVED MODULE ADDRESS, CLASS 001
   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  176470  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
                                        ;
001424  012767  000340  177444  CHAINN: MOV     #PRTY7,1076
001432  005077  177554                  CLR     @UDCR
001436  016767  002464  177438          MOV     SCOPTR,1074
001444  012706  001074                  MOV     #1074,SP
001450  005267  002450                  INC     ICNT            ;INCREMENT ICNT
001454  001002                          BNE     CHNAC           ;BR IF RESULT NOT 0
001456  005167  002442                  COM     ICNT            ;RESET ICNT TO -1
001462  032767  040000  176100  CHNAC:  BIT     #BIT14,SR       ;CHECK FOR SCOPE OPTION
001470  001403                          BEQ     CHNA            ;BRANCH IF SCOPE SWR NOT SET
001472  016716  002430          CHNAB:  MOV     SCOPTR,(SP)     ;SET UP RETURN TO ROUTINE
001476  000002                          RTI
                                        ;
001500  032767  004000  176062  CHNA:   BIT     #BIT11,SR       ;TEST INHIBIT ITERATION SWITCH
001506  001003                          BNE     CHNAA           ;BRANCH IF INHIBIT ITERATION SW SET
001510  005367  002406                  DEC     ICTR            ;DECREMENT ITERATION COUNT
001514  001366                          BNE     CHNAB           ;BRANCH IF COUNT NOT 0
001516  022626          CHNAA:  POPSP2                          ;POP STACK POINTER TWICE
001520  032767  002000  176042          BIT     #BIT10,SR       ;IS ROUTINE END HALT SW SET?
001526  001403                          BEQ     CHNB            ;BRANCH IF NOT SET
001530  016700  002374                  MOV     RTNNO,R0
001534  000000                          HALT                    ;ROUTINE END HALT, TEST #IN LIGHTS.
001536  032767  001000  176024  CHNB:   BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH
001544  001255                          BNE     GETRDY          ;BRANCH IF SELECT RTN SW SET
001546  022767  177777  002356          CMP     #-1,NXTST       ;LAST TEST ?
001554  001254                          BNE     GTRDYX          ;BRANCH IF NOT LAST TEST
001556  104000                          TYPE                    ;TYPE PROGRAM END BELL
001560  004051                          MPGEND
001562  013705  000042                  MOV     @#42,R5         ;LINK TO MONITOR
001566  001644                          BEQ     GETRDY          ;NO, REPEAT PROGRAM
001570  000005                          RESET
001572  004715          LOGIC:  JSR     %7,(5)
001574  000240                          NOP
001576  000240                          NOP
001600  000240                          NOP
001602  000636                          BR      GETRDY          ;GO REPEAT PROGRAM
                                        ;
                                        ;TEST CONTROLLER
                                        ;
001604  016705  002322          FORWD:  MOV     NXTST,R5        ;ADDRESS OF NEXT ROUTINE
001610  012567  002314                  MOV     (5)+,RTNNO      ;GET NEXT ROUTINE NUMBER    "
001614  012567  002312                  MOV     (5)+,NXTST      ;GET ADDRESS ON NEXT "NEXT" ROUTINE
001620  012567  002276                  MOV     (5)+,ICTR       ;GET ITERATION COUNT
001624  012567  002276                  MOV     (5)+,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
```

```
  799                                   ;
  800                                   ;ERROR HANDLER
  801                                   ;
  802  001644  017767  177342  002264  ERRST:  MOV     @UDCR,UDCR'     ;SAVE CONTENTS OF UDCR
  803  001652  017767  177336  002260          MOV     @UDSR,UDSR'     ;SAVE CONTENTS OF UDSR
  804  001660  012767  003223  000166          MOV     #MSTR,ERRB
  805  001666  005067  000200                  CLR     ERRE
  806  001672  004567  000240                  JSR     %5,OACNV        ;CONVERT TO ASCII
  807  001676  004136                          UDCRT
  808  001700  003233                          MUDCR
  809  001702  000006                          6
  810  001704  004567  000226                  JSR     %5,OACNV        ;CONVERT TO ASCII
  811  001710  004140                          UDSRT
  812  001712  003251                          MUDSR
  813  001714  000006                          6
  814  001716  000421                          BR      ERRA-6
  815  001720  012767  177777  000126  ERRI:   MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL
  816  001726  012767  000240  000122          MOV     #240,ERRB+2
  817  001734  005067  000132                  CLR     ERRE
  818  001740  000413                          BR      ERRA
  819  001742  011667  000106          ERRII:  MOV     (SP),ERRB       ;DEVELOP ADDITIONAL MESSAGE ADDR.
  820  001746  017767  000102  000100          MOV     @ERRB,ERRB
  821  001754  012767  000002  000110          MOV     #2,ERRE
  822  001762  012767  177777  000066          MOV     #-1,ERRB+2
  823  001770  032767  020000  175572  ERRAI:  BIT     #BIT13,SR       ;INHIBIT ERROR PRINT ?
  824  001776  001038                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT
  825  002000  011667  000064                  MOV     (SP),ERRD       ;DEVELOP CALLING ADDR.
  826  002004  162767  000002  000056          SUB     #2,ERRD
  827  002012  004567  000120                  JSR     %5,OACNV        ;CONVERT TEST # TO ASCII
  828  002016  004130                          RTNNO
  829  002020  003161                          MTNUM
  830  002022  000003                          3
  831  002024  004567  000106                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT
  832  002030  002070                          ERRD                    ;SOURCE ADDRESS
  833  002032  003174                          MPC                     ;DESTINATION ADDRESS
  834  002034  000006                          6                       ;#OF DIGITS TO CONVERT
  835  002036  004567  000162                  JSR     %5,BDCNV        ;CONVERT ICNT TO DECIMAL ASCII
  836  002042  004124                          ICNT
  837  002044  003212                          MICNT
  838  002046  000005                          5
  839  002050  104001                          TYPES                   ;TYPE.
  840  002052  003160                          MES                     ;ERROR HEADER
  841  002054  000000          ERRBI:  OPEN                            ;ADDITIONAL ERROR MESSAGE IF ANY
  842  002056  177777                          -1
  843  002060  104017          ERRCI:  EHALT                           ;GO ERR HALT IF DESIRED
  844  002062  066716  000004                  ADD     ERRE,(SP)
  845  002066  000002                          RTI
  846  002070  000000          ERRDI:  OPEN
  847  002072  000000          ERREI:  OPEN
```

```
849                                     ;
850                                     ;CONDITIONAL ERROR HALT ROUTINE
851                                     ;
852  002074  005767  175470            EHLT:   TST     SR              ;CHECK FOR HALT ON ERROR
853  002100  100001                             BPL     EHLTA           ;BRANCH IF NO HALT DESIRED
854  002102  000000                             HALT
855  002104  000002                     EHLTA:  RTI
856                                     ;
857                                     ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPES PRINTER
858                                     ;
859  002106  104015                     TYPS:   SAVDSS
860  002110  012567  000016                     MOV     (5)+,TYPSB      ;GET ADDRESS OF MESSAGE TO TYPSB
861  002114  022767  177777  000010            CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
862  002122  001002                             BNE     TYPSA           ;BRANCH IF NOT TERMINATOR
863  002124  104014                             RSTDSS
864  002126  000002                             RTI                     ;TERMINATOR REACHED, EXIT
865  002130  104000                     TYPSA:  TYPE                    ;CALL ON TYP SUBROUTINE TO TYPE MESSAGE
866  002132  000000                     TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
867  002134  000765                             BR      TYPS+2          ;GO PROCESS NEXT MESSAGE
```

```
                                        ;
                                        ;SUBROUTINE FOR OCTAL TO ASCII CONVERSION
                                        ;
002136  104011                  OACNVI: 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                  BDCNVI: SAV84                   ;SAVE REGS
002226  012700  002402                  MOV     #DECVAL,R0      ;SET UP ADDR TO STORE DECIMAL ASCII
002232  013501                          MOV     @(5)+,R1        ;BINARY VALUE TO R1
002234  012767  000052                  MOV     (5)+,BDCNVC     ;DESTINATION ADDR TO BDCNVC
002240  012767  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,%1       ;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,%1       ;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: OPEN
002364  000000          DIGIT:  OPEN
002366  000000          TENPWR: OPEN
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  104011          BMOVE:  SAV84                   ;SAVE REGS
002412  012501                  MOV     (5)+,%1         ;GET FROM ADDRESS
002414  012502                  MOV     (5)+,%2         ;GET TO ADDRESS
002416  012503                  MOV     (5)+,%3         ;GET COUNT
002420  112122          BMOVA:  MOVB    (1)+,(2)+       ;MOVE BYTE
002422  005303                  DEC     %3              ;DECREMENT COUNT
002424  001375                  BNE     BMOVA           ;BRANCH IF NOT DONE
002426  104012                  RST84                   ;RESTORE REGS AND EXIT
002430  000205                  RTS     %5
                                        ;
                                        ;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  005532                  MPWRF
002462  000167  176612                  JMP     GETRDYX         ;GO TO NEXT TEST
```

```
                                        ;
                                        ;POWER FAIL TEST
                                        ;
002466  012706  001100          PWRTST: MOV     #1100,SP        ;SET UP SP AND STATUS
002472  012767  002566  175324          MOV     #PWRDT,PWRPL    ;SET UP FOR POWER DOWN
002500  012777  002620  176510          MOV     #PWFDC,@UTV
002506  012777  000300  176504          MOV     #PRTY6,@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     #PRTY0,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  175230  PWRDT: MOV     #PWRUT,PWRPL    ;SET UP FOR POWER UP
002574  000000                          HALT
002576  012767  002566  175220  PWRUT: MOV     #PWRDT,PWRPL
002604  012706  001100                  MOV     #1100,SP
002610  000005                          RESET
002612  104000                          TYPE
002614  003532                          MPWRF
002616  000740                          BR      PWUDC
002620  032777  040000  176364  PWPDC: BIT     #BIT14,@UDCR
002626  001404                          BEQ     PWPDCX
002630  104000                          TYPE
002632  003645                          MPUDOK
002634  000005                          RESET
002636  000730                          BR      PWUDC
002640  104000          PWPDCX: TYPE
002642  003721                          MPUDNG
002644  000005                          RESET
002646  000724                          BR      PWUDC
```

```
 996                                    ;
 997                                    ;EMT HANDLER
 998                                    ;
 999  002650  011646                    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  121667  001232                    CMPB    (SP),EMTLIM     ;CHECK IF CALL WITHIN LIMITS
1003  002666  101402                          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:   SAV85S
1015  002716  010500                          MOV     %5,%0           ;DEVELOP ADDRESS OF CALLER
1016  002720  005740                          TST     -(0)
1017  002722  000000                          HALT                    ;HALT,ADDRESS OF CALL INSTRUCTION
1018  002724  104014                          RST85S
1019  002726  000002                          RTI                     ;IN DATA LIGHTS
1020                                    ;
1021                                    ;SUBROUTINE TO ISSUE RESET
1022                                    ;
1023  002730  104013                    SRSET:: SAV85S
1024  002732  012700  052525                    MOV     #52525,%0       ;DATA TO R0
1025  002736  005100                          COM     %0
1026  002740  010067  177770                    MOV     %0,SRSET+4
1027  002744  000005                          RESET                   ;ISSUE RESET, R0 IS DESPLAYED
1028  002746  104016                          RST85
1029  002750  000002                          RTI
1030                                    ;
1031                                    ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
1032                                    ;
1033  002752  104015                    DLY:    SAV85S
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                          RST85S
1042  003000  000002                          RTI                     ;EXIT
```

M2

```
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      SV05B
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  016605  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)
```

```
1098  003156  000002                        RTI
1099                                  ;
1100                                  ;ASCII MESSAGES
1101                                  ;
1102  003160     124                  MEG:   .ASCII  /T/
1103  003161     040  020040  020040  MTNUM: .ASCII  /       PC= /
      003166  020040  041520  020075
1104  003174  020040  020040  020040  MPC:   .ASCII  /        ICNT= /
      003202  020040  041511  052116
      003210  020075
1105  003212  020040  020040  027040  MICNT: .ASCIZ  /     ;/<15><12>
      003220  000015     000
1106  003223     040  052440  041504  MSTR:  .ASCII  /  UDCR= /
      003230  036522     040
1107  003233     040  020040  020040  MUDCR: .ASCII  /        UDSR= /
      003240  020040  052440  051504
      003246  036522     040
1108  003251     040  020040  020040  MUDSR: .ASCIZ  /        /<15><12>
      003256  020040  006440  000012
1109  003264  042523  020124  051123  MSETSR: .ASCII  /SET SR OPTIONS', NORMAL SR = 000000./
      003272  047440  052120  047511
      003300  051516  020056  047516
      003306  046522  046101  051440
      003314  020122  020075  030060
      003322  030060  030060     054
1110  003327     040  044124  047105        .ASCIZ  / THEN PRESS CONTINUE/<15><12>
      003334  050040  042522  051523
      003342  041440  047117  044524
      003350  052516  006505  000012
1111  003356  047111  040526  044514  MINCRT: .ASCIZ  /INVALID TEST',/<15><12>
      003364  020104  042524  052123
      003372  006456  000012
1112  003376  000015  042125  026503  MTITL:  .ASCIZ  <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
1113  003453     015  050012  053517  MPWRT:  .ASCIZ  <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
1114  003532  042522  047503  042526  MPWRF:  .ASCIZ  /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  026124
      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  000015
1118  003776  047510  042527  042526          ,ASCIZ  /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  000015
      004050     000
1119  004051     007                      MPGEND1 ,BYTE   007
1120  004052  047105  006504  000012              ,ASCIZ  /END/<15><12>
1121                                              .EVEN
1122                                      ;
1123                                      ;EMT DEFINITIONS AND ASSIGNMENTS
1124                                      ;
1125  004060                              EMTTAB1:
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                          SCOPE=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                          SAV04=EMT+EMTX
1154  004102        003002                          .WORD   SV04
1155                000012                          EMTX=EMTX+1
1156                104012                          RST04=EMT+EMTX
1157  004104        003076                          .WORD   RS04
1158                000013                          EMTX=EMTX+1
1159                104013                          SAV05=EMT+EMTX
1160  004106        003032                          .WORD   SV05
1161                000014                          EMTX=EMTX+1
1162                104014                          RST05S=EMT+EMTX
1163  004110        003124                          .WORD   RS05S
1164                000015                          EMTX=EMTX+1
1165                104015                          SAV05S=EMT+EMTX
1166  004112        003022                          .WORD   SV05S
1167                000016                          EMTX=EMTX+1
1168                104016                          RST05=EMT+EMTX
1169  004114        003136                          .WORD   RS05
1170                000017                          EMTX=EMTX+1
1171                104017                          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          ICTR:   OPEN                    ;CURRENT ITERATION COUNT
1179  004124        000000          ICNT:   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          UDSRT:  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  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1202  004166  104002                    A1B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCR
1203  004170  022626                            POPSP2
1204  004172  104005                            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  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1217  004220  104002                    A2B:    ERROR                   ;TRAPPED WHEN REFERENCING UDSR
1218  004222  022626                            POPSP2
1219  004224  104005                            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  173540    A3A:    MOV     #A3B,MACHER     ;SET UP BUS TRAP ERROR
1230  004244  005777  174756                    TST     @UDCA1          ;REFERENCE UDCA1
1231  004250  104005                            SCOPE                   ;OR IF NO TRAP OCCURS
1232  004252  104002                    A3B:    ERROR                   ;TRAPPED WHEN REFERENCING UDCA1
1233  004254  022626                            POPSP2
1234  004256  104005                            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  004278                            A4A                     ;SCOPE ENTRY POINT               *
```

```
1241            000003                          X=X+1                   ;
1242                                    ;*******************************************************************
1243                                    ;TEST ABILITY TO REFERENCE UDCA2 WITHOUT TRAPPING
1244   004270   012767   004304  173506 A4A:    MOV     #A4B,MACHER     ;SET UP BUS TRAP ERROR
1245   004276   005777   174726                 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                 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                 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                 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          ;REFERENCE 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  A11A:  MOV     #A11B,@CSRADR   ;SET UP BUS TRAP ERROR
1350  004564  005777  174456          TST     @UDCA9          ;REFERENCE UDCA9
1351  004570  104005                  SCOPE                   ;OK IF NO TRAP OCCURS
1352  004572  104002          A11B:   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  B1A:    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          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  B2A:    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                *
```

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1403  004766  005044                        T16                     ;ADDRESS OF NEXT ROUTINE
1404  004770  000144                        100.                    ;TEST ITERATION COUNT
1405  004772  004774                        B3A                     ;SCOPE ENTRY POINT
1406          000015                        X=X+1                   ;
1407                              ;*************************************************************
1408                              ;TEST THAT UDCR BIT 2 CAN BE SET AND CLEARED
1409  004774  005077  174212      B3A1:     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  005124                        T17                     ;ADDRESS OF NEXT ROUTINE
1424  005050  000144                        100.                    ;TEST ITERATION COUNT
1425  005052  005054                        B4A                     ;SCOPE ENTRY POINT
1426          000016                        X=X+1                   ;
1427                              ;*************************************************************
1428                              ;TEST THAT UDCR BIT 3 CAN BE SET AND CLEARED
1429  005054  005077  174132      B4A1:     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  005204                        T20                     ;ADDRESS OF NEXT ROUTINE
1444  005130  000144                        100.                    ;TEST ITERATION COUNT
1445  005132  005134                        B5A                     ;SCOPE ENTRY POINT
1446          000017                        X=X+1                   ;
1447                              ;*************************************************************
1448                              ;TEST THAT UDCR BIT 4 CAN BE SET AND CLEARED
1449  005134  005077  174052      B5A1:     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
```

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1457  005176  001401                        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  001401                        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  001401                        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
```

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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                  T23:    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          B9A:    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                  T24:    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  173478  C1A:    BIS     #BIT0,@UDCR     ;SET  UDCR BIT 0
1550  005522  104004                          SRESET                  ;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                  T25:    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  C2A:    BIS     #BIT1,@UDCR     ;SET  UDCR BIT 1
```

K3

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1565  005556  104004                        SRESET                  ;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  005630                         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  104004                        SRESET                  ;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  104004                        SRESET                  ;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  104004                        SRESET                  ;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            *
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 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,@UDCR     ;SET  UDCR BIT 5
 1625  005736  104004                  SRESET                  ;ISSUE RESET TO CLEAR BIT
 1626  005740  032777  000040  173244          BIT     #BIT5,@UDCR     ;SEE IF BIT IS CLEAR
 1627  005746  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1628  005750  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR 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  173228  C7A1:  BIS     #BIT6,@UDCR     ;SET  UDCR BIT 6
 1640  005772  104004                  SRESET                  ;ISSUE RESET TO CLEAR BIT
 1641  005774  032777  000100  173218          BIT     #BIT6,@UDCR     ;SEE IF BIT IS CLEAR
 1642  006002  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1643  006004  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR 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,@UDCR     ;SET  UDCR BIT 7
 1655  006026  104004                  SRESET                  ;ISSUE RESET TO CLEAR BIT
 1656  006030  032777  000200  173154          BIT     #BIT7,@UDCR     ;SEE IF BIT IS CLEAR
 1657  006036  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1658  006040  104002                          ERROR                   ;RESET FAILED TO CLEAR UDCR 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  173138  C9A1:  BIS     #BIT8,@UDCR     ;SET  UDCR BIT 8
 1670  006062  104004                  SRESET                  ;ISSUE RESET TO CLEAR BIT
 1671  006064  032777  000400  173128          BIT     #BIT8,@UDCR     ;SEE IF BIT IS CLEAR
 1672  006072  001401                          BEQ     .+4             ;BRANCH IF BIT IS CLEAR
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M3

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1673  006074  104022                          ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 8
1674  006076  104005                          SCOPE
1675                                  ;
1676                                  ;*****************************************************************
1677  006100  000035                 T35:    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 C10A:   BIS     #BIT9,@UDCR     ;SET  UDCR BIT 9
1685  006116  104004                         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  104005                         SCOPE
1690                                  ;
1691                                  ;*****************************************************************
1692  006134  000036                 T36:    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 C11A:   BIS     #BIT10,@UDCR    ;SET  UDCR BIT 10
1700  006152  104004                         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  104005                         SCOPE
1705                                  ;
1706                                  ;*****************************************************************
1707  006170  000037                 T37:    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 C12A:   BIS     #BIT11,@UDCR    ;SET  UDCR BIT 11
1715  006206  104004                         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  104005                         SCOPE
1720                                  ;
1721                                  ;*****************************************************************
1722  006224  000040                 T40:    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                   ;                                 *
```

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1727                                    ;*****************************************************************
1728                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 12
1729  006234  052777  010000  172750  C13A:  BIS     #BIT12,@UDCR    ;SET  UDCR BIT 12
1730  006242  104004                        SRESET                  ;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  C14A:  BIS     #BIT13,@UDCR    ;SET  UDCR BIT 13
1745  006276  104004                        SRESET                  ;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  006350                        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  C15A:  BIS     #BIT14,@UDCR    ;SET  UDCR BIT 14
1760  006332  104004                        SRESET                  ;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  C16A:  BIS     #BIT15,@UDCR    ;SET  UDCR BIT 15
1775  006366  104004                        SRESET                  ;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                                  ;
```

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                                 ;*************************************************************
      006404  000044             T44:     44                        ;ROUTINE NUMBER 44                 *
      006406  006430                      T45                       ;ADDRESS OF NEXT ROUTINE           *
      006410  000012                      10.                       ;TEST ITERATION COUNT              *
      006412  006414                      C17A                      ;SCOPE ENTRY POINT                 *
              000044                      X=X+1                     ;                                  *
                                 ;*************************************************************
                                 ;TEST THAT INIT CLEARS SCAN REGISTER
      006414  104004             C17A:    SRESET
      006416  105777  172572              TSTB     @UDSR            ;TEST IF SCAN REGISTER = 0
      006422  001401                      BEQ      .+4              ;BRANCH IF REGISTER = 0
      006424  104007                      ERRORS
      006426  104005                      SCOPE
                                 ;
                                 ;*************************************************************
      006430  000045             T45:     45                        ;ROUTINE NUMBER 45                 *
      006432  006654                      T46                       ;ADDRESS OF NEXT ROUTINE           *
      006434  000062                      50.                       ;TEST ITERATION COUNT              *
      006436  006440                      D1A                       ;SCOPE ENTRY POINT                 *
              000045                      X=X+1                     ;                                  *
                                 ;*************************************************************
                                 ;TEST THAT X SCAN REG COUNTS CORRECTLY USING MAINT CLOCK
      006440  104004             D1A:     SRESET                    ;CLEAR SCAN REGISTER
      006442  005777  172554              TST      @MCLK            ;GENERATE STROBE
      006446  127727  172542  000040      CMPB     @UDSR,#40        ;CHECK COUNT
      006454  001402                      BEQ      .+6              ;BRANCH IF COUNT CORRECT
      006456  104007                      ERRORS                    ;X DID NOT COUNT TO 1
      006460  104005                      SCOPE
      006462  005777  172534              TST      @MCLK
      006466  127727  172522  000100      CMPB     @UDSR,#100
      006474  001402                      BEQ      .+6
      006476  104007                      ERRORS                    ;X DID NOT COUNT TO 2
      006500  104005                      SCOPE
      006502  005777  172514              TST      @MCLK
      006506  127727  172502  000140      CMPB     @UDSR,#140
      006514  001402                      BEQ      .+6
      006516  104007                      ERRORS                    ;X DID NOT COUNT TO 3
      006520  104005                      SCOPE
      006522  005777  172474              TST      @MCLK
      006526  127727  172462  000200      CMPB     @UDSR,#200
      006534  001402                      BEQ      .+6
      006536  104007                      ERRORS                    ;X DID NOT COUNT TO 4
      006540  104005                      SCOPE
      006542  005777  172454              TST      @MCLK
      006546  127727  172442  000240      CMPB     @UDSR,#240
      006554  001402                      BEQ      .+6
      006556  104007                      ERRORS                    ;X DID NOT COUNT TO 5
      006560  104005                      SCOPE
      006562  005777  172434              TST      @MCLK
      006566  127727  172422  000300      CMPB     @UDSR,#300
      006574  001402                      BEQ      .+6
      006576  104007                      ERRORS                    ;X DID NOT COUNT TO 6
      006600  104005                      SCOPE
      006602  005777  172414              TST      @MCLK
```

C4

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1835  006606  127727  172402  000340          CMPB    @UDSR,#340
1836  006614  001402                          BEQ     .+6
1837  006616  104007                          ERRORS                  ;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                          ERRORS
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                          ERRORS
1847  006652  104005                          SCOPE
1848                                  ;
1849                                  ;.....
1850  006654  000046                  T46:    46                      ;ROUTINE NUMBER 46                      .
1851  006656  007110                          T47                     ;ADDRESS OF NEXT ROUTINE                .
1852  006660  000002                          90.                     ;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                  D2A:    SRESET                  ;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  172310  000004          CMPB    @UDSR,#4        ;CHECK COUNT
1861  006706  001402                          BEQ     .+6             ;BRANCH IF COUNT CORRECT
1862  006710  104007                          ERRORS                  ;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                          ERRORS                  ;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                          ERRORS                  ;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                          ERRORS                  ;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                          ERRORS                  ;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                          ERRORS                  ;Y DID NOT COUNT TO 6
1888  007032  104005                          SCOPE
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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  000062                          50.                     ;TEST ITERATION COUNT                   *
1908  007116  007120                          DJA                     ;SCOPE ENTRY POINT                      *
1909          000047                          X=X+1                   ;                                       *
1910                                  ;*****************************************************************
1911                                  ;TEST THAT WD SCAN REG COUNTS CORRECTLY USING MAINT CLK
1912  007120  104004                  DJA:    SRESET                  ;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                   *
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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 PS67
1970  007344  104004                  E2A1:   SRESET
1971  007346  012777  000412  171636          MOV     #BIT1,@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                    *
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                000052                          X=X+1                           ;                                       .
                                        ;.......................................................................
                                        ;TEST THAT RIF DOES NOT SET WITH DEF START SCAN
        007452  104004                  E20A:   SRESET                          ;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:   SRESET                          ;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:    SRESET
        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                          SRESET
```

G4

```
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  E4A:    MOV     #BITC1,@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  E5A:    MOV     #BITC2!BIT8,@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  104027                        ERRORS
2107  010050  032777  000001  171134        BIT     #BIT0,@UDCR     ;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=7
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  104027                        ERRORS
2126  010120  104005                        SCOPE
2127  010122  032777  000040  171062        BIT     #BIT5,@UDCR     ;TEST IF DEF DONE SET
2128  010130  001002                        BNE     .+6             ;BRANCH IF SET
2129  010132  104027                        ERRORS
2130  010134  104005                        SCOPE
2131  010136  042777  000001  171046        BIC     #BIT0,@UDCR     ;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=7
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  104027                        ERRORS
2148  010202  104005                        SCOPE
2149  010204  032777  000040  171000        BIT     #BIT5,@UDCR     ;TEST IF DEF DONE SET
2150  010212  001002                        BNE     .+6             ;BRANCH IF SET
2151  010214  104027                        ERRORS
2152  010216  104005                        SCOPE
2153  010220  042777  000001  170764        BIC     #BIT0,@UDCR     ;GENERATE RIP
2154  010226  104005                        SCOPE
2155                                  ;
2156                                  ;*****************************************************************
2157  010230  000061                  T61:  61                      ;ROUTINE NUMBER 61                *
2158  010232  010310                        T62                     ;ADDRESS OF NEXT ROUTINE          *
```

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 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                  TSTB    @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     #BIT2,@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                          T65                     ;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:    SRESET
2241  010470  012777  000424  170514          MOV     #BIT2,@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  104007                        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  170334F3A:    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
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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                        F4A                       ;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  F4A1: 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                        F5A                       ;SCOPE ENTRY POINT                *
2342          000070                        X=X+1                     ;                                 *
2343                                  ;*****************************************************************
2344                                  ;TEST THAT Y FAULT CAN BE GENERATED IN IMM MODE,NO TRAPS PS=7
2345  011060  012777  001424  170124  F5A1: 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                                  ;
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M4

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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 WD 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 WD
2368  011150  104010                            DELAY                   ;WAIT 1MS
2369  011152  000001                            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,WD SET WILL NOT SET ERROR
2389  011224  012777  007404  167760    F7A:    MOV     #BIT0!BIT2!BIT8!BIT9,@UDCR      ;SET MAINT,IMM INT EN,STP X+Y+WD
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+WD SETWILL SCAN TO 0
2410  011304  012777  007404  167700    F8A:    MOV     #BIT0!BIT2!BIT8!BIT9,@UDCR      ;SET MAINT,IMM INT EN,STP X+Y+WD
2411  011312  052777  000020  167672            BIS     #BIT4,@UDCR     ;SET IMM SCAN EN
2412  011320  104010                            DELAY
```

A5

```
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                T74:    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:    SRESET
2432  011364  016701  167622                MOV     UDCR,R1         ;MOVE ADDRESS INTI R0
2433  011370  012700  001000                MOV     #BIT9,R0
2434  011374  012777  000412  167618        MOV     #BIT0!BIT1!BIT8,@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                T75:    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:    SRESET
2463  011476  016701  167510                MOV     UDCR,R1         ;MOVE ADDRESS I NTO R0
2464  011502  012700  000004                MOV     #BIT2,R0
2465  011506  012777  000432  167476        MOV     #BIT0!BIT4,@UDCR        ;SET MAINT,DEF INT,SCAN ENABS
2466  011514  050011                        BIS     R0,(1)          ;SET IMM INT
```

B5

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011516  104010                          DELAY                           ;WAIT FOR SCAN DONE
011520  000001                          1
011522  032777  100000  167462          BIT     #BIT15,@UDCR            ;SCAN ERROR SHOULD BE SET
011530  001002                          BNE     .+6
011532  104007                          ERRORS
011534  104005                          SCOPE
011536  032777  000200  167446          BIT     #BIT7,@UDCR             ;IMM DONE SHOULD BE SET
011544  001002                          BNE     .+6
011546  104007                          ERRORS
011550  104005                          SCOPE
011552  032777  000040  167432          BIT     #BIT5,@UDCR             ;DEF DONE SHOULD NOT BE SET
011560  001401                          BEQ     .+4
011562  104007                          ERRORS
011564  104005                          SCOPE
                                ;
                                ;**************************************************************
011566  000076                  T76:    76                              ;ROUTINE NUMBER 76              *
011570  011634                          T77                             ;ADDRESS OF NEXT ROUTINE        *
011572  000144                          100.                            ;TEST ITERATION COUNT           *
011574  011576                          G2AA                            ;SCOPE ENTRY POINT              *
        000076                          X=X+1                           ;                               *
                                ;**************************************************************
                                ;TEST THAT WHEN IMM+DEF ENABLED , NO TRAPS OCCUR
011576  012777  011630  167412  G2AA:   MOV     #G2AAER,@UTV            ;PRIME FOR TRAP ERROR
011604  012777  000036  167400          MOV     #36,@UDCR               ;SET IMM+DEF ENABLES
011612  005067  166160                  CLR     PS                      ;PS=0
011616  005777  167370                  TST     @UDCR                   ;ADDRESS CONTROL,SHOULD NOT TRAP
011622  005777  167366                  TST     @UDSR
011626  104005                          SCOPE
011630  104007                  G2AAER: ERRORS                          ;TRAPPED WITH NO INTERRUPT
011632  104005                          SCOPE
                                ;
                                ;**************************************************************
011634  000077                  T77:    77                              ;ROUTINE NUMBER 77              *
011636  011754                          T100                            ;ADDRESS OF NEXT ROUTINE        *
011640  000144                          100.                            ;TEST ITERATION COUNT           *
011642  011644                          G3A                             ;SCOPE ENTRY POINT              *
        000077                          X=X+1                           ;                               *
                                ;**************************************************************
                                ;TEST THAT IMMEDIATE INTERRUPT TRAPS TO CORRECT LOCATION
011644  012777  011716  167344  G3A:    MOV     #G3OK,@UTV              ;PRIME FOR GOOD RETURN
011652  012777  000000  167340          MOV     #PRTY0,@UPL
011660  012767  000000  166110          MOV     #PRTY0,PS
011666  016701  167320                  MOV     UDCR,%1                 ;MOVE ADDRESS INTO R0
011672  012700  002000                  MOV     #BIT10,%0               ;PUT STOP Y INTO R0
011676  012777  005424  167306          MOV     #BITC3!BIT8!BIT11,@UDCR ;SET MAINT,IMM INT,IMM SCAN EN
011704  050011                          BIS     %0,(1)                  ;SET STOP Y TO STOP SCAN
011706  104010                          DELAY
011710  000001                          1
011712  104007                          ERRORS                          ;SHOULD TRAP BEFORE GETTING HERE
011714  104005                          SCOPE
011716  012777  011750  167272  G3OK:   MOV     #G3ERRX,@UTV            ;PRIME FOR SERVICE TRAP
011724  005777  167262                  TST     @UDCR                   ;ADDRESS CONTROL TO SEE IF TRAP CAUSED
011730  005777  167260                  TST     @UDSR
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2521  011734  022777  027624  167250          CMP     #27624,@UDCR    ;IMM INT,STOP X+Y+WD
2522  011742  001401                          BEQ     .+4             ;MAINT,IMM DONE,IMM SCAN EN,IMM INT SET
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                  T100:   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  G4A:     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!BIT2!BIT1!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  G40K:    MOV     #G4ERRX,@UTV    ;PRIME FOR SERVICE TRAP
2548  012044  005777  167142                  TST     @UDCR           ;ADDRESS CONTROL TO SEE IF
2549  012050  005777  167140                  TST     @UDSR           ;THIS CAUSES SERVICE TRAP
2550  012054  022777  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  G5A:     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!BIT2!BIT0!BIT1,@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
```

D5

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2575  012154  104007                    G5ERR:  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                    G5OK:   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    G6A:    MOV     #G6ERR,@UTV             ;PRIME FOR ERROR RETURN
2593  012222  012777  000200  166770            MOV     #PRTY4,@UPL
2594  012230  012767  000200  165540            MOV     #PRTY4,PS               ;SET PS=4
2595  012236  016701  166750                    MOV     UDCR,X1                 ;MOVE ADDRESS INTO R0
2596  012242  012700  001000                    MOV     #BIT9,X0                ;PUT STOP X IN R0
2597  012246  012777  000412  166736            MOV     #BITC1!BIT10!BIT9!BIT1,@UDCR    ;SET MAINT,DEF INT,SCAN EN
2598  012254  050011                            BIS     X0,(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                    G6OK:   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    G7A:    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  166658            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
```

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 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              T104:     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 G8A1:    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              T105:     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 G9A1:    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  012576  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              T106:     106                     ;ROUTINE NUMBER 106                    *
```

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 2683  012574  177777                    TLAST                   ;ADDRESS OF NEXT ROUTINE                 *
 2684  012576  000001                    1                       ;TEST ITERATION COUNT                    *
 2685  012600  012602                    EZA                     ;SCOPE ENTRY POINT                       *
 2686          000106                    X=X+1                   ;                                        *
 2687                          ;*********************************************************************************
 2688                          ;DUMMY END TEST
 2689  012602  104005          EZA:      SCOPE
 2690          000001                    .END
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ADTENP   002370          A1A      004152          A1B      004166          Á1ÊA     004524
A10B     004540          A11A     004556          A11B     004572          Á2Á      004204
A2B      004220          A3A      004236          A3B      004252          Á4Á      004270
A4B      004304          A5A      004322          A5B      004336          Á6Á      004354
A6B      004370          A7A      004406          A7B      004422          Á8Á      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          Á1Á      004610
B2A      004714          B3A      004774          B4A      005054          Á5Á      005134
B6A      005214          B7A      005274          B8A      005354          Á9Á      005434
CHAINN   001424          CHALT  = 104003          CHLT     002714          ČHÑA     001500
CHNAA    001516          CHNAB    001472          CHNAC    001462          ČHÑB     001536
CNVCTR   002362          CURTST   004134          C1A      005514          Č1ÊA     006110
C11A     006144          C12A     006200          C13A     006234          Č14A     006270
C15A     006324          C16A     006360          C17A     006414          Č2Á      005550
C3A      005604          C4A      005640          C5A      005674          Č6Á      005730
C7A      005764          C8A      006020          C9A      006054          ĎEČVÁL   002402
DELAY  = 104010          DIGIT    002364          DLY      002752          ĎLŸA     002762
DLYB     002766          D1A      006440          D2A      006664          Ď3Á      007120
EMALT  = 104017          EMLT     002074          EMLTA    002104          EMŸA     002674
EMTINT   002650          EMTLIM   004120          EMTTAB   004060          EMŸV     000030
EMTX   = 000020          ERR      001720          ERRA     001770          ERÂB     002054
ERRC     002060          ERRD     002070          ERRE     002072          ERÂOR  = 104002
ERRORS = 104007          ERROR1 = 104006          ERRST    001644          ERÂ1     001742
E1A      007254          E2A      007344          E2DA     007452          E2ČA     007526
E3A      007602          E4A      007656          E5A      007746          E6Á      010074
E7A      010156          E8A      010240          E9A      010320          FORWD    001604
F1A      010376          F2A      010466          F2DA     010574          FŽÁ      010650
F4A      010740          F5A      011060          F6A      011142          FŸÁ      011224
F8A      011304          GETRDY   001300          GTRDYA   001342          GŸRDŸC   001362
GTRDYD   001404          GTRDYX   001306          G1A      011362          G2Á      011474
G2AA     011576          G2AAER   011630          G3A      011644          G3ERRX   011750
G3OK     011716          G4A      011764          G4ERRX   012070          G4OK     012036
G5A      012104          G5ERR    012154          G5OK     012202          G6Á      012214
G6ERR    012264          G6OK     012312          G7A      012324          G7ERR    012404
G8A      012420          G8ERR    012502          G9A      012516          G9ERR    012566
G9OK     012570          ICNT     004124          ICTR     004122          LOGIČ    001572
MACHER   000004          MCLK     001222          MEB      003100          MIČNŸ    003212
MINCRT   003356          MPC      003174          MPGEND   004051          MPÚDC    003571
MPUDNG   003721          MPUDOK   003645          MPWRF    003532          MPWRŸ    003453
MSETSR   003264          MSTR     003223          MTIT     003376          MŸÑUM    003161
MUDCR    003233          MUDSR    003251          NOP    = 000240          ÑXŸSŸ    004132
OACNV    002136          OACNVA   002152          OACNVX   002222          OPEN   = 000000
PC     =%000007          POPSP  = 005726          POPSP2 = 022626          PRŸY0  = 000000
PRTY1  = 000040          PRTY2  = 000100          PRTY3  = 000140          PRŸY4  = 000200
PRTY5  = 000240          PRTY6  = 000300          PRTY7  = 000340          PS     = 177776
PUSH   = 005746          PUSH2  = 024646          PWFDC    002620          PWFDČX   002640
PWRDN    002432          PWRDT    002566          PWRFL    000024          PWRTST   002466
```

```
PWRUP    002442          PWRUT    002576          PWUDC    002520          PWUDCA   002540
RST04  = 104012          RST05  = 104016          RST05S = 104014          RSP4     003076
RS05     003130          RS05S    003124          RTNNO    004130          R0     =%000000
SAV04  = 104011          SAV05  = 104013          SAV05S = 104015          SCOPE  = 104005
SCOPTR   004126          SP     =%000006          SR     = 177570          SRESET = 104004
SRSETT   002730          START    001250          SUBTEN   002322          SUBTNA   002326
SUBTNB   002342          SV04     003002          SV05     003032          SV05A    003040
SV05B    003052          SV05C    003066          SV05S    003022          TENPWR   002366
TKB      001204          TKS      001202          TLAST  = 177777          TPB      001210
TPS      001206          TRPVT    000034          TYPE   = 104000          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      004600
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      010238          T62      010310
T63      010366          T64      010456          T65      010564          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          UDBR     001214          UDSRT    004140          UMOD     001224
UPL      001220          UTV      001216          X      = 000106          [illegible]  012602
SFILLS   001201          SNULL    001200          STYPE    001100          .      = 012604
```

ERRORS DETECTED: 0

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