IDENTIFICATION

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

A1

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=000204. 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 UNPLUGGED 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 SR8
                                         SR7 THROUGH SR8 = 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 001338 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
000004 ERROR TRAP
000010 RESERVED INSTRUCTION TRAP
000014 DEBUG TRAP
000020 IOT TRAP
000024 POWER FAIL TRAP
000040 THROUGH 000376 - SYSTEM SOFTWARE AND INTERRUPT VECTOR AREA, EXCEPT FOR UDC11 AND TTY VECTORS.

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

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

(6.1 CONT'D)

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

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

6.2 ERROR PRINTOUTS

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

TXXX PC=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 UDBR=XXXXXX

AFTER THE PRINTOUT IS COMPLETED, THE PROGRAM WILL HALT AT COMMON ERROR HALT AT LOC 002444 IF SR19 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.

8.2 TEST ROUTINES

THE ACTUAL TESTING IS PERFORMED BY A SET OF TEST ROUTINES THAT ARE NUMBERED SEQUENTIALLY FROM 0 TO 186 (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)

```
;*****************************************************************
T28:    28              ;ROUTINE NUMBER 28.                      *
        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

```
                                .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                  BIT0!BIT1!BIT3!BIT8     ;MAINT,DEF INT,DEF SCAN EN
000402                  BIT1!BIT8               ;MAINT,DEF INT
000424                  BIT0!BIT2!BIT4!BIT8     ;MAINT,IMM INT, IMM SCAN EN
000404                  BIT2!BIT8               ;MAINT,IMM INT
001412                  BIT0!BIT1!BIT9          ;C1+STOP X
003412                  BIT0!BIT1!BIT9!BIT10    ;C1+STOP X+Y
001424                  BIT0!BIT3!BIT9          ;C3+STOP X
003424                  BIT0!BIT3!BIT9!BIT10    ;C3+STOP X+Y
007000                  BIT0!BIT9!BIT10!BIT11   ;STOP X+Y+WD
```

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                                        ;
                        000000          PR%Y0=0                 ;PRIORITY LEVEL DEFINITIONS
                        000040          PR%Y1=40
                        000100          PR%Y2=100
                        000140          PR%Y3=140
                        000200          PR%Y4=200
                        000240          PR%Y5=240
                        000300          PR%Y6=300
                        000340          PR%Y7=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
000000                  000002                  .+2                     ;UNASSIGNED TRAP
000002                  000000                  HALT
000004                  000006          MACHERI .+2                     ;SP OVERFLOW, BUS ERROR TRAP
000006                  000000                  HALT
000010                  000012                  .+2                     ;RESERVED INSTRUCTION TRAP
000012                  000000                  HALT
000014                  000016                  .+2                     ;TRACE TRAP
000016                  000000                  HALT
000020                  000022                  .+2                     ;TRAP TO CALL IOX
000022                  000000                  HALT
000024                  002432          PWRFLI  PWRDN                   ;POWER FAIL TRAP
000026                  000340                  PRTY7
000030                  002650          EMTVI   EMTINT                  ;EMT TRAP
000032                  000340                  PRTY7
000034                  000036          TRPVI   .+2                     ;TRAP TRAP
000036                  000000                  HALT
```

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672                                     ;
676  000840  000842                     .+2
(1)  000842  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000844  000846                     .+2
(1)  000846  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000850  000852                     .+2
(1)  000852  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000854  000856                     .+2
(1)  000856  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000860  000862                     .+2
(1)  000862  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000864  000866                     .+2
(1)  000866  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000870  000872                     .+2
(1)  000872  000000                     HALT            ;TRAPPED TO PREVIOUS ADDRESS
(1)  000874  000876                     .+2
(1)  000876  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
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(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
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(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
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(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)  000602  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000604  000606          .+2
(1)  000606  000020          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000610  000612          .+2
(1)  000612  000020          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000614  000616          .+2
(1)  000616  000020          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000620  000622          .+2
(1)  000622  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000624  000626          .+2
(1)  000626  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000630  000632          .+2
(1)  000632  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000634  000636          .+2
(1)  000636  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000640  000642          .+2
(1)  000642  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000644  000646          .+2
(1)  000646  000020          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000650  000652          .+2
(1)  000652  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000654  000656          .+2
(1)  000656  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000660  000662          .+2
(1)  000662  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000664  000666          .+2
(1)  000666  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000670  000672          .+2
(1)  000672  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000674  000676          .+2
(1)  000676  000020          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000700  000702          .+2
(1)  000702  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000704  000706          .+2
(1)  000706  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000710  000712          .+2
(1)  000712  000000          HALT        ;TRAPPED TO PREVIOUS ADDRESS
(1)  000714  000716          .+2
```

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

```
                000200                          .=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
```

```
687
(1)                                     ;*****************************************************************
(1)             001100                          .=1100
(1)
(1)                                     ;ROUTINE TO TYPE ASCII MESSAGE, MESSAGE MUST TERMINATE WITH A 0 BYTE.
(1)                                     ;THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
(1)                                     ;NOTE1: $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
(1)                                     ;NOTE2: $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
(1)
(1)                                     ;CALL:
(1)                                     ;1) USING A TRAP INSTRUCTION
(1)                                     ;       TYPE    ,MESADR         ;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
(1)                                     ;OR
(1)                                     ;       TYPE
(1)                                     ;       MESADR
(1)
(1)                                     ;2) USING A JSR INSTRUCTION
(1)                                     ;       MOV     PSW,-(SP)       ;PUSH PROCESSOR STATUS WORD ON THE STACK
(1)                                     ;       JSR     PC,$TYPE        ;CALL TYPE ROUTINE
(1)                                     ;       MESADDR                 ;FIRST ADRESS OF MESSAGE
(1)
(1)  001100  010046                     $TYPE:  MOV     R0,-(SP)        ;SAVE R0
(1)  001102  016600  000002             MOV     @2(SP),R0       ;GET ADDRESS OF ASCIZ STRING
(1)  001106  062766  000002  000002     ADD     #2,2(SP)        ;ADJUST RETURN PC
(1)  001114  112046                     1$:     MOVB    (R0)+,-(SP)     ;PUSH CHARACTER TO BE TYPED ONTO STACK
(1)  001116  001003                             BNE     2$              ;BR IF IT ISN'T THE TERMINATOR
(1)  001120  005726                             TST     (SP)+           ;IF TERMINATOR POP IT OFF THE STACK
(1)  001122  012600                             MOV     (SP)+,R0        ;RESTORE R0
(1)  001124  000002                             RTI                     ;RETURN
(1)  001126  004767  000026             2$:     JSR     PC,3$           ;GO TYPE THIS CHARACTER
(1)  001132  122726  000012             3$:     CMPB    #12,(SP)+       ;CHECK IF THE CHAR. TYPED WAS A  LINE FEED
(1)  001136  001366                             BNE     1$              ;GO GET NEXT CHAR. IF NOT LINE FEED
(1)  001140  016746  000034                     MOV     $NULL,-(SP)     ;GET # OF FILLER CHARS. NEEDED
                                                                        ;AND TYPE NULL CHAR
(1)
(1)  001144  105366  000001             4$:     DECB    1(SP)           ;DOES A NULL NEED TO BE TYPED?
(1)  001150  002775                             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  000022             5$:     TSTB    @TPS            ;WAIT UNTIL PRINTER IS READY
(1)  001164  100375                             BPL     5$
(1)  001166  116677  000002  000014             MOVB    2(SP),@TPB      ;LOAD CHAR TO BE TYPED INTO DATA REG.
(1)  001174  000207                             RTS     PC
(1)
688             001200                          .=1200
689                                     ;
690                                     ;VECTOR ASSIGNMENTS
691                                     ;
692  001200     000                     $NULL:  .BYTE   0
693  001201     002                     $FILLS: .BYTE   2
694  001202  177560                     TKS:    177560                  ;TTY KEYBOARD STATUS
695  001204  177562                     TKB:    177562                  ;TTY KEYBOARD BUFFER
696  001206  177564                     TPS:    177564                  ;TTY PRINTER STATUS
697  001210  177566                     TPB:    177566                  ;TTY PRINTER BUFFER
698  001212  171776                     UDCR:   171776                  ;UDC11 CONTROL REGISTER
```

D2

```
699  001214  171774                UDSRI   171774          ;UBCI1 SCAN REGISTER
700  001216  000234                UTVI    234             ;UBCI1 TRAP VECTOR
701  001220  000236                UPLI    236             ;UBCI1 PRIORITY LEVEL
702  001222  171772                MCLKI   171772          ;UBCI1 MAINTENANCE CLOCK
703  001224  171770                UMSDI   171770          ;UBCI1 RESERVED MODULE ADDRESS
704  001226  171000                UDCA1I  171000          ;UBCI1 RESERVED MODULE ADDRESS, CLASS 227
705  001230  171002                UDCA2I  171002          ;CLASS 002
706  001232  171004                UDCA3I  171004          ;CLASS 004
707  001234  171010                UDCA4I  171010          ;CLASS 010
708  001236  171020                UDCA5I  171020          ;CLASS 020
709  001240  171040                UDCA6I  171040          ;CLASS 040
710  001242  171100                UDCA7I  171100          ;CLASS 100
711  001244  171200                UDCA8I  171200          ;CLASS 200
712  001246  171400                UDCA9I  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     #T0,NXTST       ;ADDRESS OF FIRST ROUTINE
001306  012767  000006  176478  GTRDYX: MOV     #6,MACHER       ;RESET MACHER TRAP
001314  012767  000340  176454          MOV     #PRTY7,PS       ;SET PRIORITY 7
001322  016777  177672  177666          MOV     UPL,@UTV        ;RESET TRAP
001330  005077  177664                  CLR     @UPL
001334  012706  001100                  MOV     #1100,SP        ;SET BOTTOM OF STACK
001340  104004                          SRESET                  ;ISSUE RESET
001342  004767  000236          GTRDYA: JSR     PC,FORWD        ;ROLL FORWARD TO NEXT ROUTINE
001346  032767  001000  176214          BIT     #BIT9,SR        ;CHECK SELECT ROUTINE SWITCH SET
001354  001002                          BNE     GTRDYC          ;BRANCH IF SELECT ROUTINE SWITCH SET
001356  000177  002552                  JMP     @CURTST         ;GO RUN CURRENT ROUTINE
001362  016700  176202          GTRDYC: MOV     SR,R0           ;GET (SR)
001366  042700  177400                  BIC     #177400,R0      ;MASK UNDESIRED BITS
001372  126700  002532                  CMPB    RTNNO,R0        ;COMPARE RTNNO TO (R0)
001376  001002                          BNE     GTRDYD          ;BRANCH IF ROUTINE NOT FOUND YET
001400  000177  002530                  JMP     @CURTST         ;GO RUN ROUTINE
001404  022767  177777  002520  GTRDYD: CMP     #-1,NXTST       ;NO, CHECK FOR LAST ROUTINE
001412  001353                          BNE     GTRDYA          ;BRANCH IF NOT LAST ROUTINE
001414  104000                          TYPE                    ;TYPE INCORRECT RTN SELECTED
001416  003356                          MINCRT
001420  104003                          CHALT                   ;COMMON HALT
001422  000726                          BR      GETRDY          ;START OVER
```

```
                                        ;
                                        ;SCOPE LOOP AND TEST EXIT HANDLER
                                        ;
001424  012767  000340  177444  CHAINN: MOV     #PRTY7,@UDCR
001432  005077  177554                  CLR     @UDCR
001436  016767  002464  177430          MOV     SCOPTR,@UDCR
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                          .MSGEND
001562  013705  000042                  MOV     @42,R5          ;LINK TO MONITOR
001566  001644                          BEQ     GETRDY          ;NO, REPEAT PROGRAM
001570  000005                          RESET
001572  004715          LOOIC:  JSR     %7,(5)
001574  000240                          NOP
001576  000240                          NOP
001600  000240                          NOP
001602  000636                          BR      GETRDY          ;GO REPEAT PROGRAM
                                        ;
                                        ;TEST CONTROLLER
                                        ;
001604  016705  002322          FORKD:  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
```

```
                                        ;
                                        ;ERROR HANDLER
                                        ;
001644  017767  177342  002264  ERRST:  MOV     @UDCR,UDCRT     ;SAVE CONTENTS OF UDCR
001652  017767  177336  002260          MOV     @UDSR,UDSRT     ;SAVE CONTENTS OF UDSR
001660  012767  003223  000166          MOV     #MSTR,ERRB
001666  005067  000200                  CLR     ERRE
001672  004567  000240                  JSR     %5,OACNV        ;CONVERT TO ASCII
001676  004136                          UDCRT
001700  003233                          MUDCR
001702  000006                          6
001704  004567  000226                  JSR     %5,OACNV        ;CONVERT TO ASCII
001710  004140                          UDSRT
001712  003251                          MUDSR
001714  000006                          6
001716  000421                          BR      ERRA-6
001720  012767  177777  000126  ERR:   MOV     #-1,ERRB        ;SET UP ONE MESSAGE CALL
001726  012767  000240  000122          MOV     #240,ERRB+2
001734  005067  000132                  CLR     ERRE
001740  000413                          BR      ERRA
001742  011667  000106          ERR1:   MOV     (SP),ERRB       ;DEVELOP ADDITIONAL MESSAGE ADDR.
001746  017767  000102  000100          MOV     @ERRB,ERRB
001754  012767  000002  000110          MOV     #2,ERRE
001762  012767  177777  000066          MOV     #-1,ERRB+2
001770  032767  020000  175572  ERRA:   BIT     #BIT13,SR       ;INHIBIT ERROR PRINT ?
001776  001038                          BNE     ERRC            ;BRANCH TO INHIBIT PRINT
002000  011667  000064                  MOV     (SP),ERRD       ;DEVELOP CALLING ADDR.
002004  162767  000002  000056          SUB     #2,ERRD
002012  004567  000120                  JSR     %5,OACNV        ;CONVERT TEST # TO ASCII
002016  004130                          RTNNO
002020  003161                          MTNUM
002022  000003                          3
002024  004567  000106                  JSR     %5,OACNV        ;GO TO OCTAL TO ASCII CONVERT
002030  002070                          ERRD                    ;SOURCE ADDRESS
002032  003174                          MPC                     ;DESTINATION ADDRESS
002034  000006                          6                       ;OF DIGITS TO CONVERT
002036  004567  000162                  JSR     %5,BDCNV        ;CONVERT ICNT TO DECIMAL ASCII
002042  004124                          ICNT
002044  003212                          MICNT
002046  000005                          5
002050  104001                          TYPES                   ;TYPE
002052  003160                          MES                     ;ERROR HEADER
002054  000000          ERRB:   OPEN                            ;ADDITIONAL ERROR MESSAGE IF ANY
002056  177777                          -1
002060  104017          ERRC:   EHALT                           ;GO ERR HALT IF DESIRED
002062  066716  000004                  ADD     ERRE,(SP)
002066  000002                          RTI
002070  000000          ERRD:   OPEN
002072  000000          ERRE:   OPEN
```

```
                                        ;
                                        ;CONDITIONAL ERROR HALT ROUTINE
                                        ;
002074  005767  179470          EHLT1:  TST     SR              ;CHECK FOR HALT ON ERROR
002100  100001                          BPL     EHLTA           ;BRANCH IF NO HALT DESIRED
002102  000000                          HALT
002104  000002                  EHLTA:  RTI
                                        ;
                                        ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPES PRINTER
                                        ;
002106  104015                  TYPS:   SAVESS
002110  013567  000016                  MOV     @6)+,TYPSB      ;GET ADDRESS OF MESSAGE TO TYPSB
002114  027767  177777  000010          CMP     #-1,TYPSB       ;CHECK FOR TERMINATOR
002122  001002                          BNE     TYPSA           ;BRANCH IF NOT TERMINATOR
002124  104014                          RSTESS
002126  000002                          RTI                     ;TERMINATOR REACHED, EXIT
002130  104000                  TYPSA:  TYPE                    ;CALL ON TYP SUBROUTINE TO TYPE MESSAGE
002132  000000                  TYPSB:  OPEN                    ;ADDRESS OF MESSAGE GOES HERE
002134  000765                          BR      TYPS+2          ;GO PROCESS NEXT MESSAGE
```

```
  869                                   ;
  870                                   ;SUBROUTINE FOR OCTAL TO ASCII CONVERSION
  871                                   ;
  872  002136  104011                  OACNV:  SAV04
  873  002140  013567  000056                  MOV     @(5)+,OACNVX    ;GET OCTAL VALUE
  874  002144  012501                          MOV     (5)+,R1         ;GET DESTINATION ADDRESS
  875  002146  012502                          MOV     (5)+,R2         ;GET CONVERT COUNT
  876  002150  060201                          ADD     R2,R1           ;DEVELOP ADDR TO STORE 1ST CHAR.
  877  002152  016703  000044          OACNVA: MOV     OACNVX,R3
  878  002156  042703  177770                  BIC     #177770,R3      ;ISOLATE LEAST SIGNIFICANT DIGIT
  879  002162  062703  000060                  ADD     #60,R3          ;CONVERT DIGIT TO ASCII
  880  002166  110341                          MOVB    R3,-(R1)        ;STORE ASCII CHARACTER
  881  002170  042767  000007  000024          BIC     #7,OACNVX
  882  002176  006067  000020                  ROR     OACNVX
  883  002202  006067  000014                  ROR     OACNVX
  884  002206  006067  000010                  ROR     OACNVX
  885  002212  005302                          DEC     R2              ;DONE ALL DIGITS?
  886  002214  001356                          BNE     OACNVA          ;BRANCH IF NOT DONE
  887  002216  104012                          RST04
  888  002220  000205                          RTS     R5              ;DONE, EXIT
  889  002222  000000                  OACNVXI: OPEN
  890                                   ;
  891                                   ;SUBROUTINE FOR BINARY TO DECIMAL ASCII CONVERSION
  892                                   ;
  893  002224  104011                  BDCNV:  SAV04                   ;SAVE REGS
  894  002226  012700  002402                  MOV     #DECVAL,R0      ;SET UP ADDR TO STORE DECIMAL ASCII
  895  002232  013501                          MOV     @(5)+,R1        ;BINARY VALUE TO R1
  896  002234  012567  000052                  MOV     (5)+,BDCNVB     ;DESTINATION ADDR TO BDCNVB
  897  002240  012567  000050                  MOV     (5)+,BDCNVD     ;CHARACTER COUNT TO BDCNVD
  898  002244  012702  002370                  MOV     #ADTENP,R2      ;ADDR OF TEN POWER STRING
  899  002250  012767  000005  000104          MOV     #5,CNVCTR       ;SET UP FOR 5 POWER CONVERSIONS
  900  002256  012267  000104          BDCNVA: MOV     (2)+,TENPWR     ;MOVE POWER OF TEN VALUE
  901  002262  004767  000034                  JSR     PC,SUBTEN       ;PERFORM CONVERSION
  902  002266  005367  000070                  DEC     CNVCTR          ;DONE 5 CONVERSION?
  903  002272  001371                          BNE     BDCNVA          ;BRANCH IF NOT YET 5.
  904  002274  166700  000014                  SUB     BDCNVD,R0
  905  002300  010067  000004                  MOV     R0,BDCNVB
  906  002304  004567  000100                  JSR     R5,BMOVE
  907  002310  000000                  BDCNVB: OPEN
  908  002312  000000                  BDCNVC: OPEN
  909  002314  000000                  BDCNVD: OPEN
  910  002316  104012                          RST04                   ;RESTORE REGS AND EXIT
  911  002320  000205                          RTS     R5
```

```
913                                             ;
914  002322  005067  000036          SUBTEN: CLR     DIGIT
915  002326  166701  000034          SUBTNA: SUB     TENPWR,%1       ;SUBTRACT TEN POWER FROM BINARY VALUE
916  002332  103403                          BCS     SUBTNB          ;BRANCH IF UNSUCESSFUL SUBTRACTION
917  002334  005267  000024                  INC     DIGIT
918  002340  000772                          BR      SUBTNA
919  002342  066701  000020          SUBTNB: ADD     TENPWR,%1       ;RESTORE SUBTRACTED VALUE.
920  002346  062767  000060  000010          ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
921  002354  116720  000004                  MOVB    DIGIT,(0)+      ;MOVE ASCII CHAR TO DECVAL FIELD
922  002360  000207                          RTS     PC              ;EXIT
923  002362  000000          CNVCTR: OPEN
924  002364  000000          DIGIT:  OPEN
925  002366  000000          TENPWR: OPEN
926  002370  023420          ADTENP: 10000.
927  002372  001750                  1000.
928  002374  000144                  100.
929  002376  000012                  10.
930  002400  000001                  1.
931  002402     040     040     040  DECVAL: .BYTE   040,040,040,040,040,040
     002405     040     040     040
932                                             ;
933                                             ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES
934                                             ;
935  002410  104011          BMOVE:  SAV04                           ;SAVE REGS
936  002412  012501                  MOV     (5)+,%1                 ;GET FROM ADDRESS
937  002414  012502                  MOV     (5)+,%2                 ;GET TO ADDRESS
938  002416  012503                  MOV     (5)+,%3                 ;GET COUNT
939  002420  112122          BMOVA:  MOVB    (1)+,(2)+               ;MOVE BYTE
940  002422  005303                  DEC     %3                      ;DECREMENT COUNT
941  002424  001375                  BNE     BMOVA                   ;BRANCH IF NOT DONE
942  002426  104012                  RST04                           ;RESTORE REGS AND EXIT
943  002430  000205                  RTS     %5
944                                             ;
945                                             ;UNEXPECTED POWER FAIL SERVICE
946                                             ;
947  002432  012767  002442  175364  PWRDN:  MOV     #PWRUP,PWRVL    ;SET UP FOR POWER UP
948  002440  000000                  HALT
949  002442  012706  001100          PWRUP:  MOV     #1100,SP        ;RESTORE STACK POINTER
950  002446  012767  002432  175350          MOV     #PWRDN,PWRVL    ;SET UP FOR POWER DOWN
951  002454  000005                  RESET
952  002456  104000                  TYPE                            ;TYPE RECOVERY MESSAGE
953  002460  005532                  MPWRF
954  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          PWUDC1: 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  175238  PWRDT1: MOV     #PWRUT,PWRPL    ;SET UP FOR POWER UP
002574  000000                          HALT
002576  012767  002566  175220  PWRUT1: 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  PWFDC1: BIT     #BIT14,@UDCR
002626  001404                          BEQ     PWFDCX
002630  104000                          TYPE
002632  003645                          MPUDOK
002634  000005                          RESET
002636  000730                          BR      PWUDC
002640  104000          PWFDCX1:        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  011616  000000           MOV     @(SP),(SP)
 1002  002662  127667  001232           CMPB    (SP),EMTLIM     ;CHECK IF CALL WITHIN LIMITS
 1003  002666  103402                   BLOS    EMTA
 1004  002670  000000                   HALT                    ;CALL IS NOT WITHIN LIMITS
 1005  002672  000776                   BR      .-2
 1006  002674  006116          EMTA:    ROL     (SP)            ;EMT ARG X 2
 1007  002676  042716  177001           BIC     #177001,(SP)    ;REMOVE 7 MSB
 1008  002702  062716  004000           ADD     #EMTTAB,(SP)    ;FORM EMT RTN ADDRESS
 1009  002706  011616  000000           MOV     @(SP),(SP)
 1010  002712  000136                   JMP     @(SP)+          ;GO TO EMT RETURN
 1011                                   ;
 1012                                   ;SUBROUTINE FOR COMMON HALTS
 1013                                   ;
 1014  002714  104415          CHLT:    SAVDSS
 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  104414                   RSTDSS
 1019  002726  000002                   RTI                     ;IN DATA LIGHTS
 1020                                   ;
 1021                                   ;SUBROUTINE TO ISSUE RESET
 1022                                   ;
 1023  002730  104413          SRESET:  SAVDS
 1024  002732  012700  052525           MOV     #52525,%0       ;DATA TO R0
 1025  002736  005100                   COM     %0
 1026  002740  010067  177770           MOV     %0,SRESET+2
 1027  002744  000005                   RESET                   ;ISSUE RESET, R0 IS DESPLAYED
 1028  002746  104416                   RSTDS
 1029  002750  000002                   RTI
 1030                                   ;
 1031                                   ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
 1032                                   ;
 1033  002752  104415          DLY:     SAVDSS
 1034  002754  011500                   MOV     (5)+,%0         ;DELAY COUNTER TO R0
 1035  002756  012701  177742           MOV     #-36,%1         ;CONSTANT FOR TRAP TIME
 1036  002762  062701  000388  DLYA:    ADD     #388,%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  104414                   RSTDSS
 1042  003000  000002                   RTI                     ;EXIT
```

```
1044                                    ;
1045                                    ;SUBROUTINE TO SAVE REGS 0-4
1046                                    ;
1047  003002  012666  177764           SV04:  MOV     (SP)+,-12.(SP)  ;MOVE PC+PS UP STACK
1048  003006  012666  177764                  MOV     (SP)+,-12.(SP)
1049  003012  012767  000002  000046          MOV     #RTI,SV05C
1050  003020  000414                          BR      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                  MES:    .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  020040  MICNT:  .ASCII  /     ;/<19><12>
       003220  000015     000
 1106  003223     040  052440  041504  MSTR:   .ASCII  /  UDCR= /
       003230  036522     040
 1107  003233     040  020040  020040  MUDCR:  .ASCII  /        UDBR= /
       003240  020040  052440  051504
       003246  036522     040
 1108  003251     040  020040  020040  MUDSR:  .ASCII  /        /<19><12>
       003256  020040  000440  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     054
 1110  003327     040  044124  047105          .ASCII  / THEN PRESS CONTINUE/<15><12>
       003334  050040  042522  051523
       003342  041440  047117  044524
       003350  052516  000505  000012
 1111  003356  047111  040526  044514  MINCRT: .ASCII  /INVALID TEST./<15><12>
       003364  020104  042524  052123
       003372  000456  000012
 1112  003376  000015  042125  026503  MTIT:   .ASCII  <15><12>/UDC-11 CONTROL TEST = MAINDEC-11-DZUDB-A/<15><12>
       003404  030461  041440  047117
       003412  051124  046117  052040
       003420  051505  020124  020055
       003426  040515  047111  042504
       003434  026503  030461  042055
       003442  052532  041104  040455
       003450  000015     000
 1113  003453     015  050012  053517  MPWRT:  .ASCII  <15><12>/POWER FAIL TEST: WAITING FOR POWER FAILURE/<15><12>
       003460  051105  043040  044501
       003466  020114  042524  052123
       003474  020073  040527  052111
       003502  047111  020107  047506
       003510  020122  047520  042527
       003516  020122  040506  046111
       003524  051125  000505  000012
 1114  003532  042522  047503  042526  MPWRF:  .ASCII  /RECOVERED FROM POWER FAILURE/<15><12>
       003540  042522  020104  051104
       003546  046517  050040  053517
       003554  051105  043040  044501
       003562  052514  042522  000015
       003570     000
```

```
 1115  003571     125  041504  050040  MPUDC1  .ASCIZ  /UDC POWER FAIL BIT SET, NO TRAP INITIATED/<15><12>
       003576  053517  051105  043040
       003604  044501  020114  044502
       003612  020124  042523  020124
       003620  047040  020117  051124
       003626  050101  044440  044516
       003634  044524  052101  042105
       003642  000015     000
 1116  003645     122  041505  053117  MPUDOK1 .ASCIZ  /RECOVERED FROM UDB 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 UDB 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  047516  040527  042526          .ASCII  /HOWEVER ERROR BIT NOT SET IN STATUS WORD/<15><12>
       004004  020122  051105  047522
       004012  020122  044502  020124
       004020  047516  020124  042523
       004026  020124  047111  051440
       004034  040524  052524  020123
       004042  047527  042122  000015
       004050     000
 1119  004051     007                     MPSEND1 .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  001106                            .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  001714                            .WORD   CHLT
 1137          000004                            EMTX=EMTX+1
 1138          104004                            SRESET=EMT+EMTX
 1139  004070  001730                            .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                          SAV84=EMT+EMTX
1154  004102   003002                          .WORD   SV84
1155            000012                          EMTX=EMTX+1
1156            104012                          RST84=EMT+EMTX
1157  004104   003076                          .WORD   RS84
1158            000013                          EMTX=EMTX+1
1159            104013                          SAV85=EMT+EMTX
1160  004106   003032                          .WORD   SV85
1161            000014                          EMTX=EMTX+1
1162            104014                          RST85S=EMT+EMTX
1163  004110   003124                          .WORD   RS85S
1164            000015                          EMTX=EMTX+1
1165            104015                          SAV85S=EMT+EMTX
1166  004112   003022                          .WORD   SV85S
1167            000016                          EMTX=EMTX+1
1168            104016                          RST85=EMT+EMTX
1169  004114   003130                          .WORD   RS85
1170            000017                          EMTX=EMTX+1
1171            104017                          EMALT=EMT+EMTX
1172  004116   002074                          .WORD   EMLT
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    A1:     MOV     #A1B,MACHER     ;SET UP BUS TRAP ERROR
1200  004160  005777  175026                    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    A2:     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    A3:     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  004270                            A4A                     ;SCOPE ENTRY POINT              *
```

```
1241          000003                        X=X+1                          ;
1242                                        ;*****************************************************************
1243                                        ;TEST ABILITY TO REFERENCE UDCA2 WITHOUT TRAPPING
1244  004270  012767  004304  173586 A4A:   MOV     #A4B,@#ACHER           ;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,@#ACHER           ;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,@#ACHER           ;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,@#ACHER           ;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
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 1349  004556  012767  004572  173220  A11A:  MOV     #A11B,MACMER    ;SET UP BUS TRAP ERROR
 1350  004564  005777  174456              TST     @UDCA           ;REFERENCE UDCA
 1351  004570  104005                      SCOPE                   ;OR IF NO TRAP OCCURS
 1352  004572  104002                      A11B:   ERROR           ;TRAPPED WHEN REFERENCING UDCA
 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,@UDCA     ;SET UDCR BIT 0
 1366  004622  032777  000001  174362          BIT     #BIT0,@UDCA     ;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,@UDCA     ;CLEAR UDCR BIT 0
 1371  004644  032777  000001  174340          BIT     #BIT0,@UDCA     ;SEE IF BIT WAS 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,@UDCA     ;SET UDCR BIT 0 (RIF)
 1375  004664  005777  174356                  TST     @UDCA           ;ADDRESS MODULE
 1376  004670  032777  000001  174314          BIT     #BIT0,@UDCA
 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,@UDCA     ;SET UDCR BIT 1
 1391  004726  032777  000002  174256          BIT     #BIT1,@UDCA     ;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,@UDCA     ;CLEAR UDCR BIT 1
 1396  004750  032777  000002  174234          BIT     #BIT1,@UDCA     ;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  000044                        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       B3A:    CLR     @UDCR           ;CLEAR UDCR
1410  005000  052777  000004  174204        BIS     #BIT2,@UDCR     ;SET UDCR BIT 2
1411  005006  032777  000004  174176        BIT     #BIT2,@UDCR     ;SEE IF BIT IS SET
1412  005014  001002                        BNE     .+6             ;BRANCH IF SET
1413  005016  104002                        ERROR                   ;UDCR BIT 2 FAILED TO SET
1414  005020  104005                        SCOPE
1415  005022  042777  000004  174162        BIC     #BIT2,@UDCR     ;CLEAR UDCR BIT 2
1416  005030  032777  000004  174154        BIT     #BIT2,@UDCR     ;SEE IF BIT IS CLEAR
1417  005036  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1418  005040  104002                        ERROR                   ;UDCR BIT 2 FAILED TO CLEAR
1419  005042  104005                        SCOPE
1420                                ;
1421                                ;*****************************************************************
1422  005044  000016                T16:    16                      ;ROUTINE NUMBER 16
1423  005046  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       B4A:    CLR     @UDCR           ;CLEAR UDCR
1430  005060  052777  000010  174124        BIS     #BIT3,@UDCR     ;SET UDCR BIT 3
1431  005066  032777  000010  174116        BIT     #BIT3,@UDCR     ;SEE IF BIT IS SET
1432  005074  001002                        BNE     .+6             ;BRANCH IF SET
1433  005076  104002                        ERROR                   ;UDCR BIT 3 FAILED TO SET
1434  005100  104005                        SCOPE
1435  005102  042777  000010  174102        BIC     #BIT3,@UDCR     ;CLEAR UDCR BIT 3
1436  005110  032777  000010  174074        BIT     #BIT3,@UDCR     ;SEE IF BIT IS CLEAR
1437  005116  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1438  005120  104002                        ERROR                   ;UDCR BIT 3 FAILED TO CLEAR
1439  005122  104005                        SCOPE
1440                                ;
1441                                ;*****************************************************************
1442  005124  000017                T17:    17                      ;ROUTINE NUMBER 17
1443  005126  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       B5A:    CLR     @UDCR           ;CLEAR UDCR
1450  005140  052777  000020  174044        BIS     #BIT4,@UDCR     ;SET UDCR BIT 4
1451  005146  032777  000020  174036        BIT     #BIT4,@UDCR     ;SEE IF BIT IS SET
1452  005154  001002                        BNE     .+6             ;BRANCH IF SET
1453  005156  104002                        ERROR                   ;UDCR BIT 4 FAILED TO SET
1454  005160  104005                        SCOPE
1455  005162  042777  000020  174022        BIC     #BIT4,@UDCR     ;CLEAR UDCR BIT 4
1456  005170  032777  000020  174014        BIT     #BIT4,@UDCR     ;SEE IF BIT IS CLEAR
```

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 1457  005176  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1458  005200  104002                        ERROR                   ;UDCR BIT 4 FAILED TO CLEAR
 1459  005202  104005                        SCOPE
 1460                                  ;
 1461                                  ;*****************************************************************
 1462  005204  000020                  T20:  20                      ;ROUTINE NUMBER 20
 1463  005206  005264                        T21                     ;ADDRESS OF NEXT ROUTINE                *
 1464  005210  000144                        100.                    ;TEST ITERATION COUNT                   *
 1465  005212  005214                        .+2                     ;SCOPE ENTRY POINT                      *
 1466          000020                        X=X+1                   ;                                       *
 1467                                  ;*****************************************************************
 1468                                  ;TEST THAT UDCR BIT 8 CAN BE SET AND CLEARED
 1469  005214  005077  173772         B8$:  CLR     @UDCR             ;CLEAR UDCR
 1470  005220  052777  000400  173764        BIS     #BIT8,@UDCR     ;SET UDCR BIT 8
 1471  005226  032777  000400  173756        BIT     #BIT8,@UDCR     ;SEE IF BIT IS SET
 1472  005234  001002                        BNE     .+6             ;BRANCH IF SET
 1473  005236  104002                        ERROR                   ;UDCR BIT 8 FAILED TO SET
 1474  005240  104005                        SCOPE
 1475  005242  042777  000400  173742        BIC     #BIT8,@UDCR     ;CLEAR UDCR BIT 8
 1476  005250  032777  000400  173734        BIT     #BIT8,@UDCR     ;SEE IF BIT IS CLEAR
 1477  005256  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1478  005260  104002                        ERROR                   ;UDCR BIT 8 FAILED TO CLEAR
 1479  005262  104005                        SCOPE
 1480                                  ;
 1481                                  ;*****************************************************************
 1482  005264  000021                  T21:  21                      ;ROUTINE NUMBER 21                      *
 1483  005266  005344                        T22                     ;ADDRESS OF NEXT ROUTINE                *
 1484  005270  000144                        100.                    ;TEST ITERATION COUNT                   *
 1485  005272  005274                        .+2                     ;SCOPE ENTRY POINT                      *
 1486          000021                        X=X+1                   ;                                       *
 1487                                  ;*****************************************************************
 1488                                  ;TEST THAT UDCR BIT 9 CAN BE SET AND CLEARED
 1489  005274  005077  173712         B9$:  CLR     @UDCR             ;CLEAR UDCR
 1490  005300  052777  001000  173704        BIS     #BIT9,@UDCR     ;SET UDCR BIT 9
 1491  005306  032777  001000  173676        BIT     #BIT9,@UDCR     ;SEE IF BIT IS SET
 1492  005314  001002                        BNE     .+6             ;BRANCH IF SET
 1493  005316  104002                        ERROR                   ;UDCR BIT 9 FAILED TO SET
 1494  005320  104005                        SCOPE
 1495  005322  042777  001000  173662        BIC     #BIT9,@UDCR     ;CLEAR UDCR BIT 9
 1496  005330  032777  001000  173654        BIT     #BIT9,@UDCR     ;SEE IF BIT IS CLEAR
 1497  005336  000401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1498  005340  104002                        ERROR                   ;UDCR BIT 9 FAILED TO CLEAR
 1499  005342  104005                        SCOPE
 1500                                  ;
 1501                                  ;*****************************************************************
 1502  005344  000022                  T22:  22                      ;ROUTINE NUMBER 22                      *
 1503  005346  005424                        T23                     ;ADDRESS OF NEXT ROUTINE                *
 1504  005350  000144                        100.                    ;TEST ITERATION COUNT                   *
 1505  005352  005354                        .+2                     ;SCOPE ENTRY POINT                      *
 1506          000022                        X=X+1                   ;                                       *
 1507                                  ;*****************************************************************
 1508                                  ;TEST THAT UDCR BIT 10 CAN BE SET AND CLEARED
 1509  005354  005077  173632         B10$: 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 8
1549  005514  052777  000001  173470  C1A:    BIS     #BIT8,@UDCR     ;SET  UDCR BIT 8
1550  005522  104004                          $RESET                  ;ISSUE RESET TO CLEAR BIT
1551  005524  032777  000001  173460          BIT     #BIT8,@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 8
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
```

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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                  T29:    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  173320  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  000724  000005                        5,                      ;TEST ITERATION COUNT
 1620  000726  000730                        C6A                     ;SCOPE ENTRY POINT
 1621          000031                        XBX+1                   ;
 1622                                ;.....
 1623                                ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 5
 1624  000730  052777  000040  173254 C6A1:  BIS     #BIT5,@UDCR     ;SET  UDCR BIT 5
 1625  000736  104004                        SRESET                  ;ISSUE RESET TO CLEAR BIT
 1626  000740  032777  000040  173244        BIT     #BIT5,@UDCR     ;SEE IF BIT IS CLEAR
 1627  000746  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1628  000750  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 5
 1629  000752  104005                        SCOPE
 1630                               ;
 1631                                ;.....
 1632  000754  000032                T32:    32                      ;ROUTINE NUMBER 32
 1633  000756  000810                        T33                     ;ADDRESS OF NEXT ROUTINE
 1634  000760  000005                        5,                      ;TEST ITERATION COUNT
 1635  000762  000764                        C7A                     ;SCOPE ENTRY POINT
 1636          000032                        XBX+1                   ;
 1637                                ;.....
 1638                                ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 6
 1639  000764  052777  000100  173220 C7A1:  BIS     #BIT6,@UDCR     ;SET  UDCR BIT 6
 1640  000772  104004                        SRESET                  ;ISSUE RESET TO CLEAR BIT
 1641  000774  032777  000100  173210        BIT     #BIT6,@UDCR     ;SEE IF BIT IS CLEAR
 1642  001002  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1643  001004  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 6
 1644  001006  104005                        SCOPE
 1645                               ;
 1646                                ;.....
 1647  001010  000033                T33:    33                      ;ROUTINE NUMBER 33
 1648  001012  001044                        T34                     ;ADDRESS OF NEXT ROUTINE
 1649  001014  000005                        5,                      ;TEST ITERATION COUNT
 1650  001016  001020                        C8A                     ;SCOPE ENTRY POINT
 1651          000033                        XBX+1                   ;
 1652                                ;.....
 1653                                ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 7
 1654  001020  052777  000200  173164 C8A1:  BIS     #BIT7,@UDCR     ;SET  UDCR BIT 7
 1655  001026  104004                        SRESET                  ;ISSUE RESET TO CLEAR BIT
 1656  001030  032777  000200  173154        BIT     #BIT7,@UDCR     ;SEE IF BIT IS CLEAR
 1657  001036  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
 1658  001040  104002                        ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 7
 1659  001042  104005                        SCOPE
 1660                               ;
 1661                                ;.....
 1662  001044  000034                T34:    34                      ;ROUTINE NUMBER 34
 1663  001046  001100                        T35                     ;ADDRESS OF NEXT ROUTINE
 1664  001050  000005                        5,                      ;TEST ITERATION COUNT
 1665  001052  001054                        C9A                     ;SCOPE ENTRY POINT
 1666          000034                        XBX+1                   ;
 1667                                ;.....
 1668                                ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 8
 1669  001054  052777  000400  173130 C9A1:  BIS     #BIT8,@UDCR     ;SET  UDCR BIT 8
 1670  001062  104004                        SRESET                  ;ISSUE RESET TO CLEAR BIT
 1671  001064  032777  000400  173120        BIT     #BIT8,@UDCR     ;SEE IF BIT IS CLEAR
 1672  001072  001401                        BEQ     .+4             ;BRANCH IF BIT IS CLEAR
```

```
 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  173048 C11A:  BIS     #BIT10,@UDCR    ;SET  UDCR BIT 10
 1700  006152  104004                        SRESET                  ;ISSUE RESET TO CLEAR BIT
 1701  006154  032777  002000  173038        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                   ;                                 *
```

```
1727                                    ;*****************************************************************
1728                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 12
1729  006234  052777  010000  172750  C13AI:  BIS     #BIT12,@UDCR    ;SET  UDCR BIT 12
1730  006242  104004                         $RESET                  ;ISSUE RESET TO CLEAR BIT
1731  006244  032777  010000  172740         BIT     #BIT12,@UDCR    ;SEE IF BIT IS CLEAR
1732  006252  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1733  006254  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 12
1734  006256  104005                         SCOPE
1735                                    ;
1736                                    ;*****************************************************************
1737  006260  000041                  T41:    41                      ;ROUTINE NUMBER 41                  *
1738  006262  006314                         T42                     ;ADDRESS OF NEXT ROUTINE            *
1739  006264  000005                         5.                      ;TEST ITERATION COUNT               *
1740  006266  006270                         C14A                    ;SCOPE ENTRY POINT                  *
1741           000041                         X=X+1                   ;                                   *
1742                                    ;*****************************************************************
1743                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 13
1744  006270  052777  020000  172714  C14AI:  BIS     #BIT13,@UDCR    ;SET  UDCR BIT 13
1745  006276  104004                         $RESET                  ;ISSUE RESET TO CLEAR BIT
1746  006300  032777  020000  172704         BIT     #BIT13,@UDCR    ;SEE IF BIT IS CLEAR
1747  006306  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1748  006310  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 13
1749  006312  104005                         SCOPE
1750                                    ;
1751                                    ;*****************************************************************
1752  006314  000042                  T42:    42                      ;ROUTINE NUMBER 42                  *
1753  006316  006358                         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  C15AI:  BIS     #BIT14,@UDCR    ;SET  UDCR BIT 14
1760  006332  104004                         $RESET                  ;ISSUE RESET TO CLEAR BIT
1761  006334  032777  040000  172650         BIT     #BIT14,@UDCR    ;SEE IF BIT IS CLEAR
1762  006342  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1763  006344  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 14
1764  006346  104005                         SCOPE
1765                                    ;
1766                                    ;*****************************************************************
1767  006350  000043                  T43:    43                      ;ROUTINE NUMBER 43                  *
1768  006352  006404                         T44                     ;ADDRESS OF NEXT ROUTINE            *
1769  006354  000005                         5.                      ;TEST ITERATION COUNT               *
1770  006356  006360                         C16A                    ;SCOPE ENTRY POINT                  *
1771           000043                         X=X+1                   ;                                   *
1772                                    ;*****************************************************************
1773                                    ;TEST THAT RESET INSTRUCTION CLEARS UDCR BIT 15
1774  006360  052777  100000  172624  C16AI:  BIS     #BIT15,@UDCR    ;SET  UDCR BIT 15
1775  006366  104004                         $RESET                  ;ISSUE RESET TO CLEAR BIT
1776  006370  032777  100000  172614         BIT     #BIT15,@UDCR    ;SEE IF BIT IS CLEAR
1777  006376  001401                         BEQ     .+4             ;BRANCH IF BIT IS CLEAR
1778  006400  104002                         ERROR                   ;RESET FAILED TO CLEAR UDCR BIT 15
1779  006402  104005                         SCOPE
1780                                    ;
```

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1781                                    ;*****************************************************************
1782  006404  000044                   T44:  44                        ;ROUTINE NUMBER 44                *
1783  006406  006438                         T45                       ;ADDRESS OF NEXT ROUTINE          *
1784  006410  000012                         10.                       ;TEST ITERATION COUNT             *
1785  006412  006414                         C17A                      ;SCOPE ENTRY POINT                *
1786          000044                         X=X+1                     ;                                 *
1787                                    ;*****************************************************************
1788                                    ;TEST THAT INIT CLEARS SCAN REGISTER
1789  006414  104004                   C17A: SRESET
1790  006416  105777  172572                 TSTB    @UBSR             ;TEST IF SCAN REGISTER = 0
1791  006422  001401                         BEQ     .+4               ;BRANCH IF REGISTER = 0
1792  006424  104007                         ERRORS
1793  006426  104005                         SCOPE
1794                                    ;
1795                                    ;*****************************************************************
1796  006430  000045                   T45:  45                        ;ROUTINE NUMBER 45                *
1797  006432  006454                         T46                       ;ADDRESS OF NEXT ROUTINE          *
1798  006434  000002                         2.                        ;TEST ITERATION COUNT             *
1799  006436  006440                         D1A                       ;SCOPE ENTRY POINT                *
1800          000045                         X=X+1                     ;                                 *
1801                                    ;*****************************************************************
1802                                    ;TEST THAT X SCAN REG COUNTS CORRECTLY USING MAINT CLOCK
1803  006440  104004                   D1A:  SRESET                    ;CLEAR SCAN REGISTER
1804  006442  005777  172554                 TST     @MCLK             ;GENERATE STROBE
1805  006446  127727  172542  000040         CMPB    @UBSR,#40         ;CHECK COUNT
1806  006454  001402                         BEQ     .+6               ;BRANCH IF COUNT CORRECT
1807  006456  104007                         ERRORS                    ;X DID NOT COUNT TO 1
1808  006460  104005                         SCOPE
1809  006462  005777  172534                 TST     @MCLK
1810  006466  127727  172522  000100         CMPB    @UBSR,#100
1811  006474  001402                         BEQ     .+6
1812  006476  104007                         ERRORS                    ;X DID NOT COUNT TO 2
1813  006500  104005                         SCOPE
1814  006502  005777  172514                 TST     @MCLK
1815  006506  127727  172502  000140         CMPB    @UBSR,#140
1816  006514  001402                         BEQ     .+6
1817  006516  104007                         ERRORS                    ;X DID NOT COUNT TO 3
1818  006520  104005                         SCOPE
1819  006522  005777  172474                 TST     @MCLK
1820  006526  127727  172462  000200         CMPB    @UBSR,#200
1821  006534  001402                         BEQ     .+6
1822  006536  104007                         ERRORS                    ;X DID NOT COUNT TO 4
1823  006540  104005                         SCOPE
1824  006542  005777  172454                 TST     @MCLK
1825  006546  127727  172442  000240         CMPB    @UBSR,#240
1826  006554  001402                         BEQ     .+6
1827  006556  104007                         ERRORS                    ;X DID NOT COUNT TO 5
1828  006560  104005                         SCOPE
1829  006562  005777  172434                 TST     @MCLK
1830  006566  127727  172422  000300         CMPB    @UBSR,#300
1831  006574  001402                         BEQ     .+6
1832  006576  104007                         ERRORS                    ;X DID NOT COUNT TO 6
1833  006600  104005                         SCOPE
1834  006602  005777  172414                 TST     @MCLK
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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                  T461:   46                      ;ROUTINE NUMBER 46                  .
1851  006656  007110                          T47                     ;ADDRESS OF NEXT ROUTINE            .
1852  006660  000002                          5$;                     ;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=MAIN?
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  000777  172162          TST     @#CLK
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,#BIT8!BIT8       ;BR IF ONLY STOP X+MAINT SET
1895  007062  001402                  BEQ     .+6
1896  007064  104007                  ERRORS
1897  007066  104005                  SCOPE
1898  007070  000777  172126          TST     @#CLK           ;STROBE TO ERROR
1899  007074  027727  172112  101400  CMP     @#UDCR,#BIT15!BIT9!BIT8  ;ONLY SCAN ERR,STP X,MAINT SET
1900  007102  001401                  BEQ     .+4
1901  007104  104007                  ERRORS
1902  007106  104005                  SCOPE
1903                          ;
1904                          ;*************************************************************
1905  007110  000047          T49:    47                      ;ROUTINE NUMBER 47              *
1906  007112  007244                  T50                     ;ADDRESS OF NEXT ROUTINE        *
1907  007114  000002                  50.                     ;TEST ITERATION COUNT           *
1908  007116  007120                  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:    $RESET                  ;CLEAR SCAN REGISTER
1913  007122  012777  003400  172062  MOV     #BIT8!BIT9!BIT10,@#UDCR  ;SET STP X+Y+MAINT
1914  007130  000777  172066          TST     @#CLK           ;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 BIT NOT COUNT TO 1
1918  007146  104005                  SCOPE
1919  007150  000777  172046          TST     @#CLK
1920  007154  127727  172034  000002  CMPB    @#UDSR,#2
1921  007162  001402                  BEQ     .+6
1922  007164  104007                  ERRORS                  ;WD BIT NOT COUNT TO 2
1923  007166  104005                  SCOPE
1924  007170  000777  172026          TST     @#CLK
1925  007174  127727  172014  000003  CMPB    @#UDSR,#3
1926  007202  001402                  BEQ     .+6
1927  007204  104007                  ERRORS                  ;WD BIT 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  000777  171772          TST     @#CLK           ;STROBE TO ERROR
1934  007230  027727  171756  103400  CMP     @#UDCR,#BIT15!BIT11!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,@UDBR     ;SET MAINT+DEF INT EN
 1948  007262  032777  010000  171722         BIT     #BIT12,@UDBR    ;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,@UDBR    ;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,@UDBR    ;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                TST1:   51                      ;ROUTINE NUMBER 51                      *
 1964  007336  007442                        TST2                    ;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 OCCUR
 1970  007344  104004                E2A1:   SRESET
 1971  007346  012777  000412  171636         MOV     #BIT1,@UDBR     ;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,@UDBR    ;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,@UDBR    ;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                TST2:   52                      ;ROUTINE NUMBER 52                      *
 1994  007444  007516                        TST3                    ;ADDRESS OF NEXT ROUTINE                *
 1995  007446  000012                        10.                     ;TEST ITERATION COUNT                   *
 1996  007450  007452                        E2BA                    ;SCOPE ENTRY POINT                      *
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F4

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1997          000092                        X=X+1                       ;                                                  *
1998                                ;*************************************************************************
1999                                ;TEST THAT RIF DOES NOT SET WITH DEF START SCAN
2000  007452  104004                E22A1:  SRESET                      ;INITIALIZE CONTROL
2001  007454  012777  000412  171538        MOV     #BIT1,@UDCR         ;SET MAINT,DEF INT,DEF SCAN EN
2002  007462  032777  000001  171522        BIT     #BIT0,@UDCR         ;DID RIF SET WITH START SCAN
2003  007470  001402                        BEQ     .+6                 ;BRANCH IF RIF CLEAR
2004  007472  104007                        ERRORS
2005  007474  104005                        SCOPE
2006  007476  104010                        DELAY                       ;WAIT FOR SCAN DONE
2007  007500  000001                        1
2008  007502  022777  120452  171502        CMP     #120452,@UDCR       ;SCAN ERR,DEF INT,MAINT,DEF SCAN DONE
2009  007510  001001                        BNE     .+4                 ;DEF SCAN EN,DEF INT EN
2010  007512  104007                        ERRORS                      ;SHOULD ALL BE SET
2011  007514  104005                        SCOPE
2012                                ;
2013                                ;*************************************************************************
2014  007516  000053                T53:    53                          ;ROUTINE NUMBER 53                                 *
2015  007520  007572                        T54                         ;ADDRESS OF NEXT ROUTINE                           *
2016  007522  000012                        10.                         ;TEST ITERATION COUNT                              *
2017  007524  007526                        E22A                        ;SCOPE ENTRY POINT                                 *
2018          000053                        X=X+1                       ;                                                  *
2019                                ;*************************************************************************
2020                                ;TEST THAT RIF DOES NOT CLEAR WITH DEF START SCAN
2021  007526  104004                E22A1:  SRESET                      ;INITIALIZE CONTROL
2022  007530  012777  000413  171454        MOV     #BIT1!BIT0,@UDCR    ;SET MAINT,DEF INT,DEF SCAN,RIF
2023  007536  032777  000001  171446        BIT     #BIT0,@UDCR         ;DID RIF CLEAR WITH START SCAN
2024  007544  001002                        BNE     .+6                 ;BRANCH IF RIF SET
2025  007546  104007                        ERRORS
2026  007550  104005                        SCOPE
2027  007552  104010                        DELAY
2028  007554  000001                        1
2029  007556  022777  120453  171426        CMP     #120453,@UDCR       ;SCAN ERR,D INT,MAINT,D SCAN DONE
2030  007564  001001                        BNE     .+4                 ;D SCAN EN,D INT EN ALL SET
2031  007566  104007                        ERRORS
2032  007570  104005                        SCOPE
2033                                ;
2034                                ;*************************************************************************
2035  007572  000054                T54:    54                          ;ROUTINE NUMBER 54                                 *
2036  007574  007646                        T55                         ;ADDRESS OF NEXT ROUTINE                           *
2037  007576  000012                        10.                         ;TEST ITERATION COUNT                              *
2038  007600  007602                        E3A                         ;SCOPE ENTRY POINT                                 *
2039          000054                        X=X+1                       ;                                                  *
2040                                ;*************************************************************************
2041                                ;TEST THAT SCAN ERROR SETS SCAN VALUE TO ALL ONES
2042  007602  104004                E3A1:   SRESET
2043  007604  012777  000416  171408        MOV     #BIT2!BIT1!BIT0,@UDCR       ;SET MAINT,DEF INT,DEF SCAN EN,IMM EN
2044  007612  104010                        DELAY                       ;WAIT 1 MS
2045  007614  000001                        1
2046  007616  127727  171372  000377        CMPB    @UDSR,#377          ;CHECK IF SCAN VALUE 377
2047  007624  001402                        BEQ     .+6                 ;BRANCH IF SCAN = 377
2048  007626  104007                        ERRORS
2049  007630  104005                        SCOPE
2050  007632  104004                        SRESET
```

```
 2051  007634  100777  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  000035                  T591:   95              ;ROUTINE NUMBER 95                      *
 2058  007650  007736                          T96             ;ADDRESS OF NEXT ROUTINE                *
 2059  007652  000144                          100.            ;TEST ITERATION COUNT                   *
 2060  007654  007656                          E4A             ;SCOPE ENTRY POINT                      *
 2061          000005                          X=X+1           ;                                       *
 2062                                  ;*****************************************************************
 2063                                  ;TEST THAT DEF SCAN START CLEARS SCAN ERROR & DEF SCAN DONE
 2064  007656  212777  000412  171326  E4A1:   MOV     #BIT1,@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,@UDCA     ;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                  T561:   96              ;ROUTINE NUMBER 96                      *
 2081  007740  010064                          T97             ;ADDRESS OF NEXT ROUTINE                *
 2082  007742  000144                          100.            ;TEST ITERATION COUNT                   *
 2083  007744  007746                          E5A             ;SCOPE ENTRY POINT                      *
 2084          000006                          X=X+1           ;                                       *
 2085                                  ;*****************************************************************
 2086                                  ;TEST THAT DEF SCAN ENABLE WILL INHIBIT SCAN & RIF CLEARS DONE
 2087  007746  012777  000403  171236  E5A1:   MOV     #BIT7!BIT8,@UDCA        ;SET MAINT,RIF&DEF INT
 2088  007754  104010                  DELAY                   ;WAIT, SCAN SHOULD NOT START
 2089  007756  000001                  1
 2090  007760  032777  000040  171224          BIT     #BIT5,@UDCA     ;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,@UDCA     ;CLEAR TO PREVENT NEW SCAN
 2098  010014  032777  000001  171170          BIT     #BIT0,@UDCA     ;DID RIF 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 RIF
 2103  010034  000240                  NOP                     ;WAIT FOR DEL CLR DONE
 2104  010036  032777  100040  171146          BIT     #BIT15!BIT5,@UDCA       ;DID RIF CLEAR ERROR&DONE?
```

```
 2105  010044  001401                    BEQ     .+4             ;BRANCH IF CLEAR
 2106  010046  104007                    ERRORS
 2107  010050  032777  000001  171134    BIT     #BIT0,@UDCA     ;IS RIP STILL SET?
 2108  010056  001001                    BNE     .+4             ;BRANCH IF SET
 2109  010060  104007                    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                    C6A                     ;SCOPE ENTRY POINT                    *
 2117          000057                    X=X+1                   ;                                     *
 2118          ;*****************************************************************************
 2119          ;TEST THAT Y FAULT CAN BE GENERATED IN DEF MODE,NO TRAPS PS=?
 2120  010074  012777  001412  171110  E6A:    MOV     #BITC5,@UDCR    ;SET MAINT,DEF INT+SCAN,STOP Y
 2121  010102  104010                    DELAY                   ;WAIT 1MS
 2122  010104  000001                    1
 2123  010106  032777  100000  171076          BIT     #BIT15,@UDCR    ;TEST IF SCAN ERROR SET
 2124  010114  001002                    BNE     .+6             ;BRANCH IF SET
 2125  010116  104007                    ERRORS
 2126  010120  104005                    SCOPE
 2127  010122  032777  000040  171062          BIT     #BIT5,@UDCA     ;TEST IF DEF DONE SET
 2128  010130  001002                    BNE     .+6             ;BRANCH IF SET
 2129  010132  104007                    ERRORS
 2130  010134  104005                    SCOPE
 2131  010136  042777  000001  171046          BIC     #BIT0,@UDCA     ;GENERATE RIP
 2132  010144  104005                    SCOPE
 2133
 2134          ;*****************************************************************************
 2135  010146  000060          T60:    60                      ;ROUTINE NUMBER 60                    *
 2136  010150  010230                    T61                     ;ADDRESS OF NEXT ROUTINE              *
 2137  010152  001750                    1000.                   ;TEST ITERATION COUNT                 *
 2138  010154  010156                    C7A                     ;SCOPE ENTRY POINT                    *
 2139          000060                    X=X+1                   ;                                     *
 2140          ;*****************************************************************************
 2141          ;TEST THAT MD FAULT CAN BE GENERATED IN DEF MODE,NO TRAPS PS=?
 2142  010156  012777  003412  171026  E7A:    MOV     #BITC6,@UDCR    ;SET MAINT,DEF INT+SCAN,STOP MD
 2143  010164  104010                    DELAY                   ;WAIT 1MS
 2144  010166  000001                    1
 2145  010170  032777  100000  171014          BIT     #BIT15,@UDCR    ;TEST IF SCAN ERROR SET
 2146  010176  001002                    BNE     .+6             ;BRANCH IF SET
 2147  010200  104007                    ERRORS
 2148  010202  104005                    SCOPE
 2149  010204  032777  000040  171000          BIT     #BIT5,@UDCA     ;TEST IF DEF DONE SET
 2150  010212  001002                    BNE     .+6             ;BRANCH IF SET
 2151  010214  104007                    ERRORS
 2152  010216  104005                    SCOPE
 2153  010220  042777  000001  170764          BIC     #BIT0,@UDCA     ;GENERATE RIP
 2154  010226  104005                    SCOPE
 2155
 2156          ;*****************************************************************************
 2157  010230  000061          T61:    61                      ;ROUTINE NUMBER 61                    *
 2158  010232  010310                    T62                     ;ADDRESS OF NEXT ROUTINE              *
```

```
 2159  010234  000750                    1000.                   ;TEST ITERATION COUNT                    *
 2160  010236  010240                    E0A                     ;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  E0A1:  MOV   #BIT02!BIT09,@UDCR     ;SET MAINT,DEF INT E4,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  000750                        1000.                   ;TEST ITERATION COUNT                    *
 2181  010316  010328                        E0A                     ;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  E0A1:  MOV   #BIT02!BIT09,@UDCR     ;SET MAINT,DEF INT,STP X,Y,WD
```

```
2197  018326  052777  000010  178656          BIS     #BIT3,@UDCR     ;SET DEF SCAN EN
2198  018334  104010                          DELAY                   ;WAIT FOR DONE
2199  018336  000001                          1
2200  018340  105777  178650                  TSTB    @UDSR           ;TEST FOR SCAN OF 0
2201  018344  001402                          BEQ     .+6
2202  018346  104007                          ERRORS
2203  018350  104005                          SCOPE
2204  018352  022777  017452  178632          CMP     #17452,@UDBR    ;DEF INT,STP X,Y,WD,MAINT,DEF DONE
2205  018360  001401                          BEQ     .+4             ;DEF SCAN EN,DEF INT
2206  018362  104007                          ERRORS
2207  018364  104005                          SCOPE
2208                                ;
2209                                ;.....................................................................
2210  018366  000063                T63:    63                      ;ROUTINE NUMBER 63                  .
2211  018370  018456                        T64                     ;ADDRESS OF NEXT ROUTINE            .
2212  018372  000144                        100.                    ;TEST ITERATION COUNT               .
2213  018374  018376                        F1A                     ;SCOPE ENTRY POINT                  .
2214          000063                        X=X+1                   ;                                   .
2215                                ;.....................................................................
2216                                ;TEST WHAT IMM INT CAN BE GENERATED BY MAINT+IMM INT EN
2217  018376  012777  000404  178606  F1A:    MOV     #BIT4,@UDBR     ;SET MAINT+IMM INT EN
2218  020404  032777  020000  178600          BIT     #BIT13,@UDBR    ;CHECK IMM INT BEING GENERATED
2219  020412  001002                          BNE     .+6             ;BRANCH IF SET
2220  020414  104007                          ERRORS
2221  020416  104005                          SCOPE
2222  020420  032777  010000  178564          BIT     #BIT12,@UDBR    ;CHECK IF DEF INT SET
2223  020426  001402                          BEQ     .+6             ;BRANCH IF CLEAR
2224  020430  104007                          ERRORS
2225  020432  104005                          SCOPE
2226  020434  042777  000400  178550          BIC     #BIT8,@UDCR     ;CLEAR MAINT
2227  020442  032777  020000  178542          BIT     #BIT13,@UDBR    ;CHECK IF IMM INT CLEAR
2228  020450  001401                          BEQ     .+4             ;BRANCH IF CLEAR
2229  020452  104007                          ERRORS
2230  020454  104005                          SCOPE
2231                                ;
2232                                ;.....................................................................
2233  020456  000064                T64:    64                      ;ROUTINE NUMBER 64                  .
2234  020460  020504                        T65                     ;ADDRESS OF NEXT ROUTINE            .
2235  020462  000012                        10.                     ;TEST ITERATION COUNT               .
2236  020464  020466                        F2A                     ;SCOPE ENTRY POINT                  .
2237          000064                        X=X+1                   ;                                   .
2238                                ;.....................................................................
2239                                ;TEST WHAT IMM SCAN STARTS AND SETS SCAN ERROR, NO TRAP PS=7
2240  020466  104004                F2A:    SRESET
2241  020470  012777  000424  178514          MOV     #BIT8!BIT4,@UDBR ;SET MAINT,IMM INT,IMM SCAN EN
2242  020476  104010                          DELAY                   ;WAIT 1MS
2243  020500  000001                          1
2244  020502  032777  100000  178502          BIT     #BIT15,@UDBR    ;DID SCAN ERROR SET?
2245  020510  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
2246  020512  104007                          ERRORS
2247  020514  104005                          SCOPE
2248  020516  032777  000200  178466          BIT     #BIT7,@UDCR     ;DID SCAN ERROR SET IMM DONE?
2249  020524  001002                          BNE     .+6             ;BRANCH IF BIT IS SET
2250  020526  104007                          ERRORS
```

```
 2251  010538  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  170360    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  010738                    T67                     ;ADDRESS OF NEXT ROUTINE        *
 2286  010644  000144                    100.                    ;TEST ITERATION COUNT           *
 2287  010646  010650                    F3A                     ;SCOPE ENTRY POINT              *
 2288            000066                  X=X+1                   ;                               *
 2289                            ;*****************************************************************
 2290                            ;TEST THAT IMM SCAN START CLEARS SCAN ERROR & IMM SCAN DONE
 2291  010650  012777  000424  170334    MOV     #BITC3,@UDCR    ;SET MAINT,IMM INT&SCAN EN
 2292  010656  104010                    DELAY                   ;WAIT UNTIL ERROR AND DONE SETS
 2293  010660  000001                    1
 2294  010662  042777  000004  170322    BIC     #BIT2,@UDCR     ;SET IMM INT EN LOW=HIGH
 2295  010670  052777  000004  170314    BIS     #BIT2,@UDCR     ;TO CLEAR SCAN ERROR=DONE
 2296  010676  000240                    NOP                     ;WAIT FOR DLY CLEAR DONE
 2297  010700  017700  170306            MOV     @UDCR,R0
 2298  010704  032700  100000            BIT     #BIT15,R0       ;DID SCAN ERROR CLEAR
 2299  010710  001402                    BEQ     .+6             ;BRANCH IF CLEAR
 2300  010712  104005                    SCOPE
 2301  010714  104007                    ERRORS
 2302  010716  032700  000100            BIT     #BIT6,R0        ;DID IMM SCAN DONE CLEAR?
 2303  010722  001401                    BEQ     .+4             ;BRANCH IF CLEAR
 2304  010724  104007                    ERRORS
```

```
 2305  010726  104005                    SCOPE
 2306                              ;
 2307                              ;*****************************************************************
 2308  010730  000067             T67:   67                      ;ROUTINE NUMBER 67                *
 2309  010732  011050                    T70                     ;ADDRESS OF NEXT ROUTINE          *
 2310  010734  000144                    100.                    ;TEST ITERATION COUNT             *
 2311  010736  010740                    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!BIT7,@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!BIT7,@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=?
 2345  011060  012777  001424  170124 F5A1:  MOV     #BIT7,@UDCR     ;SET MAINT,IMM INT&SCAN,STOP Y
 2346  011066  104010                    DELAY                   ;WAIT IMS
 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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2359                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2360  011132  000071                    T71:    71                      ;ROUTINE NUMBER 71                                      +
2361  011134  011214                            T72                     ;ADDRESS OF NEXT ROUTINE                                +
2362  011136  001750                            1000.                   ;TEST ITERATION COUNT                                   +
2363  011140  011142                            F6A                     ;SCOPE ENTRY POINT                                      +
2364          000071                            X=X+1                   ;                                                       +
2365                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2366                                    ;TEST THAT NO FAULT CAN BE GENERATED IN IMM MODE,NO TRAPS PS=7
2367  011142  012777  023424  170042  F6A:    MOV     #BIT0,@UDCR     ;SET MAINT,IMM INT=SCAN,STOP NO
2368  011150  104010                          DELAY                   ;WAIT IMS
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,@UDCA     ;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     #BIT8,@UDCA     ;GENERATE RIF
2379  011212  104005                          SCOPE
2380                                    ;
2381                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2382  011214  000072                    T72:    72                      ;ROUTINE NUMBER 72                                      +
2383  011216  011274                            T73                     ;ADDRESS OF NEXT ROUTINE                                +
2384  011220  001750                            1000.                   ;TEST ITERATION COUNT                                   +
2385  011222  011224                            F7A                     ;SCOPE ENTRY POINT                                      +
2386          000072                            X=X+1                   ;                                                       +
2387                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2388                                    ;TEST THAT IMM INT WITH STOP X,Y,NO SET WILL NOT SET ERROR
2389  011224  012777  007404  167760  F7A:    MOV     #BIT0!BIT2!BIT9,@UDCR   ;SET MAINT,IMM INT EN,STP X+Y+NO
2390  011232  052777  000020  167752          BIS     #BIT4,@UDCA     ;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,@UDCA     ;CHECK IF IMM SCAN DONE SET
2398  011266  001001                          BNE     .+4             ;BRANCH IF DONE SET
2399  011270  104007                          ERRORS
2400  011272  104005                          SCOPE
2401                                    ;
2402                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2403  011274  000073                    T73:    73                      ;ROUTINE NUMBER 73                                      +
2404  011276  011352                            T74                     ;ADDRESS OF NEXT ROUTINE                                +
2405  011300  001750                            1000.                   ;TEST ITERATION COUNT                                   +
2406  011302  011304                            F8A                     ;SCOPE ENTRY POINT                                      +
2407          000073                            X=X+1                   ;                                                       +
2408                                    ;+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
2409                                    ;TEST THAT IMM INT WITH STOP X+Y+NO SET WILL SCAN TO 8
2410  011304  012777  007404  167720  F8A:    MOV     #BIT0!BIT2!BIT9,@UDCR   ;SET MAINT,IMM INT EN,STP X+Y+NO
2411  011312  052777  000020  167672          BIS     #BIT4,@UDCA     ;SET IMM SCAN EN
2412  011320  104010                          DELAY
```

```
2413  011322  000001                    ;
2414  011324  105777  167664            TSTB    @UDSR           ;TEST FOR SCAN ADR OF 0
2415  011330  001402                    BEQ     .+6
2416  011332  104007                    ERRDRS
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+RF SET
2420  011346  104007                    ERRDRS
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 INTO R0
2433  011370  012700  001000               MOV     #BIT9,R0
2434  011374  012777  000412  167610       MOV     #BIT10!BIT11!BIT12,@UDCR        ;SET MAINT,DEF INT,SCAN EN
2435  011402  050011                       BIS     R0,(1)          ;SET STOP X
2436  011404  104010                       DELAY
2437  011406  000001                       ;
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                       ERRDRS
2442  011430  104005                       SCOPE
2443  011432  104010                       DELAY
2444  011434  000001                       ;
2445  011436  105777  167552               TSTB    @UDSR           ;IS SCAN ON
2446  011442  001402                       BEQ     .+6             ;BRANCH IF SCAN IS 0
2447  011444  104007                       ERRDRS
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                       ERRDRS
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     #BIT11!BIT8,@UDCR       ;SET MAINT,DEF INT,SCAN ENABS
2466  011514  050011                       BIS     R0,(1)          ;SET IMM INT
```

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 2467  011516  104010                        DELAY                   ;WAIT FOR SCAN DONE
 2468  011520  000001                        1
 2469  011522  032777  100000  167462        BIT     #BIT15,@UDCR    ;SCAN ERROR SHOULD BE SET
 2470  011530  001002                        BNE     .+6
 2471  011532  104007                        ERRORS
 2472  011534  104005                        SCOPE
 2473  011536  032777  000200  167446        BIT     #BIT7,@UDCR     ;IMM DONE SHOULD BE SET
 2474  011544  001002                        BNE     .+6
 2475  011546  104007                        ERRORS
 2476  011550  104005                        SCOPE
 2477  011552  032777  000040  167432        BIT     #BIT5,@UDCR     ;DEF DONE SHOULD NOT BE SET
 2478  011560  001401                        BEQ     .+6
 2479  011562  104007                        ERRORS
 2480  011564  104005                        SCOPE
 2481                          ;
 2482                          ;*****************************************************************
 2483  011566  000076          T76:    76                              ;ROUTINE NUMBER 76
 2484  011570  011634                  T77                             ;ADDRESS OF NEXT ROUTINE
 2485  011572  000144                  100.                            ;TEST ITERATION COUNT
 2486  011574  011576                  G2AA                            ;SCOPE ENTRY POINT
 2487          000076                  X=X+1                           ;
 2488                          ;*****************************************************************
 2489                          ;TEST THAT WHEN IMM+DEF ENABLED , NO TRAPS OCCUR
 2490  011576  012777  011630  167412  G2AA:   MOV     #G2AAER,@UTV    ;PRIME FOR TRAP ERROR
 2491  011604  012777  000036  167400          MOV     #36,@UDCR       ;SET IMM+DEF ENABLES
 2492  011612  000867  166160                  CLR     PS              ;PS=0
 2493  011616  005777  167370                  TST     @UDCR           ;ADDRESS CONTROL,SHOULD NOT TRAP
 2494  011622  005777  167366                  TST     @UDBR
 2495  011626  104005                          SCOPE
 2496  011630  104007  G2AAER:  ERRORS                                  ;TRAPPED WITH NO INTERRUPT
 2497  011632  104005                          SCOPE
 2498                          ;
 2499                          ;*****************************************************************
 2500  011634  000077          T77:    77                              ;ROUTINE NUMBER 77
 2501  011636  011754                  T100                            ;ADDRESS OF NEXT ROUTINE
 2502  011640  000144                  100.                            ;TEST ITERATION COUNT
 2503  011642  011644                  G3A                             ;SCOPE ENTRY POINT
 2504          000077                  X=X+1                           ;
 2505                          ;*****************************************************************
 2506                          ;TEST THAT IMMEDIATE INTERRUPT TRAPS TO CORRECT LOCATION
 2507  011644  012777  011716  167344  G3A:    MOV     #G3OK,@UTV      ;PRIME FOR GOOD RETURN
 2508  011652  012777  000000  167340          MOV     #PRTY0,@UPLC
 2509  011660  012767  000000  166116          MOV     #PRTY0,PS
 2510  011666  016701  167320                  MOV     UDCR,R1         ;MOVE ADDRESS INTO R0
 2511  011672  012700  002000                  MOV     #BIT10,R0       ;PUT STOP Y INTO R0
 2512  011676  012777  000424  167306          MOV     #BITC3!BIT8!BIT4!BIT2,@UDCR ;SET MAINT,IMM INT,IMM SCAN EN
 2513  011704  050011                          BIS     R0,(1)          ;SET STOP Y TO STOP SCAN
 2514  011706  104010                          DELAY
 2515  011710  000001                          1
 2516  011712  104007                          ERRORS                  ;SHOULD TRAP BEFORE GETTING HERE
 2517  011714  104005                          SCOPE
 2518  011716  012777  011750  167272  G3OK:   MOV     #G3ERRX,@UTV    ;PRIME FOR SERVICE TRAP
 2519  011724  005777  167262                  TST     @UDCR           ;ADDRESS CONTROL TO SEE IF TRAP CAUSED
 2520  011730  005777  167260                  TST     @UDBR
```

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2521  011734  021777  027624  167258          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                  T101:   100                     ;ROUTINE NUMBER 100                 .
2530  011756  012074                          T101                    ;ADDRESS OF NEXT ROUTINE            .
2531  011760  000144                          100.                    ;TEST ITERATION COUNT               .
2532  011762  011764                          G4A                     ;SCOPE ENTRY POINT                  .
2533          000100                          X=X+1                   ;                                   .
2534                                  ;.....................................................................
2535                                  ;TEST THAT DEFERRED INTERRUPT TRAPS TO CORRECT LOCATION
2536  011764  012777  012036  167224  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     #BIT10!BIT8!BIT1,@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  G4OK:   MOV     #G4ERRX,@UTV    ;PRIME FOR SERVICE TRAP
2548  012044  005777  167142                  TST     @UDCR           ;ADDRESS CONTROL TO SEE IF
2549  012050  005777  167140                  TST     @UDCR           ;THIS CAUSES SERVICE TRAP
2550  012054  021777  017452  167136          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     #BIT2!BIT10!BIT9!BIT8!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
```

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2575  012154  104007                  G5ERR:  ERRORS                  ;HM TRAP WHEN PS=6
2576  012156  104005                          SCOPE
2577  012160  012777  012202  167838          MOV     #G5OK,@UTV      ;PRIME FOR GOOD RETURN
2578  012166  012767  000240  165682          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,R1         ;MOVE ADDRESS INTO R0
2596  012242  012700  001000                  MOV     #BIT9,R0        ;PUT STOP X IN R0
2597  012246  012777  000412  166736          MOV     #B:TC!BIT8!BIT4!1,@UDCR         ;SET MAINT,DEF INT,SCAN EN
2598  012254  050011                          BIS     R0,(1)          ;SET STOP X TO STOP SCAN
2599  012256  104010                          DELAY                   ;WAIT,NO TRAP SHOULD OCCUR
2600  012260  000001                          1
2601  012262  000402                          BR      .+6
2602  012264  104007                  G6ERR:  ERRORS                  ;DEF TRAPPED WHEN PS=4
2603  012266  104005                          SCOPE
2604  012270  012777  012312  166720          MOV     #G6OK,@UTV      ;PRIME FOR GOOD RETURN
2605  012276  012767  000140  165472          MOV     #PRTY3,PS       ;LOWER PS TO 3
2606  012304  000240                          NOP
2607  012306  000240                          NOP
2608  012310  104007                          ERRORS                  ;NO TRAP PS=3
2609  012312  104005                  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  012464  166664  G7A:    MOV     #G7ERR,@UTV     ;PRIME FOR ERROR RETURN
2620  012332  012777  000036  166652          MOV     #36,@UDCR       ;SET INH-DEF INT-SCAN ENABS
2621  012340  012767  000000  165430          MOV     #PRTY0,PS       ;SET PS TO 0
2622  012346  012777  177777  166650          MOV     #177777,@UMOD   ;LOAD UDC BUS WITH ONES
2623  012354  005777  166644                  TST     @UMOD           ;UDC BUS SHOULD BE 0
2624  012360  001402                          BEQ     .+6
2625  012362  104007                          ERRORS
2626  012364  104005                          SCOPE
2627  012366  005077  166632                  CLR     @UMOD           ;CLEAR UDC BUS
2628  012372  005777  166626                  TST     @UMOD
```

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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  000134            T184:   184                     ;ROUTINE NUMBER 184                *
2637  012412  012506                    T185                    ;ADDRESS OF NEXT ROUTINE           *
2638  012414  001750                    1000.                   ;TEST ITERATION COUNT              *
2639  012416  012420                    G8A                     ;SCOPE ENTRY POINT                 *
2640          000104                    X=X+1                   ;                                  *
2641                             ;*****************************************************************
2642                             ;TEST THAT DATA TRANSFERS WILL NOT CAUSE FALSE TRAPS
2643  012420  012777  012502  166578  G8A:     MOV     #G8ERR,@UTV     ;PRIME FOR ERROR RETURN
2644  012426  012777  000036  166556            MOV     #36,@UDCR       ;SET IMM+DEF INT AND SCAN ENABS
2645  012434  012767  000000  165334            MOV     #PRTY0,PS       ;SET PS TO 0
2646  012442  012777  125252  166554            MOV     #125252,@UMOD   ;LOAD UDC BUS WITH PATTERN
2647  012450  005777  166550                    TST     @UMOD           ;UDC BUS SHOULD BE 0
2648  012454  001402                    BEQ     .+6
2649  012456  104007                    ERRORS
2650  012460  104005                    SCOPE
2651  012462  012777  052525  166534            MOV     #52525,@UMOD    ;LOAD COMPLIMENT PATTERN
2652  012470  005777  166530                    TST     @UMOD
2653  012474  001401                    BEQ     .+4
2654  012476  104007                    ERRORS
2655  012500  104005                    SCOPE
2656  012502  104007            G8ERR:  ERRORS                  ;DATA TRANSFERS CAUSED TRAP
2657  012504  104005                    SCOPE
2658                             ;
2659                             ;*****************************************************************
2660  012506  000105            T185:   185                     ;ROUTINE NUMBER 185                *
2661  012510  012572                    T186                    ;ADDRESS OF NEXT ROUTINE           *
2662  012512  000144                    100.                    ;TEST ITERATION COUNT              *
2663  012514  012516                    G9A                     ;SCOPE ENTRY POINT                 *
2664          000105                    X=X+1                   ;                                  *
2665                             ;*****************************************************************
2666                             ;TEST THAT DEF SCAN ERROR TRAPS AT LEVEL 6
2667                             ; AND DOES NOT TRAP WITH IMM INT DISABLED
2668  012516  012777  012566  166472  G9A:     MOV     #G9ERR,@UTV     ;PRIME FOR ERROR RETURN
2669  012524  012767  000240  165244            MOV     #PRTY5,PS       ;SET PS=5
2670  012532  012777  000412  166452            MOV     #BIT8!BIT1!BIT0,@UDCR   ;SET MAINT,DEF INT+SCAN EN
2671  012540  104010                    DELAY
2672  012542  000001                    1
2673  012544  012777  012570  166444            MOV     #G9OK,@UTV      ;PRIME FOR GOOD RETURN
2674  012552  052777  000004  166432            BIS     #BIT2,@UDCR     ;ENABLE IMM INT
2675  012560  104010                    DELAY
2676  012562  000001                    1
2677  012564  104007                    ERRORS                  ;NO TRAP WITH IMM INT EN
2678  012566  104007            G9ERR:  ERRORS                  ;TRAP OCCURRED WITH IMM INT DISABLED
2679  012570  104005            G9OK:   SCOPE
2680                             ;
2681                             ;*****************************************************************
2682  012572  000106            T186:   186                     ;ROUTINE NUMBER 186                *
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 2683  012574  177777                    ?LAST                ;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        EZA1:       SCOPE
 2690          000001                    .END
```

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ADYENP   002376        A1A      004152        A1B      004166        A1PA     004524
A10B     004540        A11A     004556        A11B     004572        A2A      004224
A2B      004220        A3A      004236        A3B      004252        A4A      004270
A4B      004304        A5A      004322        A5B      004336        A6A      004354
A6B      004370        A7A      004406        A7B      004422        A8A      004440
A8B      004454        A9A      004472        A9B      004506        BDCNV    002224
BDCNVA   002256        BDCNVB   002310        BDCNVC   002312        BDCNVD   002314
BITC1  = 000412        BITC2  = 000402        BITC3  = 000424        BITC4  = 000404
BITC5  = 001412        BITC6  = 003412        BITC7  = 001424        BITC8  = 003424
BITC9  = 007000        BITB   = 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        B1A      004610
B2A      004714        B3A      004774        B4A      005054        B5A      005134
B6A      005214        B7A      005274        B8A      005354        B9A      005434
CHAINN   001424        CHALT  = 104003        CHLT     002714        CHNA     001500
CHNAA    001516        CHNAB    001472        CHNAC    001462        CHNB     001536
CNVCTR   002362        CURTST   004134        C1A      005514        C1PA     006110
C11A     006144        C12A     006200        C13A     006234        C14A     006270
C15A     006324        C16A     006360        C17A     006414        C2A      005550
C3A      005604        C4A      005640        C5A      005674        C6A      005730
C7A      005764        C8A      006020        C9A      006054        DEQVAL   002402
DELAY  = 104010        DIBIT    002364        DLV      002752        DLYA     002760
DLYB     002766        D1A      006440        D2A      006464        D3A      007120
EMALT  = 104017        EMLT     002074        EMLTA    002104        EMTA     002674
EMTINT   002650        EMTLIM   004120        EMTTAB   004060        EMTV     000030
EMTX   = 000020        ERR      001720        ERRA     001770        ERRB     002054
ERRC     002060        ERRD     002070        ERRE     002072        ERROR  = 104002
ERRORS = 104007        ERROR1 = 104006        ERRST    001644        ERR1     001742
E1A      007254        E2A      007344        E2BA     007452        E2EA     007526
E3A      007602        E4A      007656        E5A      007746        E6A      010074
E7A      010156        E8A      010240        E9A      010320        FORHD    001604
F1A      010376        F2A      010466        F2BA     010574        F3A      010650
F4A      010740        F5A      011060        F6A      011142        F7A      011224
F8A      011304        GETRDY   001300        GTRDYA   001342        GTRDYC   001362
GTRDYD   001404        GTRDYX   001306        G1A      011362        G2A      011474
G2AA     011576        G2AAER   011630        G3A      011644        G3ERRX   011750
G30K     011716        G4A      011764        G4ERRX   012070        G40K     012036
G5A      012104        G5ERR    012154        G50K     012202        G6A      012214
G6ERR    012264        G60K     012312        G7A      012324        G7ERR    012404
G8A      012420        G8ERR    012502        G9A      012510        G9ERR    012546
G90K     012570        ICNT     004124        ICTR     004122        LOGIC    001572
MACHER   000004        MCLK     001222        MEB      003160        MICNT    003212
MINCRT   003356        MPC      003174        MPCEND   004051        MPUDC    003571
MPUDNG   003721        MPUDOK   003645        MPWRF    003532        MPWRT    003453
MSETSR   003264        MSTR     003223        MTIT     003376        MTNUM    003161
MUDCR    003233        MUDSR    003251        NOP    = 000240        NXTST    004132
OACNV    002136        OACNVA   002152        OACNVX   002222        OPEN   = 000000
PC     =%000007        POPSP  = 005726        POPSP2 = 002626        PRTY0  = 000000
PRTY1  = 000040        PRTY2  = 000100        PRTY3  = 000140        PRTY4  = 000200
PRTY5  = 000240        PRTY6  = 000300        PRTY7  = 000340        PS     = 177776
PUSH   = 005746        PUSH2  = 024646        PWPDC    002620        PWPDCX   002640
PWRDN    002432        PWRDT    002566        PWRFL    000024        PWRTST   002466
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PWRUP    002442          PWRUT    002576          PWUDC    002520          PWUDCA   002540
RST04  = 104012          RST05  = 104016          RST05S = 104014          RSP4     003F76
RS05     003130          RS05S    003124          RTNNO    004130          %B     =%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    003F48
SV05B    003052          SV05C    003066          SV05S    003022          TENPWR   002366
TKB      001204          TKS      001202          TLAST  = 177777          TPB      001210
TPS      001206          TRPW     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      004602
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      006454          T47      007110          T5       004344
T50      007244          T51      007334          T52      007442          T53      007516
T54      007572          T55      007646          T56      007736          T57      010004
T6       004376          T60      010146          T61      010230          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          UDSR     001214          UDSRT    004140          UMOD     001224
UPL      001220          UTV      001216          X      = 000106          ?ZI      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
```