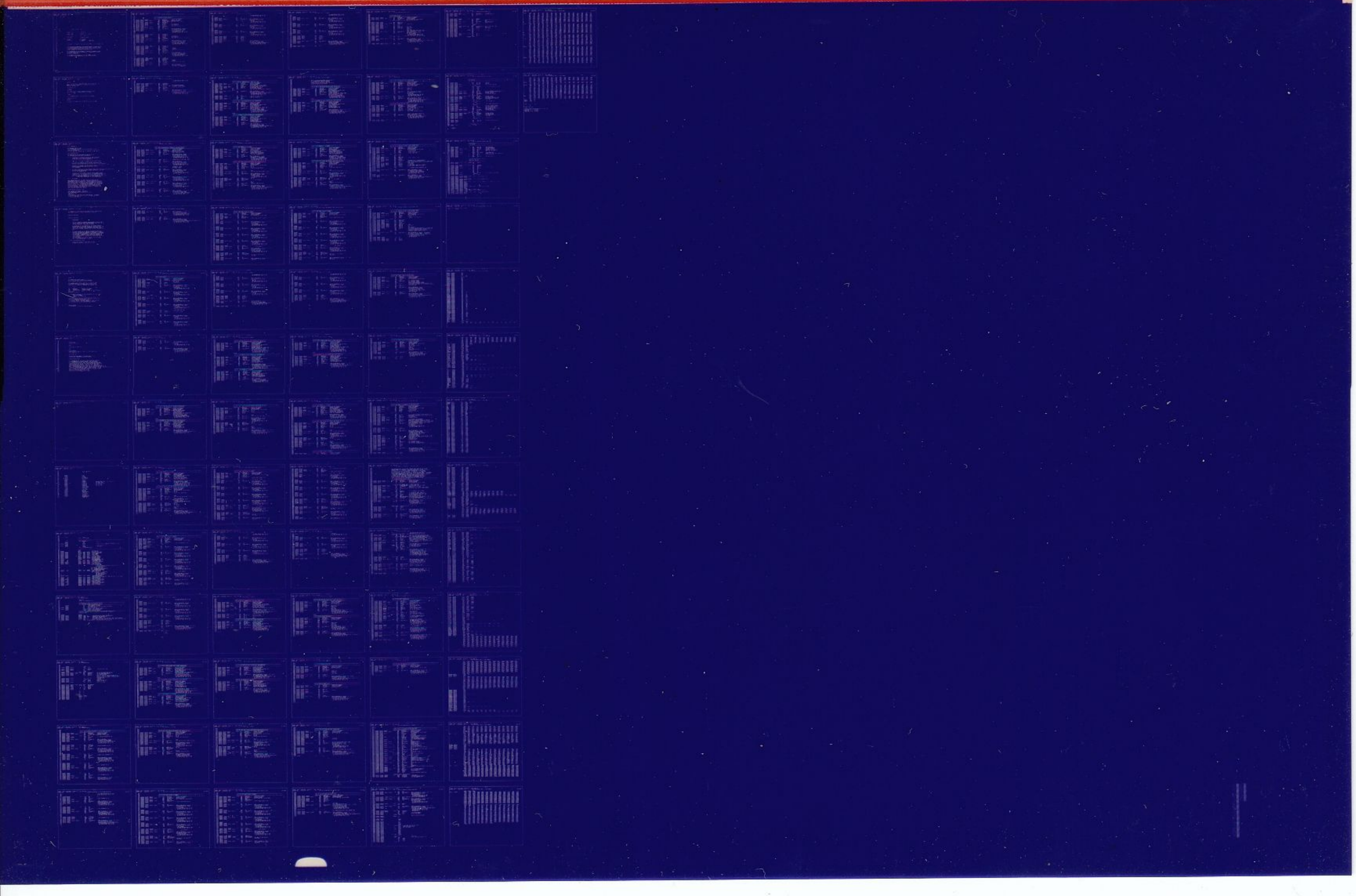
PDT-11/LSI-11

TRAPS TEST
CVKADC0

AH-8200C-MC

FICHE 1 OF 1

DEC 1978
digital
MADE IN USA



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          .REM    !
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IDENTIFICATION

PRODUCT CODE:	AC-8198C-MC	
PRODUCT NAME:	CVKADC0 LSI-11 TRAPS TEST	
DATE CREATED:	AUG, 1978	
MAINTAINER:	DIAGNOSTIC GROUP	
AUTHOR:	AL LOSCHAK	
REVISED BY:	M. MCNALLY	JUNE 1976
	J. RICH	JULY 1978

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47
48          1.      ABSTRACT
49
50                  THIS IS A TEST OF ALL OPERATIONS AND INSTRUCTIONS THAT CAUSE
51                  TRAPS, ODDITIES OF REGISTER 6, INTERRUPTS, THE RESET
52                  AND WAIT INSTRUCTIONS.
53
54          2.      REQUIREMENTS
55
56          2.1     EQUIPMENT
57
58                  PDT-11 OR LSI-11 STANDARD COMPUTER WITH AN SLU UNIT
59                  AND 4K OF MEMORY.  THE CLOCK MUST BE DISABLED.
60
61          2.2     STORAGE
62
63                  2.2.1 PROGRAM STORAGE - THE ROUTINE USES 4K MEMORY
64
65          3.      LOADING PROCEDURE
66
67          3.1     METHOD
68
69                  PROCEDURE FOR NORMAL ABSOLUTE TAPES SHOL_D BE FOLLOWED.
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                4.      SETUP PROCEDURE

                        THE PROGRAM STARTS AT 200.
                        IF IT IS DESIRED TO RESET THE PASS COUNT BACK TO ZERO
                        START AT LOCATION 210.
                        THE CLOCK MUST BE DISABLED FOR THIS PROGRAM TO RUN CORRECTLY.

                4.1     SWITCH REGISTER BITS

                        THE OPERATOR HAS THE FOLLOWING OPTIONS BY SETTING
                        THE SOFTWARE SWITCH REGISTER (LOCATION 422)

                        BIT 6=1 (100 OCTAL) TO SUPPRESS TESTING EIS AND FIS OPCODES
                                (70000-75037) FOR RESERVED INSTRUCTION TRAPPING
                                IN THE LAST TEST OF THIS DIAGNOSTIC.

                        BIT 5=1 (40 OCTAL) IF WE WANT TO SUPRESS 'END OF PASS' TYPEOUT

                        BIT 4=1 (20 OCTAL) TO SUPPRESS TESTING OPCODES 75400-76777 FOR
                                RESERVED INSTRUCTIONS TRAPS IN THE LAST TEST OF THIS DIAGNOSTIC.

                        BIT 3=1 (10 OCTAL) TO SUPPRESS TESTING OPCODES 170000-177777 FOR
                                RESERVED INSTRUCTIONS TRAPS IN THE LAST TEST OF
                                THIS DIAGNOSTIC.

                        BIT 2=1 (4 OCTAL) TO SUPPRESS TESTING OPCODES 76030-76057 (DIS RESERVED OPCODE SPACE)
                                NOR EIS OPCODES FOR RESERVED INSTRUCTION TRAPS IN THE LAST
                                TEST OF THIS DIAGNOSTIC

                        BIT 1=1 (2 OCTAL) IF THERE IS NO I/O DEVICE IN THE ADDRESS SPACE
                                160000-167777.  IF THIS BIT IS SET, THIS ADDRESS AREA WILL BE
                                CHECKED BY TEST 70, EXPECTING IT TO ALL TRAP, OR ALL NOT.
                                NOTE: THIS BIT WOULD NORMALLY BE SET WHEN RUNNING ON TIM, SINCE
                                      IT CANNOT HAVE PERIPHERALS IN THIS ADDRESS AREA.

                4.2     APT -- CPU OPTIONS

                        WHEN RUNNING UNDER APT, THE DON'T SIZE BIT SHOULD BE SET
                        ($ENVM=200, OR 240 TO INHIBIT ALL TYPEOUTS) AND THE CPU OPTIONS
                        WORD ($CPUOP) SHOULD BE SETUP TO FLAG THE PRESENCE OR ABSENCE
                        OF EIS/FIS OR DIS.  TO INDICATE EIS/FIS PRESENT, SET CPU OPTIONS
                        BITS 6,7 (OCTAL 300).  TO INDICATE DIS PRESENT, SET CPU OPTIONS
                        BIT 5 (OCTAL 40).  THESE BITS INHIBIT TRAP TESTING OF THEIR
                        RESPECTIVE OPCODES.  THE SAME THING CAN BE ACCOMPLISHED USING
                        THE SWITCH REGISTER AS DESCRIBED IN SECTION 4.1; HOWEVER, THE
                        DON'T SIZE BIT SHOULD STILL BE SET.

                4.3     PROGRAM AND/OR OPERATOR ACTION

                        LOAD PROGRAM INTO MEMORY. (BOTTOM 4K)
                        SET THE DESIRED SWITCH REGISTER BITS,IF ANY.
                        LOAD ADDRESS 200.
                        START.
                        THE PROGRAM WILL SIZE FOR EIS/FIS AND FOR DIS.  TO INHIBIT
                        SIZING, SET THE DON'T SIZE BIT (BIT 7 OF $ENVM (ODD BYTE),
                        I.E. $ENV,$ENVM=100000)
```

```
                THE PROGRAM WILL PRINT END OF PASS AFTER THE 1ST ITERATION AND
                THEN PRINT IT EVERY 15 TIMES; APROXIMATELY 2 MINUTES.


        5.      OPERATION PROCEDURE


        5.2     SUBROUTINE ABSTRACTS

                5.2.1   TRAPCATCHER
                        -----------

                        THIS IS A SERIES OF INSTRUCTIONS DESIGNED TO DETECT AND
                        ISOLATE UNEXPECTED TRAPS AND INTERRUPTS, THAT OCCUR IN THE
                        TRAP AND INTERRUPT VECTOR AREA OF MEMORY.

                        THE PRINCIPLE OF THIS ROUTINE IS: THE VECTOR ENTRANCE
                        ADDRESS POINTS TO THE NEXT SEQUENTIAL WORD WHICH WILL CON-
                        TAIN A HALT (000000) (THIS LOCATION IS ALSO THE STATUS
                        WORD FOR THAT VECTOR ENTRANCE. BUT THIS WILL HAVE NO EFFECT
                        ON IT.

                        IF A HALT OCCURS IN THE TRAP OR INTERRUPT VECTOR AREA,
                        REGISTER SIX SHOULD BE EXAMINED TO DETERMINE ITS CONTENTS,
                        THEN USE REGISTER SIX CONTENTS AS AN ADDRESS TO DETERMINE
                        THE LOCATION THE PROGRAM WAS AT, WHEN THE INTERRUPT OR
                        TRAP OCCURRED. (MEMORY AS SPECIFIED BY R6 CONTAINS THE
                        PC OF THE INSTRUCTION FOLLOWING THE INSTRUCTION WHERE THE
                        TRAP OCCURRED.
                        ALSO THE CONTENTS OF '$TESTN' CONTAIN THE TEST NUMBER
                        THAT IT WAS DOING BEFORE IT TRAPPED.

        5.3     PROGRAM AND/OR OPERATOR ACTION

                5.3.1   LOADING AND STARTING AT 200 STARTS THE TEST. IF
                        AN ERROR IS DETECTED, THERE WILL BE A HALT.
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                6.      ERRORS

                6.1     ALL ERRORS WILL CAUSE A HALT.
                        THE PC+2 OF THE HALT INSTRUCTION IS PRINTED
                        ON THE CONSOLE DEVICE BY THE LSI-11'S U-ODT.

                6.1.1   THE PROGRAM CHECKS TO SEE THAT THE P.C. DOESN'T JUMP
                        WITHIN THE TESTS, BY A SEQUENCE COUNT CALLED '$TSTN'
                        THIS TEST IS A SEQUENTIAL INCREMENT AND COMPARE COUNT.

                        EX:     CODE

                        INC     @#$TESTN        ;UPDATE TEST NUMBER
                        CMP     #N,@#$TESTN     ;SEQUENCE ERROR?
                        BNE     SOME LOCATION   ;BRANCH TO ERROR HALT ON SEQ ERROR
                        IMPORTANT
                ****************************

                        IF AN ERROR IS DETECTED ;IT COULD BE BECAUSE OF TWO REASONS.
                        A)      WRONG TEST NUMBER
                        B)      ERROR IN THE PRESENT TEST.

                        ////////////////////////////////////////////////////////
                        THE TEST SEQUENCE LOCATION "TESTN" SHOULD BE CHECKED FIRST
                        TO SEE IF IT MATCHES THE PRESENT TEST.
                        IF IT DOESN'T MATCH ; THEN THE CONTENTS OF THIS LOCATION
                        TELL YOU WHICH TEST IT WAS DOING BEFORE IT HALTED.
                        ////////////////////////////////////////////////////////


                6.2     ERROR RECOVERY
                        ON TRAP ERRORS - RESTART AT STARTING ADDRESS
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196
197
198             7.      RESTRICTIONS
199             7.1     STARTING RESTRICTION
200
201                     NONE
202
203             7.2     OPERATIONAL RESTRICTION
204
205                     NONE
206
207             8.      MISCELLANEOUS
208                     THERE IS A TEST THAT WILL CHECK THAT ODD ADDRESSING
209                     WILL IGNORE BIT '0'
210
211             8.1     EXECUTION TIME
212
213                     FOR ONE PASS APROXIMATELY 8 SECONDS;THEN IT TYPES
214                     'END OF PASS' APROXIMATELY EVERY 2 MINUTES.
215
216             9.      PROGRAM DESCRIPTION
217
218                     THIS PROGRAM CHECKS THAT ON ALL TRAP OPERATIONS REGISTER
219                     6 IS DECREMENTED THE CORRECT AMOUNT, THAT THE CORRECT
220                     PC IS SAVED ON THE STACK, THAT THE OLD CONDITION CODES AND
221                     PRIORITY ARE PLACED ON THE STACK AND THAT THE NEW STATUS AND
222                     CONDITION CODES ARE CORRECT.  BOTH THE 'TRAP' AND 'EMT'
223                     TRAP INSTRUCTIONS ARE TESTED TO SEE THAT ALL COMBINATIONS WILL
224                     TRAP.  CHECKED ALSO ARE THE RTT AND THE RTI INSTRUCTIONS AND THAT ALL
225                     RESTRICTED INSTRUCTIONS WILL TRAP.  VERIFICATION OF THE 'BPT' INSTRUCTION (00003)
226                     WHICH IS USED FOR SOFTWARE DEBUG ROUTINES: ODT,DDT, IS DONE.
227                     ALSO, THE TRACE BIT IS CHECKED TO SEE IF IT CAUSES A TRAP.
228                     SPECIAL CHECKS ARE MADE TO SEE IF BUS
229                     ERROR TRAPS OCCUR ON NON-EXISTENT MEMORY.
230             !
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231
232
233                             .LIST   BIN,LOC
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```
                                .NLIST  MD,CND,MC
                                .LIST   ME


000007                          PC=%7
000006                          SP=%6
000000                          HLT=HALT
104400                          TRAP=104400
104000                          EMT=104000
000003                          TRT=3
000004                          ITRAP5=4
000004                          RTRAP5=4                ;RESERVED INST AND ILLEGAL ADDRESSES
000014                          RTRAP4=14               ;FOR TRACE TRAP
000030                          RTRAP3=30               ;FOR EMULATOR TRAP
000020                          RTRAP2=20               ;FOR IOT TRAP
000034                          RTRAP1=34               ;FOR TRAP INST
177564                          TTCSR=177564
177560                          TRCSR=177560
177564                          TPS=177564
177566                          TPB=177566
000240                          BELL=240
000240                          NOP=240
000007                          TRAPA=000007
000010                          RTRAP=10
004700                          ILLA=004700
000100                          ILLB=100
000404                          $TSTNM=$TESTN
000402                          $ERROR=$FATAL
                                .ENABL ABS
```

```
                                        .=400
                                .SBTTL  ACT11 HOOKS

                                ;*******************************************************************************
                                ;HOOKS REQUIRED BY ACT11
                                        $SVPC=.                 ;SAVE PC
                                        .=46
                                        $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
                                        .=52
                                        .WORD   0               ;;2)SET LOC.52 TO ZERO
                                        .=$SVPC                 ;; RESTORE PC
                                .SBTTL  APT MAILBOX-ETABLE

                                ;*******************************************************************************
                                .EVEN
000400                          $MAIL:                  ;;APT MAILBOX
000400  000000                  $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
000402  000000                  $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
000404  000000                  $TESTN: .WORD   ATESTN  ;;TEST NUMBER
000406  000000                  $PASS:  .WORD   APASS   ;;PASS COUNT
000410  000000                  $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
000412  000000                  $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
000414  000000                  $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
000416  000000                  $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
000420                          $ETABLE:                ;;APT ENVIRONMENT TABLE
000420     000                  $ENV:   .BYTE   AENV    ;;ENVIRONMENT BYTE
000421     000                  $ENVM:  .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
000422  000000                  $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
000424  000000                  $USWR:  .WORD   AUSWR   ;;USER SWITCHES
000426  000000                  $CPUOP: .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
                                ;*                      BITS 15-11=CPU TYPE
                                ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
                                ;*                              11/70=06,PDQ=07,Q=10
                                ;*                      BIT 10=REAL TIME CLOCK
                                ;*                      BIT  9=FLOATING POINT PROCESSOR
                                ;*                      BIT  8=MEMORY MANAGEMENT
000430     000                  $MAMS1: .BYTE   AMAMS1  ;;HIGH ADDRESS,M.S. BYTE
000431     000                  $MTYP1: .BYTE   AMTYP1  ;;MEM. TYPE,BLK#1
                                ;*                      MEM.TYPE BYTE   --  (HIGH BYTE)
                                ;*                              900 NSEC CORE=001
                                ;*                              300 NSEC BIPOLAR=002
                                ;*                              500 NSEC MOS=003
000432  000000                  $MADR1: .WORD   AMADR1  ;;HIGH ADDRESS,BLK#1
                                ;*                        MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF ''TYPE'' ABOVE
000434     000                  $MAMS2: .BYTE   AMAMS2  ;;HIGH ADDRESS,M.S. BYTE
000435     000                  $MTYP2: .BYTE   AMTYP2  ;;MEM.TYPE,BLK#2
000436  000000                  $MADR2: .WORD   AMADR2  ;;MEM.LAST ADDRESS,BLK#2
000440     000                  $MAMS3: .BYTE   AMAMS3  ;;HIGH ADDRESS,M.S.BYTE
000441     000                  $MTYP3: .BYTE   AMTYP3  ;;MEM.TYPE,BLK#3
000442  000000                  $MADR3: .WORD   AMADR3  ;;MEM.LAST ADDRESS,BLK#3
000444     000                  $MAMS4: .BYTE   AMAMS4  ;;HIGH ADDRESS,M.S.BYTE
000445     000                  $MTYP4: .BYTE   AMTYP4  ;;MEM.TYPE,BLK#4
000446  000000                  $MADR4: .WORD   AMADR4  ;;MEM.LAST ADDRESS,BLK#4
000450                          $ETEND:
```

```
                                .MEXIT
                                .SBTTL  APT PARAMETER BLOCK

                                ;*****************************************************************************
                                ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
                                ;*****************************************************************************
000450                                  .$X=.   ;;SAVE CURRENT LOCATION
000024                                  .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
000024  000200                          200     ;;FOR APT START UP
000044                                  .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
000044  000450                          $APTHDR ;;POINT TO APT HEADER BLOCK
000450                                  .=.$X   ;;RESET LOCATION COUNTER
                                ;*****************************************************************************
                                ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
                                ;INTERFACE SPEC.

000450                          $APTHD:
000450  000000                  $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
000452  000400                  $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
000454  000010                  $TSTM:  .WORD   10      ;;RUN TIM OF LONGEST TEST
000456  000015                  $PASTM: .WORD   15      ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
000460  000000                  $UNITM: .WORD   0       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
000462  000024                          .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
```

```
                        000200                          .=200
000200  000167  000276                                  JMP     START
                        000210                          .=210
000210  005037  000406                                  CLR     @#$PASS         ;CLEAR THE PASS COUNT
000214  000167  000262                                  JMP     START
                        000500                          .=500
000500  000000                          BUFF:  00000
000502  012767  013714  177314        START: MOV     #PWRDWN,24      ;SET UP THE POWER DOWN VECTOR
000510  012767  000340  177310               MOV     #340,26         ;SET UP POWER DOWN PRIORITY
000516  012706  000500                       MOV     #BUFF,SP        ;SET STACK POINTER
000522  105737  177565                       TSTB    @#TPS+1         ;TEST ODD BYTE OF CONSOLE IN CASE ON A
                                                                     ;PDT-11.  THIS WILL RESWAP COMM AND CONSOLE
                                                                     ;ADDRESSES BACK TO NORMAL IN CASE ON APT.
000526  004567  013120                       JSR     R5,TYPE         ;TYPE THE TITLE
000532  014024                                 TITLE                  ;''CVKADX''
000534  105767  177661                       TSTB    $ENVM           ;DON'T SIZE BIT SET?
000540  100402                               BMI     BEGIN           ;BRANCH IF YES
000542  004767  012662                       JSR     PC,SIZE         ;SIZE IF ALLOWED

000546  012737  177777  013426  BEGIN: MOV     #-1,@#PASSPT
000554  012702  000400          RESTRT: MOV     #$MSGTY,%2
000560  005067  177614                  CLR     $MSGTY
000564  005067  177614                  CLR     $TSTNM
000570  005067  177606                  CLR     $ERROR
000574  000167  000026                  JMP     TST1
000600  000000                  K1:     0
000602  000000                  K2:     0
000604  000000                  K3:     0
000606  000000                  K4:     0
000610  000000                  K5:     0
000612  000000                  K6:     0
000614  052525                  K7:     052525
000616  052400                  K10:    052400
000620  000000                  K11:    0
000622  000000                  K12:    0
000624  000000                  HERE:   0
```

```
                                ;*****************************************************************************
                                ;TEST 1 AUTO INCREMENT/DECREMENT OF R6 FOR WORD AND BYTES
                                ;*****************************************************************************
000626  005237  000404          TST1:   INC     @#$TESTN        ;UPDATE TEST NUMBER
000632  022737  000001  000404          CMP     #1,@#$TESTN     ;SEQUENCE ERROR?
000640  001124                        BNE     TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
000642  005006                  R6TST:  CLR     %6
000644  112667  177754                MOVB    (6)+,HERE       ;SIX SHOULD INCREMENT BY TWO
000650  020627  000002                CMP     %6,#2
000654  001405                        BEQ     1$
000656  012737  000001  000402        MOV     #1,@#$FATAL     ;MOVE TO MAILBOX #  *******  1  *******
000664  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000666  000000                        HALT                    ;R6 DID NOT AUTO INCREMENT BY TWO
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 764

000670  012706  001000          1$:     MOV     #1000,%6
000674  114667  177724                MOVB    -(6),HERE       ;SHOULD DECREMENT BY TWO
000700  020627  000776                CMP     %6,#776
000704  001405                        BEQ     2$
000706  012737  000002  000402        MOV     #2,@#$FATAL     ;MOVE TO MAILBOX #  *******  2  *******
000714  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000716  000000                        HALT                    ;R6 DID NOT AUTO DECREMENT BY 2
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 750

000720  005006                  2$:     CLR     %6
000722  112626                        MOVB    (6)+,(6)+       ;DOUBLES AUTO INCREMENT OF R6
000724  020627  000004                CMP     %6,#4
000730  001405                        BEQ     3$
000732  012737  000003  000402        MOV     #3,@#$FATAL     ;MOVE TO MAILBOX #  *******  3  *******
000740  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000742  000000                        HALT                    ;WRONG AUTO INCREMENT OF R6
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 736

000744  005006                  3$:     CLR     %6
000746  005004                        CLR     %4
000750  122624                        CMPB    (6)+,(4)+       ;TEST INCREMENT OF R6
000752  020627  000002                CMP     %6,#2
000756  001405                        BEQ     4$
000760  012737  000004  000402        MOV     #4,@#$FATAL     ;MOVE TO MAILBOX #  *******  4  *******
000766  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000770  000000                        HALT                    ;WRONG INCREMENT OF R6
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 723

000772  005006                  4$:     CLR     %6
000774  005004                        CLR     %4
000776  122426                        CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
001000  020627  000002                CMP     %6,#2
001004  001405                        BEQ     5$
001006  012737  000005  000402        MOV     #5,@#$FATAL     ;MOVE TO MAILBOX #  *******  5  *******
001014  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001016  000000                        HALT                    ;WRONG INCREMENT OF R6
```

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                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 710

001020  005006                  5$:    CLR     %6
001022  005004                         CLR     %4
001024  122624                         CMPB    (6)+,(4)+       ;TEST INCREMENT OF R4
001026  020427  000001                 CMP     %4,#1
001032  001405                         BEQ     6$
001034  012737  000006  000402         MOV     #6,@#$FATAL     ;MOVE TO MAILBOX #  *******  6  *******
001042  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001044  000000                         HALT                    ;WRONG INCREMENT OF R4
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 675

001046  005006                  6$:    CLR     %6
001050  005004                         CLR     %4
001052  122426                         CMPB    (4)+,(6)+       ;TEST INCREMENT OF R4
001054  020427  000001                 CMP     %4,#1
001060  001405                         BEQ     7$
001062  012737  000007  000402         MOV     #7,@#$FATAL     ;MOVE TO MAILBOX #  *******  7  *******
001070  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001072  000000                         HALT                    ;WRONG INCREMENT OF R4
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 662

001074  012706  001000          7$:    MOV     #1000,%6
001100  124667  177520                 CMPB    -(6),HERE       ;TEST DECREMENT OF R6
001104  022706  000776                 CMP     #776,%6
001110  001405                         BEQ     TST2
001112  012737  000010  000402         MOV     #10,@#$FATAL    ;MOVE TO MAILBOX #  *******  10  *******
001120  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001122  000000                         HALT                    ;WRONG DECREMENT OF R6,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 646
```

```
                                ;*****************************************************************************
                                ;TEST 2 TRANSFER OF BYTE USING R6
                                ;*****************************************************************************
001124  005237  000404        TST2:   INC     @#$TESTN        ;UPDATE TEST NUMBER
001130  022737  000002  000404        CMP     #2,@#$TESTN     ;SEQUENCE ERROR?
001136  001137                       BNE     TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
001140  012767  123456  177442        MOV     #123456,K5
001146  012767  050505  177424        MOV     #050505,K1
001154  012705  000600                MOV     #K1,%5          ;%5=(050505)K1
001160  012706  000610                MOV     #K5,%6          ;%6=(123456)K5
001164  112625                       MOVB    (6)+,(5)+       ;LOW .BYTE OF R6 TO R5
001166  022767  050456  177404        CMP     #050456,K1
001174  001405                       BEQ     1$
001176  012737  000011  000402        MOV     #11,@#$FATAL    ;MOVE TO MAILBOX #  *******  11  *******
001204  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001206  000000                       HALT                    ;FALSE TRANSFER OF .BYTE
                                                             ; TO SCOPE REPLACE HALT W/ 240
                                                             ; AND REPLACE NEXT INST W/ 753
001210  012767  123456  177372  1$:   MOV     #123456,K5
001216  012767  050505  177354        MOV     #050505,K1
001224  012705  000600                MOV     #K1,%5          ;%5(C50505)K1
001230  012706  000612                MOV     #K6,%6          ;%6(123456)K5
001234  114625                       MOVB    -(6),(5)+       ;LOW .BYTE OF R6 TO R5 (DECREMENT)
001236  026727  177336  050456        CMP     K1,#050456
001244  001405                       BEQ     2$
001246  012737  000012  000402        MOV     #12,@#$FATAL    ;MOVE TO MAILBOX #  *******  12  *******
001254  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001256  000000                       HALT                    ;FALSE R6 .BYTE TRANSFER
                                                             ; TO SCOPE REPLACE HALT W/ 240
                                                             ; AND REPLACE NEXT INST W/ 727
001260  012767  123456  177312  2$:   MOV     #123456,K1
001266  012767  050505  177314        MOV     #050505,K5
001274  012705  000600                MOV     #K1,%5          ;(123456)
001300  012706  000610                MOV     #K5,%6          ;(050505)
001304  112526                       MOVB    (5)+,(6)+       ;LOW OF R5 TO LOW OF R6
001306  022767  050456  177274        CMP     #050456,K5
001314  001405                       BEQ     3$
001316  012737  000013  000402        MOV     #13,@#$FATAL    ;MOVE TO MAILBOX #  *******  13  *******
001324  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001326  000000                       HALT                    ;FALSE R6 .BYTE TRANSFER
                                                             ; TO SCOPE REPLACE HALT W/ 240
                                                             ; AND REPLACE NEXT INST W/ 703
001330  012767  123456  177242  3$:   MOV     #123456,K1
001336  012767  050505  177244        MOV     #050505,K5
001344  012705  000601                MOV     #K1+1,%5        ;123456
001350  012706  000610                MOV     #K5,%6          ;050505
001354  112526                       MOVB    (5)+,(6)+       ;HIGH OF R5 TO LOW OF R6
001356  026727  177226  050647        CMP     K5,#050647
001364  001405                       BEQ     4$
001366  012737  000014  000402        MOV     #14,@#$FATAL    ;MOVE TO MAILBOX #  *******  14  *******
001374  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001376  000000                       HALT                    ;FALSE R6 .BYTE TRANSFER
```

```
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 657

001400  012767  123456  177172  4$:     MOV     #123456,K1
001406  012767  050505  177174          MOV     #050505,K5
001414  012705  000601                  MOV     #K1+1,%5        ;R5-123456-ODD ADDRESS
001420  012706  000610                  MOV     #K5,%6          ;R6-050505--.EVEN ADDRESS
001424  112625                          MOVB    (6)+,(5)+       ;LOW OF R6 TO HIGH OF R5
001426  022767  042456  177144          CMP     #042456,K1
001434  001405                          BEQ     TST3
001436  012737  000015  000402          MOV     #15,@#$FATAL    ;MOVE TO MAILBOX #  *******  15  *******
001444  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001446  000000                          HALT                    ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 633
```

```
                                ;*****************************************************************************
                                ;TEST 3 BYTE OPERATION WITH SEQUENTIAL ODD/EVEN ADDRESS
                                ;*****************************************************************************
001450  005237  000404          TST3:   INC     @#$TESTN        ;UPDATE TEST NUMBER
001454  022737  000003  000404          CMP     #3,@#$TESTN     ;SEQUENCE ERROR?
001462  001103                        BNE     TST4-12 ;BR TO ERROR HALT ON SEQ ERROR
001464  126767  177124  177123        CMPB    K7,K7+1         ;SAME .WORD LOW TO HIGH
001472  001405                        BEQ     1$
001474  012737  000016  000402        MOV     #16,@#$FATAL    ;MOVE TO MAILBOX #  *******  16  *******
001502  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001504  000000                        HALT                    ;SHOULD COMPARE LOW TO HIGH
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 766

001506  126767  177103  177100  1$:   CMPB    K7+1,K7         ;COMPARE ODD TO .EVEN SAME .WORD
001514  001405                        BEQ     2$
001516  012737  000017  000402        MOV     #17,@#$FATAL    ;MOVE TO MAILBOX #  *******  17  *******
001524  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001526  000000                        HALT                    ;ODD TO .EVEN .BYTE FAILURE
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 755

001530  126767  177063  177056  2$:   CMPB    K10+1,K7        ;SEQUENTIAL .BYTES
                                                                ;DIFFERENT .WORDS
001536  001462                        BEQ     TST4
001540  012737  000020  000402        MOV     #20,@#$FATAL    ;MOVE TO MAILBOX #  *******  20  *******
001546  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001550  000000                        HALT                    ;ODD TO .EVEN FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 744

001552  126767  177040  177032        CMPB    K10,K6
001560  001405                        BEQ     3$
001562  012737  000021  000402        MOV     #21,@#$FATAL    ;MOVE TO MAILBOX #  *******  21  *******
001570  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001572  000000                        HALT                    ;.EVEN TO EVEN FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 733

001574  126767  177015  177015  3$:   CMPB    K7+1,K10+1
001602  001405                        BEQ     4$
001604  012737  000022  000402        MOV     #22,@#$FATAL    ;MOVE TO MAILBOX #  *******  22  *******
001612  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001614  000000                        HALT                    ;ODD TO ODD FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 722

001616  126767  176774  176773  4$:   CMPB    K10,K10+1
001624  001005                        BNE     5$
001626  012737  000023  000402        MOV     #23,@#$FATAL    ;MOVE TO MAILBOX #  *******  23  *******
001634  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001636  000000                        HALT                    ;LOW TO HIGH IN SAME .WORD FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 711

001640  126767  176753  176751  5$:   CMPB    K10+1,K10+1
```

```
  599  001646  001405                        BEQ     6$
  600  001650  012737  000024  000402        MOV     #24,@#$FATAL    ;MOVE TO MAILBOX #  *******  24  *******
  601  001656  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  602  001660  000000                        HALT                    ;HIGH TO LOW IN SAME .WORD FAILED
  603                                                                ; TO SCOPE REPLACE HALT W/ 240
  604                                                                ; AND REPLACE NEXT INST W/ 700
  605
  606  001662  126767  176730  176725  6$:   CMPB    K10,K7+1
  607  001670  001005                        BNE     TST4
  608  001672  012737  000025  000402        MOV     #25,@#$FATAL    ;MOVE TO MAILBOX #  *******  25  *******
  609  001700  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  610  001702  000000                        HALT                    ;.EVEN TO ODD FAILED,OR WRONG $TESTN,OR WRONG $TESTN
  611                                                                ; TO SCOPE REPLACE HALT W/ 240
  612                                                                ; AND REPLACE NEXT INST W/ 667
```

```
                                ;*****************************************************************************
                                ;TEST 4 THE CC BITS
                                ;*****************************************************************************
001704  005237  000404          TST4:   INC     @#$TESTN        ;UPDATE TEST NUMBER
001710  022737  000004  000404          CMP     #4,@#$TESTN     ;SEQUENCE ERROR?
001716  001070                        BNE     TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
001720  000277                        SCC                     ;SET STATUS
001722  005067  011360                CLR     STATUS          ;CLEAR STATUS
001726  106467  011354                MTPS    STATUS
001732  103005                        BCC     1$
001734  012737  000026  000402        MOV     #26,@#$FATAL    ;MOVE TO MAILBOX #  *******  26  *******
001742  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001744  000000                        HALT                    ;C NOT CLEAR
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 764
001746                          1$:
001746  102005                        BVC     2$
001750  012737  000027  000402        MOV     #27,@#$FATAL    ;MOVE TO MAILBOX #  *******  27  *******
001756  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001760  000000                        HALT                    ;V NOT CLEAR
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 756
001762                          2$:
001762  001005                        BNE     3$
001764  012737  000030  000402        MOV     #30,@#$FATAL    ;MOVE TO MAILBOX #  *******  30  *******
001772  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001774  000000                        HALT                    ;Z NOT CLEAR
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 750
001776                          3$:
001776  100005                        BPL     4$
002000  012737  000031  000402        MOV     #31,@#$FATAL    ;MOVE TO MAILBOX #  *******  31  *******
002006  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002010  000000                        HALT                    ;N NOT CLEAR
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 742

002012  000257          4$:     CCC                     ;CLEAR CONDITION CODES
002014  106767  011266                MFPS    STATUS
002020  052767  000017  011260        BIS     #17,STATUS      ;SET STATUS TO ONES
002026  106467  011254                MTPS    STATUS

002032  103405                        BCS     5$
002034  012737  000032  000402        MOV     #32,@#$FATAL    ;MOVE TO MAILBOX #  *******  32  *******
002042  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002044  000000                        HALT                    ;C NOT SET
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 724
002046                          5$:
002046  102405                        BVS     6$
002050  012737  000033  000402        MOV     #33,@#$FATAL    ;MOVE TO MAILBOX #  *******  33  *******
002056  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002060  000000                        HALT                    ;V NOT SET
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 716
```

```
669  002062                                  6$:
670  002062  001405                                  BEQ     7$
671  002064  012737  000034  000402                  MOV     #34,@#$FATAL    ;MOVE TO MAILBOX #  *******  34  *******
672  002072  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
673  002074  000000                                  HALT                    ;Z NOT SET
674                                                                          ; TO SCOPE REPLACE HALT W/ 240
675                                                                          ; AND REPLACE NEXT INST W/ 710
676  002076                                  7$:
677  002076  100405                                  BMI     TST5
678  002100  012737  000035  000402                  MOV     #35,@#$FATAL    ;MOVE TO MAILBOX #  *******  35  *******
679  002106  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
680  002110  000000                                  HALT                    ;N NOT SET,OR WRONG $TESTN
681                                                                          ; TO SCOPE REPLACE HALT W/ 240
682                                                                          ; AND REPLACE NEXT INST W/ 702
```

```
                                ;*****************************************************************************
                                ;TEST 5 THAT A TRAP OCCURES ON A RESERVED INSTRUCTION
                                ;*****************************************************************************
002112  005237  000404          TST5:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002116  022737  000005  00040-          CMP     #5,@#$TESTN     ;SEQUENCE ERROR?
002124  001006                        BNE     TST6-12 ;BR TO ERROR HALT ON SEQ ERROR
002126  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
002132  012767  002154  175650        MOV     #RETA,RTRAP     ;RETURN LOCATION
002140  000007                        TRAPA                   ;RESERVED INSTRUCTION, SHOULD TRAP
002142  012737  000036  000402        MOV     #36,@#$FATAL    ;MOVE TO MAILBOX #  *******  36  *******
002150  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002152  000000                        HALT                    ;DID NOT TRAP OR WRONG $TESTN
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 764
002154                          RETA:
                                ;*****************************************************************************
                                ;TEST 6 DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                ;*****************************************************************************
002154  005237  000404          TST6:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002160  022737  000006  000404        CMP     #6,@#$TESTN     ;SEQUENCE ERROR?
002166  001011                        BNE     TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
002170  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
002174  012767  002204  175606        MOV     #RETB,RTRAP     ;RETURN POINTER
002202  000007                        TRAPA                   ;RESERVED INSTRUCTION
002204  020627  000474          RETB:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
002210  001405                        BEQ     TST7
002212  012737  000037  000402        MOV     #37,@#$FATAL    ;MOVE TO MAILBOX #  *******  37  *******
002220  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002222  000000                        HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 761
```

```
                                ;*****************************************************************************
                                ;TEST 7 THAT PROPER P.C. IS SAVED
                                ;*****************************************************************************
002224  005237  000404          TST7:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002230  022737  000007  000404          CMP     #7,@#$TESTN     ;SEQUENCE ERROR?
002236  001012                        BNE     TST10-12        ;BR TO ERROR HALT ON SEQ ERROR
002240  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
002244  012767  002254  175536        MOV     #RETC,RTRAP     ;RETURN FROM TRAP POINTER
002252  000007                INSTC:  TRAPA                   ;TRAP ON THIS INSTRUCTION
002254  022767  002254  176212  RETC: CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
002262  001405                        BEQ     TST10
002264  012737  000040  000402        MOV     #40,@#$FATAL    ;MOVE TO MAILBOX #  *******  40  *******
002272  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002274  000000                        HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 760
                                ;*****************************************************************************
                                ;TEST 10 THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
                                ;*****************************************************************************
002276  005237  000404          TST10:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002302  022737  000010  000404        CMP     #10,@#$TESTN    ;SEQUENCE ERROR?
002310  001044                        BNE     TST11-12        ;BR TO ERROR HALT ON SEQ ERROR
002312  012706  000500                MOV     #BUFF,SP        ;SET UP
002316  012767  002340  175464        MOV     #RETD,RTRAP     ;SET UP
002324  005067  010756                CLR     STATUS          ;CLEAR STATUS AND PRIORITY
002330  106467  010752                MTPS    STATUS
002334  000257                        CCC
002336  000007                        TRAPA                   ;TRAP
002340  026727  176132  000000  RETD: CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
002346  001405                        BEQ     1$
002350  012737  000041  000402        MOV     #41,@#$FATAL    ;MOVE TO MAILBOX #  *******  41  *******
002356  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002360  000000                        HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753
002362  012706  000500          1$:   MOV     #BUFF,SP        ;SET UP
002366  012767  002412  175414        MOV     #RETE,RTRAP     ;SET UP
002374  012767  000357  010704        MOV     #357,STATUS     ;SET PRIORITY
002402  106467  010700                MTPS    STATUS
002406  000277                        SCC                     ;SET STATUS
002410  000007                        TRAPA                   ;TRAP
002412  026727  176060  000357  RETE: CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
002420  001405                        BEQ     TST11
002422  012737  000042  000402        MOV     #42,@#$FATAL    ;MOVE TO MAILBOX #  *******  42  *******
002430  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002432  000000                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 726
```

```
                                ;*****************************************************************************
                                ;TEST 11 THAT "NEW" STATUS IS CORRECT
                                ;*****************************************************************************
002434  005237  000404          TST11:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002440  022737  000011  000404          CMP     #11,@#$TESTN    ;SEQUENCE ERROR?
002446  001125                        BNE     RSTP1           ;BR TO ERROR HALT ON SEQ ERROR
002450  012706  000500                MOV     #BUFF,SP
002454  012767  002470  175326        MOV     #RETF,RTRAP
002462  005067  175324                CLR     RTRAP+2         ;CLEAR FUTURE PRIORITY AND CC
002466  000007                        TRAPA
002470                          RETF:
002470  100005                        BPL     1$
002472  012737  000043  000402        MOV     #43,@#$FATAL    ;MOVE TO MAILBOX #  *******  43  *******
002500  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002502  000000                        HALT                    ;C NOT CLEARED
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 761
002504                          1$:
002504  001005                        BNE     2$
002506  012737  000044  000402        MOV     #44,@#$FATAL    ;MOVE TO MAILBOX #  *******  44  *******
002514  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002516  000000                        HALT                    ;Z NOT CLEARED
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 753
002520                          2$:
002520  102005                        BVC     3$
002522  012737  000045  000402        MOV     #45,@#$FATAL    ;MOVE TO MAILBOX #  *******  45  *******
002530  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002532  000000                        HALT                    ;V NOT CLEARED
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 745
002534                          3$:
002534  103005                        BCC     4$
002536  012737  000046  000402        MOV     #46,@#$FATAL    ;MOVE TO MAILBOX #  *******  46  *******
002544  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002546  000000                        HALT                    ;C NOT CLEARED
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 737
002550  106767  010532          4$:     MFPS    STATUS
002554  032767  000340  010524        BIT     #340,STATUS             ;TEST PRIORITY
002562  001405                        BEQ     5$
002564  012737  000047  000402        MOV     #47,@#$FATAL    ;MOVE TO MAILBOX #  *******  47  *******
002572  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002574  000000                        HALT                    ;PRIORITY NOT ZERO
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 724
002576  012706  000500          5$:     MOV     #BUFF,SP
002602  012767  002620  175200        MOV     #RETG,RTRAP
002610  012767  000357  175174        MOV     #357,RTRAP+2    ;SET NEW "CC" AND PRIORITY
002616  000007                        TRAPA                   ;TRAP HERE
002620                          RETG:
002620  100405                        BMI     1$
002622  012737  000050  000402        MOV     #50,@#$FATAL    ;MOVE TO MAILBOX #  *******  50  *******
002630  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002632  000000                        HALT                    ;N NOT SET
```

```
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 705
002634                                          1$:
002634  001405                                         BEQ     2$
002636  012737  000051  000402                        MOV     #51,@#$FATAL    ;MOVE TO MAILBOX #  *******  51  *******
002644  005212                                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002646  000000                                         HALT                    ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 677
002650                                          2$:
002650  102405                                         BVS     3$
002652  012737  000052  000402                        MOV     #52,@#$FATAL    ;MOVE TO MAILBOX #  *******  52  *******
002660  005212                                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002662  000000                                         HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 671
002664                                          3$:
002664  103405                                         BCS     4$
002666  012737  000053  000402                        MOV     #53,@#$FATAL    ;MOVE TO MAILBOX #  *******  53  *******
002674  005212                                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002676  000000                                         HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 663
002700  106767  010402                          4$:     MFPS    STATUS
002704  016706  010376                                  MOV     STATUS,SP
002710  042706  000017                                  BIC     #17,SP
002714  022706  000340                                  CMP     #340,SP
002720  001405                                         BEQ     RST1
002722                                          RSTP1:
002722  012737  000054  000402                        MOV     #54,@#$FATAL    ;MOVE TO MAILBOX #  *******  54  *******
002730  005212                                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002732  000000                                         HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 645
002734  012767  000012  175046          RST1:   MOV     #12,10
002742  005067  175044                          CLR     12
```

```
                                        ;*****************************************************************************
                                        ;TEST 12 THAT A TRAP OCCURES FOR A ''TRAP'' INSTRUCTION
                                        ;*****************************************************************************
002746  005237  000404        TST12:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002752  022737  000012  000404        CMP     #12,@#$TESTN    ;SEQUENCE ERROR?
002760  001006                      BNE     TST13-12        ;BR TO ERROR HALT ON SEQ ERROR
002762  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
002766  012767  003010  175040      MOV     #RETA1,RTRAP1   ;RETURN LOCATION
002774  104400                      TRAP                    ;RESERVED INSTRUCTION, SHOULD TRAP
002776  012737  000055  000402      MOV     #55,@#$FATAL    ;MOVE TO MAILBOX #  *******  55  *******
003004  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003006  000000                      HALT                    ;DID NOT TRAP,OR WRONG $TESN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 764
003010                          RETA1:
                                        ;*****************************************************************************
                                        ;TEST 13 DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                        ;*****************************************************************************
003010  005237  000404        TST13:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003014  022737  000013  000404        CMP     #13,@#$TESTN    ;SEQUENCE ERROR?
003022  001011                      BNE     TST14-12        ;BR TO ERROR HALT ON SEQ ERROR
003024  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
003030  012767  003040  174776      MOV     #RETB1,RTRAP1   ;RETURN POINTER
003036  104400                      TRAP                    ;RESERVED INSTRUCTION
003040  020627  000474        RETB1:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
003044  001405                      BEQ     TST14
003046  012737  000056  000402      MOV     #56,@#$FATAL    ;MOVE TO MAILBOX #  *******  56  *******
003054  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003056  000000                      HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 761
                                        ;*****************************************************************************
                                        ;TEST 14 THAT PROPER P.C. IS SAVED
                                        ;*****************************************************************************
003060  005237  000404        TST14:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003064  022737  000014  000404        CMP     #14,@#$TESTN    ;SEQUENCE ERROR?
003072  001012                      BNE     TST15-12        ;BR TO ERROR HALT ON SEQ ERROR
003074  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
003100  012767  003110  174726      MOV     #RETC1,RTRAP1   ;RETURN FROM TRAP POINTER
003106  104400                      TRAP                    ;TRAP ON THIS INSTRUCTION
003110  022767  003110  175356  RETC1:  CMP     #.,BUFF-4       ;CHECK INCREMENTED P.C.
003116  001405                      BEQ     TST15
003120  012737  000057  000402      MOV     #57,@#$FATAL    ;MOVE TO MAILBOX #  *******  57  *******
003126  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003130  000000                      HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 760
```

```
                                ;*****************************************************************************
                                ;TEST 15 THAT 'OLD' STATUS AND PRIORITY ARE PLACED ON STACK
                                ;*****************************************************************************
003132  005237  000404          TST15:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003136  022737  000015  000404          CMP     #15,@#$TESTN    ;SEQUENCE ERROR?
003144  001043                        BNE     TST16-12        ;BR TO ERROR HALT ON SEQ ERROR
003146  012706  000500                MOV     #BUFF,SP        ;SET UP
003152  012767  003174  174654        MOV     #RETD1,RTRAP1   ;SET UP
003160  005067  010122                CLR     STATUS          ;CLEAR STATUS AND PRIORITY
003164  106467  010116                MTPS    STATUS
003170  000257                        CCC
003172  104400                        TRAP                    ;TRAP
003174  026727  175276  000000  RETD1: CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
003202  001405                        BEQ     1$
003204  012737  000060  000402        MOV     #60,@#$FATAL    ;MOVE TO MAILBOX #  *******  60  *******
003212  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003214  000000                        HALT                    ;INCORRECT STATUS
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 753
003216  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
003222  012767  003244  174604        MOV     #RETE1,RTRAP1   ;SET UP
003230  012767  000357  010050        MOV     #357,STATUS             ;SET PRIORITY
003236  106467  010044                MTPS    STATUS
003242  104400                        TRAP                    ;SET CC
003244  026727  175226  000357  RETE1: CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
003252  001405                        BEQ     TST16
003254  012737  000061  000402        MOV     #61,@#$FATAL    ;MOVE TO MAILBOX #  *******  61  *******
003262  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003264  000000                        HALT                    ;INCORRECT STATUS ON STACK
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 727
```

```
                                        ;*****************************************************************************
                                        ;TEST 16 THAT 'NEW'' STATUS IS CORRECT
                                        ;*****************************************************************************
003266 005237 000404            TST16:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003272 022737 000016 000404             CMP     #16,@#$TESTN    ;SEQUENCE ERROR?
003300 001125                           BNE     TST17-12        ;BR TO ERROR HALT ON SEQ ERROR
003302 012706 000500                    MOV     #BUFF,SP
003306 012767 003322 174520             MOV     #RETF1,RTRAP1
003314 005067 174516                    CLR     RTRAP1+2        ;CLEAR FUTURE PRIORITY AND CC
003320 104400                           TRAP
003322                          RETF1:
003322 100005                           BPL     1$
003324 012737 000062 000402             MOV     #62,@#$FATAL    ;MOVE TO MAILBOX #  *******  62  *******
003332 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003334 000000                           HALT                    ;C NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
003336                          1$:
003336 001005                           BNE     2$
003340 012737 000063 000402             MOV     #63,@#$FATAL    ;MOVE TO MAILBOX #  *******  63  *******
003346 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003350 000000                           HALT                    ;Z NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753
003352                          2$:
003352 102005                           BVC     3$
003354 012737 000064 000402             MOV     #64,@#$FATAL    ;MOVE TO MAILBOX #  *******  64  *******
003362 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003364 000000                           HALT                    ;V NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 745
003366                          3$:
003366 103005                           BCC     4$
003370 012737 000065 000402             MOV     #65,@#$FATAL    ;MOVE TO MAILBOX #  *******  65  *******
003376 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003400 000000                           HALT                    ;C NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 737
003402 106767 007700            4$:     MFPS    STATUS
003406 032767 000340 007672             BIT     #340,STATUS             ;TEST PRIORITY
003414 001405                           BEQ     5$
003416 012737 000066 000402             MOV     #66,@#$FATAL    ;MOVE TO MAILBOX #  *******  66  *******
003424 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003426 000000                           HALT                    ;PRIORITY NOT ZERO
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 724
003430 012706 000500            5$:     MOV     #BUFF,SP
003434 012767 003452 174372             MOV     #RETG1,RTRAP1
003442 012767 000357 174366             MOV     #357,RTRAP1+2   ;SET NEW ''CC'' AND PRIORITY
003450 104400                           TRAP                    ;TRAP HERE
003452                          RETG1:
003452 100405                           BMI     1$
003454 012737 000067 000402             MOV     #67,@#$FATAL    ;MOVE TO MAILBOX #  *******  67  *******
003462 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003464 000000                           HALT                    ;N NOT SET
```

```
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 705
003466                                  1$:
003466  001405                          BEQ     2$
003470  012737  000070  000402          MOV     #70,@#$FATAL    ;MOVE TO MAILBOX #  *******  70  *******
003476  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003500  000000                          HALT                    ;Z NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 677
003502                                  2$:
003502  102405                          BVS     3$
003504  012737  000071  000402          MOV     #71,@#$FATAL    ;MOVE TO MAILBOX #  *******  71  *******
003512  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003514  000000                          HALT                    ;V NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 671
003516                                  3$:
003516  103405                          BCS     4$
003520  012737  000072  000402          MOV     #72,@#$FATAL    ;MOVE TO MAILBOX #  *******  72  *******
003526  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003530  000000                          HALT                    ;C NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 663
003532  106767  007550          4$:     MFPS    STATUS
003536  016706  007544                  MOV     STATUS,SP
003542  042706  000017                  BIC     #17,SP
003546  022706  000340                  CMP     #340,SP
003552  001405                          BEQ     TST17
003554  012737  000073  000402          MOV     #73,@#$FATAL    ;MOVE TO MAILBOX #  *******  73  *******
003562  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003564  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 645
```

```
                                ;*****************************************************************************
                                ;TEST 17 THAT ALL COMBINATION OF 'TRAP' WILL TRAP
                                ;*****************************************************************************
003566  005237  000404        TST17:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003572  022737  000017 000404        CMP     #17,@#$TESTN    ;SEQUENCE ERROR?
003600  001011                BNE     RB1AA           ;BR TO ERROR HALT ON SEQ ERROR
003602  012767  104400 000012        MOV     #TRAP,RB1       ;INITIALIZE BASE TRAP INSTRUCTION
003610  012767  003636 174216        MOV     #RA1,34         ;RETURN FROM TRAP TO RA1
003616  012706  000500        RC1:    MOV     #BUFF,SP        ;SET UP STACK POINTER
003622  104400                RB1:    TRAP                    ;TRAP INST WILL BE MODIFIED TO TRAP+377
003624                        RB1AA:
003624  012737  000074 000402        MOV     #74,@#$FATAL    ;MOVE TO MAILBOX ;  *******  74  *******
003632  005212                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003634  000000                HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
003636  005267  177760        RA1:    INC     RB1
003642  022767  104777 177752        CMP     #104777,RB1     ;TRAP+377 TO UPPER LIMIT
003650  103362                BHIS    RC1             ;HAVE WE TESTED ALL
003652  012767  000036 174154        MOV     #36,34
003660  005067  174152                CLR     36
                                ;*****************************************************************************
                                ;TEST 20  THAT A TRAP OCCURES ON AN ''IOT'' INSTRUCTION
                                ;*****************************************************************************
003664  005237  000404        TST20:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003670  022737  000020 000404        CMP     #20,@#$TESTN    ;SEQUENCE ERROR?
003676  001006                BNE     TST21-12        ;BR TO ERROR HALT ON SEQ ERROR
003700  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
003704  012767  003726 174106        MOV     #RETA2,RTRAP2   ;RETURN LOCATION
003712  000004                IOT                     ;RESERVE INSTRUCTION, SHOULD TRAP
003714  012737  000075 000402        MOV     #75,@#$FATAL    ;MOVE TO MAILBOX #  *******  75  *******
003722  005212                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003724  000000                HALT                    ;IOT DID NOT TRAP,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 764
003726                          RETA2:
                                ;*****************************************************************************
                                ;TEST 21  DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                ;*****************************************************************************
003726  005237  000404        TST21:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003732  022737  000021 000404        CMP     #21,@#$TESTN    ;SEQUENCE ERROR?
003740  001011                BNE     TST22-12        ;BR TO ERROR HALT ON SEQ ERROR
003742  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
003746  012767  003756 174044        MOV     #RETB2,RTRAP2   ;RETURN POINTER
003754  000004                IOT                     ;RESERVED INSTRUCTION
003756  020627  000474        RETB2:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
003762  001405                BEQ     TST22
003764  012737  000076 000402        MOV     #76,@#$FATAL    ;MOVE TO MAILBOX #  *******  76  *******
003772  005212                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003774  000000                HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
```

```
1078
1079                                    ;*****************************************************************************
1080                                    ;TEST 22  THAT PROPER P.C. IS SAVED
1081                                    ;*****************************************************************************
1082  003776  005237  000404           TST22:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1083  004002  022737  000022  000404           CMP     #22,@#$TESTN    ;SEQUENCE ERROR?
1084  004010  001012                          BNE     TST23-12        ;BR TO ERROR HALT ON SEQ ERROR
1085  004012  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
1086  004016  012767  004026  173774          MOV     #RETC2,RTRAP2   ;RETURN FROM TRAP POINTER
1087  004024  000004                          IOT                     ;TRAP ON THIS INSTRUCTION
1088  004026  022767  004026  174440  RETC2:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
1089  004034  001405                          BEQ     TST23
1090  004036  012737  000077  000402          MOV     #77,@#$FATAL    ;MOVE TO MAILBOX #  *******  77  *******
1091  004044  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1092  004046  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
1093                                                                  ; TO SCOPE REPLACE HALT W/ 240
1094                                                                  ; AND REPLACE NEXT INST W/ 760
1095                                    ;*****************************************************************************
1096                                    ;TEST 23  THAT 'OLD' STATUS AND PRIORITY ARE PLACED ON STACK
1097                                    ;*****************************************************************************
1098  004050  005237  000404           TST23:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1099  004054  022737  000023  000404           CMP     #23,@#$TESTN    ;SEQUENCE ERROR?
1100  004062  001044                          BNE     TST24-12        ;BR TO ERROR HALT ON SEQ ERROR
1101  004064  012706  000500                  MOV     #BUFF,SP        ;SET UP
1102  004070  012767  004112  173722          MOV     #RETD2,RTRAP2   ;SET UP
1103  004076  005067  007204                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
1104  004102  106467  007200                  MTPS    STATUS
1105  004106  000257                          CCC
1106  004110  000004                          IOT                     ;TRAP
1107  004112  026727  174360  000000  RETD2:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1108  004120  001405                          BEQ     1$
1109  004122  012737  000100  000402          MOV     #100,@#$FATAL   ;MOVE TO MAILBOX #  *******  100  *******
1110  004130  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1111  004132  000000                          HALT                    ;INCORRECT STATUS
1112                                                                  ; TO SCOPE REPLACE HALT W/ 240
1113                                                                  ; AND REPLACE NEXT INST W/ 753
1114  004134  012706  000500           1$:    MOV     #BUFF,SP        ;SET UP
1115  004140  012767  004164  173652          MOV     #RETE2,RTRAP2   ;SET UP
1116  004146  012767  000357  007132          MOV     #357,STATUS             ;SET PRIORITY
1117  004154  106467  007126                  MTPS    STATUS
1118  004160  000277                          SCC                     ;SET CC
1119  004162  000004                          IOT                     ;TRAP
1120  004164  026727  174306  000357  RETE2:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1121  004172  001405                          BEQ     TST24
1122  004174  012737  000101  000402          MOV     #101,@#$FATAL   ;MOVE TO MAILBOX #  *******  101  *******
1123  004202  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1124  004204  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
1125                                                                  ; TO SCOPE REPLACE HALT W/ 240
1126                                                                  ; AND REPLACE NEXT INST W/ 726
```

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1127
1128                                    ;*****************************************************************************
1129                                    ;TEST 24  THAT 'NEW' STATUS IS CORRECT
1130                                    ;*****************************************************************************
1131  004206  005237  000404   TST24:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1132  004212  022737  000024  000404   CMP     #24,@#$TESTN    ;SEQUENCE ERROR?
1133  004220  001125                   BNE     STP             ;BR TO ERROR HALT ON SEQ ERROR
1134  004222  012706  000500           MOV     #BUFF,SP
1135  004226  012767  004242  173564   MOV     #RETF2,RTRAP2
1136  004234  005067  173562           CLR     RTRAP2+2        ;CLEAR FUTURE PRIORITY AND CC
1137  004240  000004                   IOT
1138  004242                   RETF2:
1139  004242  100005                   BPL     1$
1140  004244  012737  000102  000402   MOV     #102,@#$FATAL   ;MOVE TO MAILBOX #  *******  102  *******
1141  004252  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1142  004254  000000                   HALT                    ;C NOT CLEARED
1143                                                            ; TO SCOPE REPLACE HALT W/ 240
1144                                                            ; AND REPLACE NEXT INST W/ 761
1145  004256                   1$:
1146  004256  001005                   BNE     2$
1147  004260  012737  000103  000402   MOV     #103,@#$FATAL   ;MOVE TO MAILBOX #  *******  103  *******
1148  004266  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1149  004270  000000                   HALT                    ;Z NOT CLEARED
1150                                                            ; TO SCOPE REPLACE HALT W/ 240
1151                                                            ; AND REPLACE NEXT INST W/ 753
1152  004272                   2$:
1153  004272  102005                   BVC     3$
1154  004274  012737  000104  000402   MOV     #104,@#$FATAL   ;MOVE TO MAILBOX #  *******  104  *******
1155  004302  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1156  004304  000000                   HALT                    ;V NOT CLEARED
1157                                                            ; TO SCOPE REPLACE HALT W/ 240
1158                                                            ; AND REPLACE NEXT INST W/ 745
1159  004306                   3$:     /
1160  004306  103005                   BCC     4$
1161  004310  012737  000105  000402   MOV     #105,@#$FATAL   ;MOVE TO MAILBOX #  *******  105  *******
1162  004316  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1163  004320  000000                   HALT                    ;C NOT CLEARED
1164                                    /                       ; TO SCOPE REPLACE HALT W/ 240
1165                                                            ; AND REPLACE NEXT INST W/ 737
1166  004322  106767  006760   4$:     MFPS    STATUS
1167  004326  032767  000340  006752   BIT     #340,STATUS             ;TEST PRIORITY
1168  004334  001405                   BEQ     5$
1169  004336  012737  000106  000402   MOV     #106,@#$FATAL   ;MOVE TO MAILBOX #  *******  106  *******
1170  004344  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1171  004346  000000                   HALT                    ;PRIORITY NOT ZERO
1172                                                            ; TO SCOPE REPLACE HALT W/ 240
1173                                                            ; AND REPLACE NEXT INST W/ 724
1174  004350  012706  000500   5$:     MOV     #BUFF,SP
1175  004354  012767  004372  173436   MOV     #RETG2,RTRAP2
1176  004362  012767  000357  173432   MOV     #357,RTRAP2+2   ;SET NEW "CC" AND PRIORITY
1177  004370  000004                   IOT                     ;TRAP HERE
1178  004372                   RETG2:
1179  004372  100405                   BMI     1$
1180  004374  012737  000107  000402   MOV     #107,@#$FATAL   ;MOVE TO MAILBOX #  *******  107  *******
1181  004402  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1182  004404  000000                   HALT                    ;N NOT SET
```

```
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 705
004406                                  1$:
004406  001405                                 BEQ     2$
004410  012737  000110  000402                 MOV     #110,@#$FATAL   ;MOVE TO MAILBOX #  *******  110  *******
004416  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004420  000000                                 HALT                    ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 677
004422                                  2$:
004422  102405                                 BVS     3$
004424  012737  000111  000402                 MOV     #111,@#$FATAL   ;MOVE TO MAILBOX #  *******  111  *******
004432  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004434  000000                                 HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 671
004436                                  3$:
004436  103405                                 BCS     4$
004440  012737  000112  000402                 MOV     #112,@#$FATAL   ;MOVE TO MAILBOX #  *******  112  *******
004446  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004450  000000                                 HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 663
004452  106767  006630          4$:            MFPS    STATUS
004456  016706  006624                         MOV     STATUS,SP
004462  042706  000017                         BIC     #17,SP
004466  022706  000340                         CMP     #340,SP
004472  001405                                 BEQ     STPA
004474                          STP:
004474  012737  000113  000402                 MOV     #113,@#$FATAL   ;MOVE TO MAILBOX #  *******  113  *******
004502  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004504  000000                                 HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 645
004506  012767  000022  173304  STPA:          MOV     #22,20
004514  005067  173302                         CLR     22
```

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1219
1220                                    ;*****************************************************************************
1221                                    ;TEST 25 THAT TRAP OCCURS ON AN EMT RESTRICTED INSTRUCTION
1222                                    ;*****************************************************************************
1223  004520  005237  000404           TST25:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1224  004524  022737  000025  000404           CMP     #25,@#$TESTN    ;SEQUENCE ERROR?
1225  004532  001006                   BNE     TST26-12        ;BR TO ERROR HALT ON SEQ ERROR
1226  004534  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1227  004540  012767  004562  173262   MOV     #RETA3,RTRAP3   ;RETURN LOCATION
1228  004546  104000                   EMT                     ;RESERVE INSTRUCTIOM, SHOULD TRAP
1229  004550  012737  000114  000402   MOV     #114,@#$FATAL   ;MOVE TO MAILBOX #  *******  114  *******
1230  004556  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1231  004560  000000                   HALT                    ;EMT DID NOT TRAP,OR WRONG $TESTN
1232                                                            ; TO SCOPE REPLACE HALT W/ 240
1233                                                            ; AND REPLACE NEXT INST W/ 764
1234  004562                           RETA3:
1235                                    ;*****************************************************************************
1236                                    ;TEST 26  DECREMENT OF STACK POINTER ON A TRAP OPERATION
1237                                    ;*****************************************************************************
1238  004562  005237  000404           TST26:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1239  004566  022737  000026  000404           CMP     #26,@#$TESTN    ;SEQUENCE ERROR?
1240  004574  001011                   BNE     TST27-12        ;BR TO ERROR HALT ON SEQ ERROR
1241  004576  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1242  004602  012767  004612  173220   MOV     #RETB3,RTRAP3   ;RETURN POINTER
1243  004610  104000                   EMT                     ;RESERVED INSTRUCTION
1244  004612  020627  000474           RETB3:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1245  004616  001405                   BEQ     TST27
1246  004620  012737  000115  000402   MOV     #115,@#$FATAL   ;MOVE TO MAILBOX #  *******  115  *******
1247  004626  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1248  004630  000000                   HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1249                                                            ; TO SCOPE REPLACE HALT W/ 240
1250                                                            ; AND REPLACE NEXT INST W/ 761
1251                                    ;*****************************************************************************
1252                                    ;TEST 27  THAT PROPER P.C. IS SAVED
1253                                    ;*****************************************************************************
1254  004632  005237  000404           TST27:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1255  004636  022737  000027  000404           CMP     #27,@#$TESTN    ;SEQUENCE ERROR?
1256  004644  001012                   BNE     TST30-12        ;BR TO ERROR HALT ON SEQ ERROR
1257  004646  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1258  004652  012767  004662  173150   MOV     #RETC3,RTRAP3   ;RTURN FROM TRAP POINTER
1259  004660  104000                   EMT                     ;TRAP ON THIS INSTRICTION
1260  004662  022767  004662  173604   RETC3:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
1261  004670  001405                   BEQ     TST30
1262  004672  012737  000116  000402   MOV     #116,@#$FATAL   ;MOVE TO MAILBOX #  *******  116  *******
1263  004700  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1264  004702  000000                   HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
1265                                                            ; TO SCOPE REPLACE HALT W/ 240
1266                                                            ; AND REPLACE NEXT INST W/ 760
```

```
1267
1268                                    ;*****************************************************************************
1269                                    ;TEST 30  THAT 'OLD'' STATUS AND PRIORITY ARE PLACED ON STACK
1270                                    ;*****************************************************************************
1271  004704 005237 000404              TST30:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1272  004710 022737 000030 000404             CMP     #30,@#$TESTN    ;SEQUENCE ERROR?
1273  004716 001044                           BNE     TST31-12        ;BR TO ERROR HALT ON SEQ ERROR
1274  004720 012706 000500                    MOV     #BUFF,SP        ;SET UP
1275  004724 012767 004746 173076             MOV     #RETD3,RTRAP3   ;SET UP
1276  004732 005067 006350                    CLR     STATUS          ;CLEAR STATUS AND PRIORITY
1277  004736 106467 006344                    MTPS    STATUS
1278  004742 000257                           CCC
1279  004744 104000                           EMT                     ;TRAP
1280  004746 026727 173524 000000 RETD3:      CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1281  004754 001405                           BEQ     1$
1282  004756 012737 000117 000402            MOV     #117,@#$FATAL   ;MOVE TO MAILBOX #  *******  117  *******
1283  004764 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1284  004766 000000                           HALT                    ;INCORRECT STATUS
1285                                                                   ; TO SCOPE REPLACE HALT W/ 240
1286                                                                   ; AND REPLACE NEXT INST W/ 753
1287  004770 012706 000500              1$:   MOV     #BUFF,SP        ;SET UP
1288  004774 012767 005020 173026             MOV     #RETE3,RTRAP3   ;SET UP
1289  005002 012767 000357 006276             MOV     #357,STATUS             ;SET PRIORITY
1290  005010 106467 006272                    MTPS    STATUS
1291  005014 000277                           SCC                     ;SET CC
1292  005016 104000                           EMT                     ;TRAP
1293  005020 026727 173452 000357 RETE3:      CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1294  005026 001405                           BEQ     TST31
1295  005030 012737 000120 000402            MOV     #120,@#$FATAL   ;MOVE TO MAILBOX #  *******  120  *******
1296  005036 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1297  005040 000000                           HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
1298                                                                   ; TO SCOPE REPLACE HALT W/ 240
1299                                                                   ; AND REPLACE NEXT INST W/ 726
```

```
                                ;*****************************************************************************
                                ;TEST 31  THAT 'NEW' STATUS IS CORRECT
                                ;*****************************************************************************
005042  005237  000404  TST31:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005046  022737  000031  000404  CMP     #31,@#$TESTN    ;SEQUENCE ERROR?
005054  001125                  BNE     TST32-12        ;BR TO ERROR HALT ON SEQ ERROR
005056  012706  000500          MOV     #BUFF,SP
005062  012767  005076  172740  MOV     #RETF3,RTRAP3
005070  005067  172736          CLR     RTRAP3+2        ;CLEAR FUTURE PRIORITY AND CC
005074  104000                  EMT
005076                  RETF3:                          ;TEST FOR "C" CLEARED
005076  100005                  BPL     1$
005100  012737  000121  000402  MOV     #121,@#$FATAL   ;MOVE TO MAILBOX #  *******  121  *******
005106  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005110  000000                  HALT                    ;C NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
005112                  1$:
005112  001005                  BNE     2$
005114  012737  000122  000402  MOV     #122,@#$FATAL   ;MOVE TO MAILBOX #  *******  122  *******
005122  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005124  000000                  HALT                    ;Z NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 753
005126                  2$:
005126  102005                  BVC     3$
005130  012737  000123  000402  MOV     #123,@#$FATAL   ;MOVE TO MAILBOX #  *******  123  *******
005136  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005140  000000                  HALT                    ;V NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 745
005142                  3$:
005142  103005                  BCC     4$
005144  012737  000124  000402  MOV     #124,@#$FATAL   ;MOVE TO MAILBOX #  *******  124  *******
005152  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005154  000000                  HALT                    ;C NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 737
005156  106767  006124  4$:     MFPS    STATUS
005162  032767  000340  006116  BIT     #340,STATUS             ;TEST PRIORITY
005170  001405                  BEQ     5$
005172  012737  000125  000402  MOV     #125,@#$FATAL   ;MOVE TO MAILBOX #  *******  125  *******
005200  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005202  000000                  HALT                    ;PRIORITY NOT ZERO
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 724
005204  012706  000500  5$:     MOV     #BUFF,SP
005210  012767  005226  172612  MOV     #RETG3,RTRAP3
005216  012767  000357  172606  MOV     #357,RTRAP3+2   ;SET NEW "CC" AND PRIORITY
005224  104000                  EMT                     ;TRAP HERE
005226                  RETG3:
005226  100405                  BMI     1$
005230  012737  000126  000402  MOV     #126,@#$FATAL   ;MOVE TO MAILBOX #  *******  126  *******
005236  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005240  000000                  HALT                    ;N NOT SET
```

```
1356                                                    ; TO SCOPE REPLACE HALT W/ 240
1357                                                    ; AND REPLACE NEXT INST W/ 705
1358  005242                            1$:
1359  005242  001405                          BEQ     2$
1360  005244  012737  000127  000402          MOV     #127,@#$FATAL   ;MOVE TO MAILBOX #  *******  127  *******
1361  005252  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1362  005254  000000                          HALT                    ;Z NOT SET
1363                                                    ; TO SCOPE REPLACE HALT W/ 240
1364                                                    ; AND REPLACE NEXT INST W/ 677
1365  005256                            2$:
1366  005256  102405                          BVS     3$
1367  005260  012737  000130  000402          MOV     #130,@#$FATAL   ;MOVE TO MAILBOX #  *******  130  *******
1368  005266  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1369  005270  000000                          HALT                    ;V NOT SET
1370                                                    ; TO SCOPE REPLACE HALT W/ 240
1371                                                    ; AND REPLACE NEXT INST W/ 671
1372  005272                            3$:
1373  005272  103405                          BCS     4$
1374  005274  012737  000131  000402          MOV     #131,@#$FATAL   ;MOVE TO MAILBOX #  *******  131  *******
1375  005302  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1376  005304  000000                          HALT                    ;C NOT SET
1377                                                    ; TO SCOPE REPLACE HALT W/ 240
1378                                                    ; AND REPLACE NEXT INST W/ 663
1379  005306  106767  005774           4$:    MFPS    STATUS
1380  005312  016706  005770                  MOV     STATUS,SP
1381  005316  042706  000017                  BIC     #17,SP
1382  005322  022706  000340                  CMP     #340,SP
1383  005326  001405                          BEQ     TST32
1384  005330  012737  000132  000402          MOV     #132,@#$FATAL   ;MOVE TO MAILBOX #  *******  132  *******
1385  005336  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1386  005340  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
1387                                                    ; TO SCOPE REPLACE HALT W/ 240
1388                                                    ; AND REPLACE NEXT INST W/ 645
```

```
1389
1390                                    ;*****************************************************************************
1391                                    ;TEST 32 THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
1392                                    ;*****************************************************************************
1393  005342  005237  000404     TST32:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1394  005346  022737  000032  000404     CMP     #32,@#$TESTN    ;SEQUENCE ERROR?
1395  005354  001011                     BNE     RBBB            ;BR TO ERROR HALT ON SEQ ERROR
1396  005356  012767  104000  000012     MOV     #EMT,RB         ;INITIALIZE BASE EMT INSTRUCTION
1397  005364  012767  005412  172436     MOV     #RA,30          ;RETURN FROM TRAP TO RA
1398  005372  012706  000500        RC:  MOV     #BUFF,SP        ;SET UP STACK POINTER
1399  005376  104000                 RB:  EMT                     ;TRAP INST. WILL BE MODIFIED TO EMT+377
1400  005400                      RBBB:
1401  005400  012737  000133  000402     MOV     #133,@#$FATAL   ;MOVE TO MAILBOX #  *******  133  *******
1402  005406  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1403  005410  000000                     HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TESTN
1404                                                             ; TO SCOPE REPLACE HALT W/ 240
1405                                                             ; AND REPLACE NEXT INST W/ 761
1406  005412  005267  177760        RA:  INC     RB
1407  005416  022767  104377  177752     CMP     #104377,RB      ;EMT+377 TO EMT?
1408  005424  103362                     BHIS    RC              ;HAVE WE TESTED ALL
1409  005426  012767  000032  172374     MOV     #32,30
1410  005434  005067  172372             CLR     32              ;HALT
1411                                    ;*****************************************************************************
1412                                    ;TEST 33 THAT A TRAP OCCURES ON AN 'BPT'' INSTRUCTION
1413                                    ;*****************************************************************************
1414  005440  005237  000404     TST33:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1415  005444  022737  000033  000404     CMP     #33,@#$TESTN    ;SEQUENCE ERROR?
1416  005452  001006                     BNE     TST34-12        ;BR TO ERROR HALT ON SEQ ERROR
1417  005454  012706  000500             MOV     #BUFF,SP        ;STACK POINTER SETUP
1418  005460  012767  005502  172326     MOV     #RETA4,RTRAP4   ;RETURN LOCATION
1419  005466  000003                     TRT                     ;RESERVED INSTRUCTION, SHOULD TRAP
1420  005470  012737  000134  000402     MOV     #134,@#$FATAL   ;MOVE TO MAILBOX #  *******  134  *******
1421  005476  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1422  005500  000000                     HALT                    ;DID NOT TRAP,OR WRONG $TESTN
1423                                                             ; TO SCOPE REPLACE HALT W/ 240
1424                                                             ; AND REPLACE NEXT INST W/ 764
1425  005502                      RETA4:
```

```
1426
1427                                    ;*****************************************************************************
1428                                    ;TEST 34 DECREMENT OF STACK POINTER ON A TRAP OPERATION
1429                                    ;*****************************************************************************
1430  005502  005237  000404   TST34:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1431  005506  022737  000034  000404   CMP     #34,@#$TESTN    ;SEQUENCE ERROR?
1432  005514  001011                   BNE     TST35-12        ;BR TO ERROR HALT ON SEQ ERROR
1433  005516  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1434  005522  012767  005532  172264   MOV     #RETB4,RTRAP4   ;RETURN POINTER
1435  005530  000003                   TRT                     ;RESERVED INSTRUCTION
1436  005532  020627  000474   RETB4:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1437  005536  001405                   BEQ     TST35
1438  005540  012737  000135  000402   MOV     #135,@#$FATAL   ;MOVE TO MAILBOX #  *******  135  *******
1439  005546  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1440  005550  000000                   HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1441                                                            ; TO SCOPE REPLACE HALT W/ 240
1442                                                            ; AND REPLACE NEXT INST W/ 761
1443                                    ;*****************************************************************************
1444                                    ;TEST 35 THAT PROPER P.C. IS SAVED
1445                                    ;*****************************************************************************
1446  005552  005237  000404   TST35:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1447  005556  022737  000035  000404   CMP     #35,@#$TESTN    ;SEQUENCE ERROR?
1448  005564  001012                   BNE     TST36-12        ;BR TO ERROR HALT ON SEQ ERROR
1449  005566  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1450  005572  012767  005602  172214   MOV     #RETC4,RTRAP4   ;RETURN FROM TRAP POINTER
1451  005600  000003                   TRT                     ;TRAP ON THIS INSTRUCTION
1452  005602  022767  005602  172664   CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
1453  005610  001405                   BEQ     TST36
1454  005612  012737  000136  000402   MOV     #136,@#$FATAL   ;MOVE TO MAILBOX #  *******  136  *******
1455  005620  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1456  005622  000000                   HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
1457                                                            ; TO SCOPE REPLACE HALT W/ 240
1458                                                            ; AND REPLACE NEXT INST W/ 760
```

```
1459
1460                                    ;*****************************************************************************
1461                                    ;TEST 36 THAT 'OLD'' STATUS AND PRIORITY ARE PLACED ON STACK
1462                                    ;*****************************************************************************
1463  005624  005237  000404           TST36:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1464  005630  022737  000036  000404           CMP     #36,@#$TESTN    ;SEQUENCE ERROR?
1465  005636  001044                          BNE     TST37-12        ;BR TO ERROR HALT ON SEQ ERROR
1466  005640  012706  000500                  MOV     #BUFF,SP        ;SET UP
1467  005644  012767  005666  172142          MOV     #RETD4,RTRAP4   ;SET UP
1468  005652  005067  005430                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
1469  005656  106467  005424                  MTPS    STATUS
1470  005662  000257                          CCC
1471  005664  000003                          TRT                     ;TRAP
1472  005666  026727  172604  000000  RETD4:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1473  005674  001405                          BEQ     1$
1474  005676  012737  000137  000402          MOV     #137,@#$FATAL   ;MOVE TO MAILBOX #  *******  137  *******
1475  005704  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1476  005706  000000                          HALT                    ;INCORRECT STATUS
1477                                                                  ; TO SCOPE REPLACE HALT W/ 240
1478                                                                  ; AND REPLACE NEXT INST W/ 753
1479  005710  012706  000500           1$:    MOV     #BUFF,SP        ;SET UP
1480  005714  012767  005740  172072          MOV     #RETE4,RTRAP4   ;SET UP
1481  005722  012767  000357  005356          MOV     #357,STATUS             ;SET PRIORITY
1482  005730  106467  005352                  MTPS    STATUS
1483  005734  000277                          SCC                     ;SET-SET CC
1484  005736  000003                          TRT                     ;TRAP
1485  005740  026727  172532  000357  RETE4:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1486  005746  001405                          BEQ     TST37
1487  005750  012737  000140  000402          MOV     #140,@#$FATAL   ;MOVE TO MAILBOX #  *******  140  *******
1488  005756  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1489  005760  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
1490                                                                  ; TO SCOPE REPLACE HALT W/ 240
1491                                                                  ; AND REPLACE NEXT INST W/ 726
```

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1492
1493                                    ;*****************************************************************************
1494                                    ;TEST 37 THAT 'NEW'' STATUS IS CORRECT
1495                                    ;*****************************************************************************
1496  005762  005237  000404    TST37:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1497  005766  022737  000037  000404    CMP     #37,@#$TESTN    ;SEQUENCE ERROR?
1498  005774  001125                    BNE     RSTP2           ;BR TO ERROR HALT ON SEQ ERROR
1499  005776  012706  000500            MOV     #BUFF,SP
1500  006002  012767  006016  172004    MOV     #RETF4,RTRAP4
1501  006010  005067  172002            CLR     RTRAP4+2        ;CLEAR FUTURE PRIORITY AND CC
1502  006014  000003                    TRT
1503  006016                    RETF4:
1504  006016  100005                    BPL     1$
1505  006020  012737  000141  000402    MOV     #141,@#$FATAL   ;MOVE TO MAILBOX #  *******  141  *******
1506  006026  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1507  006030  000000                    HALT                    ;C NOT CLEARED
1508                                                            ; TO SCOPE REPLACE HALT W/ 240
1509                                                            ; AND REPLACE NEXT INST W/ 761
1510  006032                    1$:
1511  006032  001005                    BNE     2$
1512  006034  012737  000142  000402    MOV     #142,@#$FATAL   ;MOVE TO MAILBOX #  *******  142  *******
1513  006042  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1514  006044  000000                    HALT                    ;Z NOT CLEARED
1515                                                            ; TO SCOPE REPLACE HALT W/ 240
1516                                                            ; AND REPLACE NEXT INST W/ 753
1517  006046                    2$:
1518  006046  102005                    BVC     3$
1519  006050  012737  000143  000402    MOV     #143,@#$FATAL   ;MOVE TO MAILBOX #  *******  143  *******
1520  006056  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1521  006060  000000                    HALT                    ;V NOT CLEARED
1522                                                            ; TO SCOPE REPLACE HALT W/ 240
1523                                                            ; AND REPLACE NEXT INST W/ 745
1524  006062                    3$:
1525  006062  103005                    BCC     4$
1526  006064  012737  000144  000402    MOV     #144,@#$FATAL   ;MOVE TO MAILBOX #  *******  144  *******
1527  006072  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1528  006074  000000                    HALT                    ;C NOT CLEARED
1529                                                            ; TO SCOPE REPLACE HALT W/ 240
1530                                                            ; AND REPLACE NEXT INST W/ 737
1531  006076  106767  005204    4$:     MFPS    STATUS
1532  006102  032767  000340  005176    BIT     #340,STATUS             ;TEST PRIORITY
1533  006110  001405                    BEQ     5$
1534  006112  012737  000145  000402    MOV     #145,@#$FATAL   ;MOVE TO MAILBOX #  *******  145  *******
1535  006120  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1536  006122  000000                    HALT                    ;PRIORITY NOT ZERO
1537                                                            ; TO SCOPE REPLACE HALT W/ 240
1538                                                            ; AND REPLACE NEXT INST W/ 724
1539  006124  012706  000500    5$:     MOV     #BUFF,SP
1540  006130  012767  006146  171656    MOV     #RETG4,RTRAP4
1541  006136  012767  000357  171652    MOV     #357,RTRAP4+2   ;SET NEW ''CC'' AND PRIORITY
1542  006144  000003                    TRT                     ;TRAP HERE
1543  006146                    RETG4:
1544  006146  100405                    BMI     1$
1545  006150  012737  000146  000402    MOV     #146,@#$FATAL   ;MOVE TO MAILBOX #  *******  146  *******
1546  006156  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1547  006160  000000                    HALT                    ;N NOT SET
```

```
1548                                                    ; TO SCOPE REPLACE HALT W/ 240
1549                                                    ; AND REPLACE NEXT INST W/ 705
1550  006162                            1$:
1551  006162  001405                         BEQ     2$
1552  006164  012737  000147  000402        MOV     #147,@#$FATAL   ;MOVE TO MAILBOX #  *******  147  *******
1553  006172  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1554  006174  000000                         HALT                    ;Z NOT SET
1555                                                    ; TO SCOPE REPLACE HALT W/ 240
1556                                                    ; AND REPLACE NEXT INST W/ 677
1557  006176                            2$:
1558  006176  102405                         BVS     3$
1559  006200  012737  000150  000402        MOV     #150,@#$FATAL   ;MOVE TO MAILBOX #  *******  150  *******
1560  006206  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1561  006210  000000                         HALT                    ;V NOT SET
1562                                                    ; TO SCOPE REPLACE HALT W/ 240
1563                                                    ; AND REPLACE NEXT INST W/ 671
1564  006212                            3$:
1565  006212  103405                         BCS     4$
1566  006214  012737  000151  000402        MOV     #151,@#$FATAL   ;MOVE TO MAILBOX #  *******  151  *******
1567  006222  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1568  006224  000000                         HALT                    ;C NOT SET
1569                                                    ; TO SCOPE REPLACE HALT W/ 240
1570                                                    ; AND REPLACE NEXT INST W/ 663
1571  006226  106767  005054           4$:  MFPS    STATUS
1572  006232  016706  005050               MOV     STATUS,SP
1573  006236  042706  000017               BIC     #17,SP
1574  006242  022706  000340               CMP     #340,SP
1575  006246  001405                        BEQ     RST2
1576  006250                           RSTP2:
1577  006250  012737  000152  000402        MOV     #152,@#$FATAL   ;MOVE TO MAILBOX #  *******  152  *******
1578  006256  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1579  006260  000000                         HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
1580                                                    ; TO SCOPE REPLACE HALT W/ 240
1581                                                    ; AND REPLACE NEXT INST W/ 645
1582  006262  012767  000016  171524  RST2:  MOV     #16,14
1583  006270  005067  171522               CLR     16
1584
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1585
1586                                    ;PDP-11 ILLEGAL AND ADDRESS INSTRUCTION TEST
1587                                    ;ALL INSTRUCTIONS THAT ARE RESERVED
1588                                    ;SHOULD TRAP TO LOCATION 4, AND THE
1589                                    ;PC THAT POINTS TO THE TRAPPING INSTRUCTION
1590                                    ;SHOULD BE PLACED ON THE STACK
1591
1592                                    ;*************************************************************************************
1593                                    ;TEST 40 THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
1594                                    ;*************************************************************************************
1595  006274  005237  000404       TST40:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1596  006300  022737  000040  000404        CMP     #40,@#$TESTN    ;SEQUENCE ERROR?
1597  006306  001006                       BNE     TST41-12        ;BR TO ERROR HALT ON SEQ ERROR
1598  006310  012706  000500               MOV     #BUFF,SP        ;STACK POINTER SETUP
1599  006314  012767  006336  171462       MOV     #RETA5,RTRAP5   ;RETURN LOCATION
1600  006322  000100                       JMP     %0              ;ILLEGAL INSTRUCTION, SHOULD TRAP
1601  006324  012737  000153  000402       MOV     #153,@#$FATAL   ;MOVE TO MAILBOX #  *******  153  *******
1602  006332  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1603  006334  000000                       HALT                    ;DID NOT TRAP,OR WRONG $TESTN
1604                                                               ; TO SCOPE REPLACE HALT W/ 240
1605                                                               ; AND REPLACE NEXT INST W/ 764
1606  006336                        RETA5:
1607                                    ;*************************************************************************************
1608                                    ;TEST 41 DECREMENT OF STACK POINTER ON A TRAP OPERATION
1609                                    ;*************************************************************************************
1610  006336  005237  000404       TST41:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1611  006342  022737  000041  000404        CMP     #41,@#$TESTN    ;SEQUENCE ERROR?
1612  006350  001011                       BNE     TST42-12        ;BR TO ERROR HALT ON SEQ ERROR
1613  006352  012706  000500               MOV     #BUFF,SP        ;STACK POINTER SETUP
1614  006356  012767  006366  171420       MOV     #RETB5,RTRAP5   ;RETURN POINTER
1615  006364  000100                       JMP     %0              ;RESERVED INSTRUCTION
1616  006366  020627  000474        RETB5:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1617  006372  001405                       BEQ     TST42
1618  006374  012737  000154  000402       MOV     #154,@#$FATAL   ;MOVE TO MAILBOX #  *******  154  *******
1619  006402  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1620  006404  000000                       HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1621                                                               ; TO SCOPE REPLACE HALT W/ 240
1622                                                               ; AND REPLACE NEXT INST W/ 761
```

```
                                        ;*****************************************************************************
                                        ;TEST 42 THAT PROPER P.C. IS SAVED
                                        ;*****************************************************************************
006406 005237 000404            TST42:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006412 022737 000042 000404             CMP     #42,@#$TESTN    ;SEQUENCE ERROR?
006420 001012                           BNE     TST43-12        ;BR TO ERROR HALT ON SEQ ERROR
006422 012706 000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
006426 012767 006436 171350             MOV     #RETC5,RTRAP5   ;RETURN FROM TRAP POINTER
006434 000100                           JMP     %0              ;TRAP ON THIS INSTRUCTION
006436 022767 006436 172030     RETC5:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
006444 001405                           BEQ     TST43
006446 012737 000155 000402             MOV     #155,@#$FATAL   ;MOVE TO MAILBOX #  *******  155  *******
006454 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006456 000000                           HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 760
                                        ;*****************************************************************************
                                        ;TEST 43 THAT ''OLD'' STATUS AND PRIORITY ARE PLACED ON STACK
                                        ;*****************************************************************************
006460 005237 000404            TST43:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006464 022737 000043 000404             CMP     #43,@#$TESTN    ;SEQUENCE ERROR?
006472 001044                           BNE     TST44-12        ;BR TO ERROR HALT ON SEQ ERROR
006474 012706 000500                    MOV     #BUFF,SP        ;SET UP
006500 012767 006522 171276             MOV     #RETD5,RTRAP5   ;SET UP
006506 005067 004574                    CLR     STATUS          ;CLEAR STATUS AND PRIORITY
006512 106467 004570                    MTPS    STATUS
006516 000257                           CCC
006520 000100                           JMP     %0              ;TRAP
006522 026727 171750 000000     RETD5:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
006530 001405                           BEQ     1$
006532 012737 000156 000402             MOV     #156,@#$FATAL   ;MOVE TO MAILBOX #  *******  156  *******
006540 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006542 000000                           HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753
006544 012706 000500            1$:     MOV     #BUFF,SP        ;SET UP
006550 012767 006574 171226             MOV     #RETE5,RTRAP5   ;SET UP
006556 012767 000357 004522             MOV     #357,STATUS             ;SET PRIORITY
006564 106467 004516                    MTPS    STATUS
006570 000277                           SCC                     ;SET CC
006572 000100                           JMP     %0              ;TRAP
006574 026727 171676 000357     RETE5:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
006602 001405                           BEQ     TST44
006604 012737 000157 000402             MOV     #157,@#$FATAL   ;MOVE TO MAILBOX #  *******  157  *******
006612 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006614 000000                           HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 726
```

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1672
1673                                    ;*****************************************************************************
1674                                    ;TEST 44 THAT 'NEW' STATUS IS CORRECT
1675                                    ;*****************************************************************************
1676  006616  005237  000404           TST44:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1677  006622  022737  000044  000404           CMP     #44,@#$TESTN    ;SEQUENCE ERROR?
1678  006630  001123                           BNE     TST45-12        ;BR TO ERROR HALT ON SEQ ERROR
1679  006632  012706  000500                   MOV     #BUFF,SP
1680  006636  012767  006652  171140           MOV     #RETF5,RTRAP5
1681  006644  005067  171136                   CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
1682  006650  000100                           JMP     %0
1683  006652                           RETF5:
1684  006652  100005                           BPL     1$
1685  006654  012737  000160  000402           MOV     #160,@#$FATAL   ;MOVE TO MAILBOX #  *******  160  *******
1686  006662  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1687  006664  000000                           HALT                    ;C NOT CLEARED
1688                                                                   ; TO SCOPE REPLACE HALT W/ 240
1689                                                                   ; AND REPLACE NEXT INST W/ 761
1690  006666                           1$:
1691  006666  001005                           BNE     2$
1692  006670  012737  000161  000402           MOV     #161,@#$FATAL   ;MOVE TO MAILBOX #  *******  161  *******
1693  006676  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1694  006700  000000                           HALT                    ;Z NOT CLEARED
1695                                                                   ; TO SCOPE REPLACE HALT W/ 240
1696                                                                   ; AND REPLACE NEXT INST W/ 753
1697  006702                           2$:
1698  006702  102005                           BVC     3$
1699  006704  012737  000162  000402           MOV     #162,@#$FATAL   ;MOVE TO MAILBOX #  *******  162  *******
1700  006712  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1701  006714  000000                           HALT                    ;V NOT CLEARED
1702                                                                   ; TO SCOPE REPLACE HALT W/ 240
1703                                                                   ; AND REPLACE NEXT INST W/ 745
1704  006716                           3$:
1705  006716  103005                           BCC     4$
1706  006720  012737  000163  000402           MOV     #163,@#$FATAL   ;MOVE TO MAILBOX #  *******  163  *******
1707  006726  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1708  006730  000000                           HALT                    ;C NOT CLEARED
1709                                                                   ; TO SCOPE REPLACE HALT W/ 240
1710                                                                   ; AND REPLACE NEXT INST W/ 737
1711  006732  106767  004350           4$:     MFPS    STATUS
1712  006736  032767  000357  004342           BIT     #357,STATUS             ;TEST PRIORITY
1713  006744  001405                           BEQ     5$
1714  006746  012737  000164  000402           MOV     #164,@#$FATAL   ;MOVE TO MAILBOX #  *******  164  *******
1715  006754  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1716  006756  000000                           HALT                    ;PRIORITY NOT ZERO
1717                                                                   ; TO SCOPE REPLACE HALT W/ 240
1718                                                                   ; AND REPLACE NEXT INST W/ 724
1719  006760  012706  000500           5$:     MOV     #BUFF,SP
1720  006764  012767  007002  171012           MOV     #RETG5,RTRAP5
1721  006772  012767  000357  171006           MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
1722  007000  000100                           JMP     %0              ;TRAP HERE
1723  007002                           RETG5:
1724  007002  100405                           BMI     1$
1725  007004  012737  000165  000402           MOV     #165,@#$FATAL   ;MOVE TO MAILBOX #  *******  165  *******
1726  007012  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1727  007014  000000                           HALT                    ;N NOT SET
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                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 705
007016                                  1$:
007016  001405                          BEQ     2$
007020  012737  000166  000402          MOV     #166,@#$FATAL   ;MOVE TO MAILBOX #  *******  166  *******
007026  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007030  000000                          HALT                    ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 677
007032                                  2$:
007032  102405                          BVS     3$
007034  012737  000167  000402          MOV     #167,@#$FATAL   ;MOVE TO MAILBOX #  *******  167  *******
007042  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007044  000000                          HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 671
007046                                  3$:
007046  103405                          BCS     4$
007050  012737  000170  000402          MOV     #170,@#$FATAL   ;MOVE TO MAILBOX #  *******  170  *******
007056  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007060  000000                          HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 663
007062  106767  004220          4$:     MFPS    STATUS
007066  016706  004214                  MOV     STATUS,SP
007072  022706  000357                  CMP     #357,SP
007076  001405                          BEQ     TST45
007100  012737  000171  000402          MOV     #171,@#$FATAL   ;MOVE TO MAILBOX #  *******  171  *******
007106  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007110  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 647
```

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1760
1761                                    ;*****************************************************************************
1762                                    ;TEST 45 THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCION
1763                                    ;*****************************************************************************
1764  007112  005237  000404           TST45:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1765  007116  022737  000045  000404           CMP     #45,@#$TESTN    ;SEQUENCE ERROR?
1766  007124  001006                   BNE     TST46-12        ;BR TO ERROR HALT ON SEQ ERROR
1767  007126  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1768  007132  012767  007154  170644   MOV     #RETH5,RTRAP5   ;RETURN LOCATION
1769  007140  004000                   JSR     %0,%0           ;RESERVED INSTRUCTION, SHOULD TRAP
1770  007142  012737  000172  000402   MOV     #172,@#$FATAL   ;MOVE TO MAILBOX #  *******  172  *******
1771  007150  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1772  007152  000000                   HALT                    ;DID NOT TRAP,OR WRONG $TESTN
1773                                                            ; TO SCOPE REPLACE HALT W/ 240
1774                                                            ; AND REPLACE NEXT INST W/ 764
1775  007154                           RETH5:
1776                                    ;*****************************************************************************
1777                                    ;TEST 46 DECREMENT OF STACK POINTER ON A TRAP OPERATION
1778                                    ;*****************************************************************************
1779  007154  005237  000404           TST46:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1780  007160  022737  000046  000404           CMP     #46,@#$TESTN    ;SEQUENCE ERROR?
1781  007166  001011                   BNE     TST47-12        ;BR TO ERROR HALT ON SEQ ERROR
1782  007170  012706  000500           MOV     #BUFF,SP        ;STACK POINTER SETUP
1783  007174  012767  007204  170602   MOV     #RETJ,RTRAP5    ;RETURN POINTER
1784  007202  004000                   JSR     %0,%0           ;RESERVED INSTRUCTION
1785  007204  020627  000474           RETJ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1786  007210  001405                   BEQ     TST47
1787  007212  012737  000173  000402   MOV     #173,@#$FATAL   ;MOVE TO MAILBOX #  *******  173  *******
1788  007220  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1789  007222  000000                   HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1790                                                            ; TO SCOPE REPLACE HALT W/ 240
1791                                                            ; AND REPLACE NEXT INST W/ 761
```

```
1792
1793                                    ;*****************************************************************************
1794                                    ;TEST 47 THAT PROPER P.C. IS SAVED
1795                                    ;*****************************************************************************
1796  007224  005237  000404           TST47:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1797  007230  022737  000047  000404           CMP     #47,@#$TESTN    ;SEQUENCE ERROR?
1798  007236  001012                           BNE     TST50-12        ;BR TO ERROR HALT ON SEQ ERROR
1799  007240  012706  000500                   MOV     #BUFF,SP        ;STACK POINTER SETUP
1800  007244  012767  007254  170532           MOV     #RETK,RTRAP5    ;RETURN FROM TRAP POINTER
1801  007252  004000                   INSTK:  JSR     %0,%0           ;TRAP ON THIS INSTRUCTION
1802  007254  022767  007254  171212   RETK:   CMP     #INSTK+2,BUFF-4 ;CHECK FOR INCREMENED P.C.
1803  007262  001405                           BEQ     TST50
1804  007264  012737  000174  000402           MOV     #174,@#$FATAL   ;MOVE TO MAILBOX #  *******  174  *******
1805  007272  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1806  007274  000000                           HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
1807                                                                   ; TO SCOPE REPLACE HALT W/ 240
1808                                                                   ; AND REPLACE NEXT INST W/ 760
1809
1810                                    ;*****************************************************************************
1811                                    ;TEST 50 THAT 'OLD' STATUS AND PRIORITY ARE PLACED ON STACK
1812                                    ;*****************************************************************************
1813  007276  005237  000404           TST50:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1814  007302  022737  000050  000404           CMP     #50,@#$TESTN    ;SEQUENCE ERROR?
1815  007310  001044                           BNE     TST51-12        ;BR TO ERROR HALT ON SEQ ERROR
1816  007312  012706  000500                   MOV     #BUFF,SP        ;SET UP
1817  007316  012767  007340  170460           MOV     #RETL,RTRAP5    ;SET UP
1818  007324  005067  003756                   CLR     STATUS          ;CLEAR STATUS AND PRIORITY
1819  007330  106467  003752                   MTPS    STATUS
1820  007334  000257                           CCC
1821  007336  004000                           JSR     %0,%0           ;TRAP
1822  007340  026727  171132  000000   RETL:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1823  007346  001405                           BEQ     1$
1824  007350  012737  000175  000402           MOV     #175,@#$FATAL   ;MOVE TO MAILBOX #  *******  175  *******
1825  007356  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1826  007360  000000                           HALT                    ;INCORRCT STATUS
1827                                                                   ; TO SCOPE REPLACE HALT W/ 240
1828                                                                   ; AND REPLACE NEXT INST W/ 753
1829  007362  012706  000500           1$:     MOV     #BUFF,SP        ;SET UP
1830  007366  012767  007412  170410           MOV     #RETM,RTRAP5    ;SET UP
1831  007374  012767  000357  003704           MOV     #357,STATUS             ;SET PRIORITY
1832  007402  106467  003700                   MTPS    STATUS
1833  007406  000277                           SCC                     ;SET CC
1834  007410  004000                           JSR     %0,%0           ;TRAP
1835  007412  026727  171060  000357   RETM:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1836  007420  001405                           BEQ     TST51
1837  007422  012737  000176  000402           MOV     #176,@#$FATAL   ;MOVE TO MAILBOX #  *******  176  *******
1838  007430  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1839  007432  000000                           HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
1840                                                                   ; TO SCOPE REPLACE HALT W/ 240
1841                                                                   ; AND REPLACE NEXT INST W/ 726
1842
1843                                    ;*****************************************************************************
1844                                    ;TEST 51 THAT 'NEW' STATUS IS CORRECT
1845                                    ;*****************************************************************************
1846  007434  005237  000404           TST51:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1847  007440  022737  000051  000404           CMP     #51,@#$TESTN    ;SEQUENCE ERROR?
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1848  007446  001122                          BNE     STP1            ;BR TO ERROR HALT ON SEQ ERROR
1849  007450  012706  000500                  MOV     #BUFF,SP
1850  007454  012767  007470  170322          MOV     #RETN,RTRAP5
1851  007462  005067  170320                  CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
1852  007466  004000                          JSR     %0,%0
1853  007470                          RETN:                           ;TEST FOR "C" CLEARED
1854  007470  100005                          BPL     1$
1855  007472  012737  000177  000402          MOV     #177,@#$FATAL   ;MOVE TO MAILBOX #  *******  177  *******
1856  007500  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1857  007502  000000                          HALT                    ;C NOT CLEARED
1858                                                                  ; TO SCOPE REPLACE HALT W/ 240
1859                                                                  ; AND REPLACE NEXT INST W/ 761
1860  007504                          1$:
1861  007504  001005                          BNE     2$
1862  007506  012737  000200  000402          MOV     #200,@#$FATAL   ;MOVE TO MAILBOX #  *******  200  *******
1863  007514  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1864  007516  000000                          HALT                    ;Z NOT CLEARED
1865                                                                  ; TO SCOPE REPLACE HALT W/ 240
1866                                                                  ; AND REPLACE NEXT INST W/ 753
1867  007520                          2$:
1868  007520  102005                          BVC     3$
1869  007522  012737  000201  000402          MOV     #201,@#$FATAL   ;MOVE TO MAILBOX #  *******  201  *******
1870  007530  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1871  007532  000000                          HALT                    ;V NOT CLEARED
1872                                                                  ; TO SCOPE REPLACE HALT W/ 240
1873                                                                  ; AND REPLACE NEXT INST W/ 745
1874  007534                          3$:
1875  007534  103005                          BCC     4$
1876  007536  012737  000202  000402          MOV     #202,@#$FATAL   ;MOVE TO MAILBOX #  *******  202  *******
1877  007544  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1878  007546  000000                          HALT                    ;C NOT CLEARED
1879                                                                  ; TO SCOPE REPLACE HALT W/ 240
1880                                                                  ; AND REPLACE NEXT INST W/ 737
1881  007550  106767  003532          4$:     MFPS    STATUS
1882  007554  016700  003526                  MOV     STATUS,%0       ;TEMP STORAGE
1883  007560  001405                          BEQ     5$
1884  007562  012737  000203  000402          MOV     #203,@#$FATAL   ;MOVE TO MAILBOX #  *******  203  *******
1885  007570  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1886  007572  000000                          HALT                    ;PRIORITY NOT ZERO
1887                                                                  ; TO SCOPE REPLACE HALT W/ 240
1888                                                                  ; AND REPLACE NEXT INST W/ 725
1889  007574  012706  000500          5$:     MOV     #BUFF,SP
1890  007600  012767  007616  170176          MOV     #RETO,RTRAP5
1891  007606  012767  000357  170172          MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
1892  007614  004000                          JSR     %0,%0           ;TRAP HERE
1893  007616                          RETO:
1894  007616  100405                          BMI     1$
1895  007620  012737  000204  000402          MOV     #204,@#$FATAL   ;MOVE TO MAILBOX #  *******  204  *******
1896  007626  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1897  007630  000000                          HALT                    ;N NOT SET
1898                                                                  ; TO SCOPE REPLACE HALT W/ 240
1899                                                                  ; AND REPLACE NEXT INST W/ 706
1900  007632                          1$:
1901  007632  001405                          BEQ     2$
1902  007634  012737  000205  000402          MOV     #205,@#$FATAL   ;MOVE TO MAILBOX #  *******  205  *******
1903  007642  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
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1904  007644  000000                          HALT                    ;Z NOT SET
1905                                                                  ; TO SCOPE REPLACE HALT W/ 240
1906                                                                  ; AND REPLACE NEXT INST W/ 700
1907  007646                            2$:
1908  007646  102405                          BVS     3$
1909  007650  012737  000206  000402          MOV     #206,@#$FATAL   ;MOVE TO MAILBOX #  *******  206  *******
1910  007656  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1911  007660  000000                          HALT                    ;V NOT SET
1912                                                                  ; TO SCOPE REPLACE HALT W/ 240
1913                                                                  ; AND REPLACE NEXT INST W/ 672
1914  007662                            3$:
1915  007662  103405                          BCS     4$
1916  007664  012737  000207  000402          MOV     #207,@#$FATAL   ;MOVE TO MAILBOX #  *******  207  *******
1917  007672  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1918  007674  000000                          HALT                    ;C NOT SET
1919                                                                  ; TO SCOPE REPLACE HALT W/ 240
1920                                                                  ; AND REPLACE NEXT INST W/ 664
1921  007676  106767  003404          4$:     MFPS    STATUS
1922  007702  016700  003400                  MOV     STATUS,%0
1923  007706  022700  000357                  CMP     #357,%0
1924  007712  001405                          BEQ     STPBB
1925  007714                            STP1:
1926  007714  012737  000210  000402          MOV     #210,@#$FATAL   ;MOVE TO MAILBOX #  *******  210  *******
1927  007722  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1928  007724  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
1929                                                                  ; TO SCOPE REPLACE HALT W/ 240
1930                                                                  ; AND REPLACE NEXT INST W/ 650
1931  007726  012767  000006  170050  STPBB:  MOV     #6,4
1932  007734  005067  170046                  CLR     6
```

```
                                        ;*****************************************************************************
                                        ;TEST 52 THAT THE T BIT (BIT4) WILL CAUSE TRACE TRAP TO 14
                                        ;*****************************************************************************
007740  005237  000404        TST52:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007744  022737  000052  000404        CMP     #52,@#$TESTN    ;SEQUENCE ERROR?
007752  001013                      BNE     TST53-12        ;BR TO ERROR HALT ON SEQ ERROR
007754  012706  000500              MOV     #BUFF,SP
007760  012767  010014  170026      MOV     #RETAT,RTRAP4   ;SET UP TO TRAP TO 14
007766  012746  000020              MOV     #20,-(SP)       ;PUSH T BIT
007772  012746  010000              MOV     #.+6,-(SP)      ;PUSH PC
007776  000002                      RTI                     ;SET T BIT
010000  000240                      NOP                     ;TRAP HERE
010002  012737  000211  000402      MOV     #211,@#$FATAL   ;MOVE TO MAILBOX #  *******  211  *******
010010  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010012  000000                      HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 757
010014                          RETAT:
                                        ;*****************************************************************************
                                        ;TEST 53 STACK POINTER DECREMENTS
                                        ;*****************************************************************************
010014  005237  000404        TST53:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010020  022737  000053  000404        CMP     #53,@#$TESTN    ;SEQUENCE ERROR?
010026  001023                      BNE     TST54-12        ;BR TO ERROR HALT ON SEQ ERROR
010030  012706  000500              MOV     #BUFF,SP
010034  012767  010070  167752      MOV     #RETBT,RTRAP4
010042  012746  000020              MOV     #20,-(SP)       ;PUSH T BIT
010046  012746  010054              MOV     #.+6,-(SP)      ;PUSH PC
010052  000002                      RTI                     ;SET T BIT
010054  000240                      NOP                     ;TRAP HERE
010056  012737  000212  000402      MOV     #212,@#$FATAL   ;MOVE TO MAILBOX #  *******  212  *******
010064  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010066  000000                      HALT                    ;TRACE BIT DID NOT TRAP!
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 757
010070  020627  000474        RETBT:  CMP     SP,#BUFF-4
010074  001405                      BEQ     TST54
010076  012737  000213  000402      MOV     #213,@#$FATAL   ;MOVE TO MAILBOX #  *******  213  *******
010104  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010106  000000                      HALT                    ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 747
```

```
                                        ;*****************************************************************************
                                        ;TEST 54 FOR PROPER PC ON STACK
                                        ;*****************************************************************************
010110  005237  000404        TST54:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010114  022737  000054 000404         CMP     #54,@#$TESTN    ;SEQUENCE ERROR?
010122  001016                       BNE     TST55-12        ;BR TO ERROR HALT ON SEQ ERROR
010124  012706  000500               MOV     #BUFF,SP
010130  012767  010150 167656        MOV     #RETCT,RTRAP4
010136  012746  000020               MOV     #20,-(SP)       ;PUSH T BIT
010142  012746  010150               MOV     #.+6,-(SP)      ;PUSH PC
010146  000002                       RTI                     ;SET T BIT
                                                             ;TRAP HERE
010150  022767  010150 170316 RETCT:  CMP     #.,BUFF-4
010156  001405                       BEQ     TST55
010160  012737  000214 000402        MOV     #214,@#$FATAL   ;MOVE TO MAILBOX #  *******  214  *******
010166  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010170  000000                       HALT                    ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
                                                             ; TO SCOPE REPLACE HALT W/ 240
                                                             ; AND REPLACE NEXT INST W/ 754
                                        ;*****************************************************************************
                                        ;TEST 55 THAT RTT POPS T- BIT
                                        ;*****************************************************************************
010172  005237  000404        TST55:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010176  022737  000055 000404         CMP     #55,@#$TESTN    ;SEQUENCE ERROR?
010204  001015                       BNE     TST56-12        ;BR TO ERROR HALT ON SEQ ERROR

010206  012706  000500               MOV     #BUFF,SP
010212  005001                       CLR     R1              ;CLEAR R1
010214  012746  000020               MOV     #20,-(SP)
010220  012746  010234               MOV     #RTT1,-(SP)
010224  012767  010252 167562        MOV     #RTT2,14
010232  000006                       RTT
010234  000240               RTT1:   NOP
010236  001405                       BEQ     TST56
010240  012737  000215 000402        MOV     #215,@#$FATAL   ;MOVE TO MAILBOX #  *******  215  *******
010246  005212                       INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010250  000000                       HALT                    ;T-BIT DID NOT TRAP,OR WRONG $TESTN
                                                             ; TO SCOPE REPLACE HALT W/ 240
                                                             ; AND REPLACE NEXT INST W/ 755

010252                       RTT2:
```

```
2020
2021                                    ;*****************************************************************************
2022                                    ;TEST 56 THAT RTT ALLOWS ONE INST. BEFORE TRAP
2023                                    ;*****************************************************************************
2024  010252  005237  000404           TST56:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2025  010256  022737  000056  000404           CMP     #56,@#$TESTN    ;SEQUENCE ERROR?
2026  010264  001031                         BNE     TST57-12        ;BR TO ERROR HALT ON SEQ ERROR
2027  010266  012705  177777                 MOV     #177777,%5
2028  010272  012706  000500           RTT5:   MOV     #BUFF,SP
2029  010276  012746  000020                 MOV     #20,-(SP)
2030  010302  012746  010320                 MOV     #RTT3,-(SP)
2031  010306  012767  010340  167500         MOV     #RTT4,14
2032  010314  005001                         CLR     R1              ;CLEAR R0
2033  010316  000006                         RTT                     ;SET T-BIT
2034  010320  005201           RTT3:   INC     R1
2035  010322  005205                         INC     %5
2036  010324  001762                         BEQ     RTT5            ;DO THIS TEST NO MORE THAN 2 TIMES
2037  010326  012737  000216  000402         MOV     #216,@#$FATAL   ;MOVE TO MAILBOX #  *******  216  *******
2038  010334  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2039  010336  000000                         HALT                    ;DID NOT TRAP
2040                                                                  ; TO SCOPE REPLACE HALT W/ 240
2041                                                                  ; AND REPLACE NEXT INST W/ 752
2042  010340  005301           RTT4:   DEC     R1              ;SEE IF RTT ALLOWS 1 INST.
2043  010342  001407                         BEQ     RTT6
2044  010344  005205                         INC     %5              ;DO THIS TEST NO MORE THAN TWO TIMES
2045  010346  001751                         BEQ     RTT5
2046  010350  012737  000217  000402         MOV     #217,@#$FATAL   ;MOVE TO MAILBOX #  *******  217  *******
2047  010356  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2048  010360  000000                         HALT                    ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
2049                                                                  ; TO SCOPE REPLACE HALT W/ 240
2050                                                                  ; AND REPLACE NEXT INST W/ 741
2051  010362                           RTT6:
```

```
2052
2053                                    ;*****************************************************************************
2054                                    ;TEST 57 THAT RTI DOES NOT ALLOW 1 INST.
2055                                    ;*****************************************************************************
2056  010362  005237  000404           TST57:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2057  010366  022737  000057  000404           CMP     #57,@#$TESTN    ;SEQUENCE ERROR?
2058  010374  001023                           BNE     TST60-12        ;BR TO ERROR HALT ON SEQ ERROR
2059  010376  012706  000500                   MOV     #BUFF,SP
2060  010402  012746  000020                   MOV     #20,-(SP)
2061  010406  012746  010424                   MOV     #RTI1,-(SP)
2062  010412  012767  010440  167374           MOV     #RTI2,14
2063  010420  005001                           CLR     R1
2064  010422  000002                           RTI                     ;SET T-BIT
2065  010424  005201                   RTI1:   INC     R1              ;RTI SHOULD NOT ALLOW THIS
2066  010426  012737  000220  000402           MOV     #220,@#$FATAL   ;MOVE TO MAILBOX #  *******  220  *******
2067  010434  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2068  010436  000000                           HALT                    ;T- BIT DID NOT CAUSE TRAP
2069                                                                   ; TO SCOPE REPLACE HALT W/ 240
2070                                                                   ; AND REPLACE NEXT INST W/ 756
2071  010440  005701                   RTI2:   TST     R1
2072                                                                   ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
2073  010442  001405                           BEQ     TST60
2074  010444  012737  000221  000402           MOV     #221,@#$FATAL   ;MOVE TO MAILBOX #  *******  221  *******
2075  010452  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2076  010454  000000                           HALT                    ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
2077                                                                   ; TO SCOPE REPLACE HALT W/ 240
2078                                                                   ; AND REPLACE NEXT INST W/ 747
```

```
                                        ;*************************************************************************************
                                        ;TEST 60 TRAP ON TRAP
                                        ;*************************************************************************************
010456  005237  000404                TST60:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010462  022737  000060  000404                CMP     #60,@#$TESTN    ;SEQUENCE ERROR?
010470  001033                              BNE     TRACE           ;BR TO ERROR HALT ON SEQ ERROR
                                        ;TEST THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
010472  012705  177777                      MOV     #177777,%5
010476  012706  000500                TRPTRP: MOV     #BUFF,%6
010502  012767  010554  167304              MOV     #TRACE1,14      ;TRACE TRAP
010510  005027  000016                      CLR     #16             ;
010514  005027  000022                      CLR     #22
010520  012767  010572  167272              MOV     #TONT1,20       ;IOT TRAP
010526  012746  000020                      MOV     #20,-(SP)       ;PUSH T BIT
010532  012746  010540                      MOV     #.+6,-(SP)      ;PUSH PC
010536  000006                            RTT                     ;SET T BIT
010540  000004                            IOT                     ;TRAP, NEW STATUS HAVE TRACE RESET
010542  012737  000222  000402              MOV     #222,@#$FATAL   ;MOVE TO MAILBOX #  *******  222  *******
010550  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010552  000000                            HALT                    ;NO TRAP OCCURRED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 746
010554  005205                TRACE1: INC     %5      ;IF FAILED TRY THIS TEST TWICE BUT NO MORE
010556  001747                            BEQ     TRPTRP
010560                          TRACE:
010560  012737  000223  000402              MOV     #223,@#$FATAL   ;MOVE TO MAILBOX #  *******  223  *******
010566  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010570  000000                            HALT                    ;IOT SHOULD HAVE CLEARED THE T BIT,OR WRONG $TESTN
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 737
010572  012767  000016  167214  TONT1:   MOV     #16,14
010600  012767  000022  167212              MOV     #22,20
```

```
                                ;*****************************************************************************
                                ;TEST 61 THAT THE TRACE BIT WILL CAUSE A TRAP
                                ;*****************************************************************************
010606  005237  000404          TST61:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010612  022737  000061  000404          CMP     #61,@#$TESTN    ;SEQUENCE ERROR?
010620  001026                        BNE     TST62-12        ;BR TO ERROR HALT ON SEQ ERROR
010622  012706  000500                MOV     #BUFF,%6        ;SET UP STACK POINTER
010626  012767  010666  167160        MOV     #TRC1,14        ;TRACE TRAP RETURN
010634  005067  167156                CLR     16
010640  012746  000020                MOV     #20,-(SP)       ;PUSH T BIT
010644  012746  010652                MOV     #.+6,-(SP)      ;PUSH PC
010650  000002                        RTI                     ;SET T BIT
010652  000240                        NOP
010654  012737  000224  000402        MOV     #224,@#$FATAL   ;MOVE TO MAILBOX #  *******  224  *******
010662  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010664  000000                        HALT                    ;DO NOT TRAP
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 755
010666  036727  167604  000020  TRC1:  BIT     BUFF-2,#20      ;CHECK FOR T BIT ON STACK
010674  001005                        BNE     TST62
010676  012737  000225  000402        MOV     #225,@#$FATAL   ;MOVE TO MAILBOX #  *******  225  *******
010704  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010706  000000                        HALT                    ;T BIT NOT SAVED ON STACKED,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 744
                                ;*****************************************************************************
                                ;TEST 62 THAT AN RTI POPS THE T BIT
                                ;*****************************************************************************
010710  005237  000404          TST62:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010714  022737  000062  000404          CMP     #62,@#$TESTN    ;SEQUENCE ERROR?
010722  001020                        BNE     TST63-12        ;BR TO ERROR HALT ON SEQ ERROR
010724  012706  000500                MOV     #BUFF,%6        ;SET UP THE STACK
010730  012746  000020                MOV     #20,-(6)        ;FUTURE T BIT ON STACK
010734  012746  010750                MOV     #TRC2,-(6)      ;RTI RETURN
010740  012767  010764  167046        MOV     #TRC3,14        ;TRACE TRAP INTERRUPT POINTER
010746  000002                        RTI

010750  000240          TRC2:  NOP                             ;TRACE IS SET SHOULD TRAP TO 14
010752  012737  000226  000402        MOV     #226,@#$FATAL   ;MOVE TO MAILBOX #  *******  226  *******
010760  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010762  000000                        HALT                    ;DID NOT TRACE TRAP,OR WRONG $TESTN
                                                            ; TO SCOPE REPLACE HALT W/ 240
                                                            ; AND REPLACE NEXT INST W/ 757

010764  012767  000016  167022  TRC3:  MOV     #16,14
010772  005067  167020                CLR     16
```

```
2160
2161                                    ;*****************************************************************************
2162                                    ;TEST 63 THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2163                                    ;*****************************************************************************
2164  010776  005237  000404           TST63:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2165  011002  022737  000063  000404           CMP     #63,@#$TESTN    ;SEQUENCE ERROR?
2166  011010  001055                          BNE     TR1             ;BR TO ERROR HALT ON SEQ ERROR
2167  011012  032767  000001  167400          BIT     #1,$ENV         ; CHECK IF ON APT
2168  011020  001403                          BEQ     NOAPT           ; IF NOT ON APT
2169  011022  005767  167360                  TST     $PASS           ; CHECK IF ON FIRST PASS
2170  011026  001055                          BNE     TST64           ; IF NOT FIRST PASS
2171  011030                          NOAPT:
2172  011030  105737  177564                  TSTB    @#TPS
2173  011034  100375                          BPL     .-4
2174  011036  012706  000500                  MOV     #BUFF,%6
2175  011042  012767  00034C  002236          MOV     #340,STATUS     ;HIGHEST PRIORITY LEVEL
2176  011050  106467  002232                  MTPS    STATUS
2177  011054  012767  011132  167002          MOV     #TR0,64
2178  011062  012767  000100  166474          MOV     #100,TTCSR      ;INTERRUPT FOR TTY PUNCH/PRINTER
2179  011070  012704  000120                  MOV     #120,R4         ;SET UP DELAY IN CASE ON PDT-11 (IT TAKES LONG
2180  011074  077401                          SOB     R4,.            ;TIME FOR INTERRUPT REQUEST TO BE SEEN BY CPU)
2181  011076  012767  011144  166730          MOV     #TR1,34         ;TRAP VECTOR
2182  011104  012767  011156  166752          MOV     #TR2,64         ;TTY VECTOR
2183  011112  012767  000340  166716          MOV     #340,36         ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2184  011120  005067  002162                  CLR     STATUS          ;SHOULD TRAP AT END OF CLR INST
2185  011124  106467  002156                  MTPS    STATUS
2186  011130  104400                          TRAP                    ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2187  011132                          TR0:
2188  011132  012737  000227  000402          MOV     #227,@#$FATAL   ;MOVE TO MAILBOX #  *******  227  *******
2189  011140  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2190  011142  000000                          HALT                    ;TTY SHOULDN'T HAVE INTERRUPTED
2191                                                                  ; TO SCOPE REPLACE HALT W/ 240
2192                                                                  ; AND REPLACE NEXT INST W/ 722
2193  011144                          TR1:
2194  011144  012737  000230  000402          MOV     #230,@#$FATAL   ;MOVE TO MAILBOX #  *******  230  *******
2195  011152  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2196  011154  000000                          HALT                    ;INTERRUPT DID NOT OCCUR FIRST,OR WRONG $TESTN
2197                                                                  ; TO SCOPE REPLACE HALT W/ 240
2198                                                                  ; AND REPLACE NEXT INST W/ 715
2199  011156  005067  166654          TR2:    CLR     36
```

```
2200
2201                                    ;*****************************************************************************
2202                                    ;TEST 64 THAT PENDING INTERRUPT OCCURS BETWEEN TRAPS
2203                                    ;*****************************************************************************
2204  011162  005237  000404           TST64:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2205  011166  022737  000064  000404           CMP     #64,@#$TESTN    ;SEQUENCE ERROR?
2206  011174  001045                          BNE     TR5             ;BR TO ERROR HALT ON SEQ ERROR
2207  011176  032767  000001  167214          BIT     #1,$ENV         ;CHECK IF ON APT
2208  011204  001403                          BEQ     NOAPT1          ; IF NOT
2209  011206  005767  167174                  TST     $PASS           ; CHECK IF ON FIRST PASS
2210  011212  001060                          BNE     TST65           ; IF NOT
2211  011214                          NOAPT1:
2212  011214  042767  000100  166342          BIC     #100,TTCSR
2213  011222  012706  000500                  MOV     #BUFF,%6
2214  011226  012767  000340  002052          MOV     #340,STATUS
2215  011234  106467  002046                  MTPS    STATUS
2216  011240  012767  000100  166316          MOV     #100,TTCSR
2217  011246  012767  011306  166560          MOV     #TR3,34         ;TRAP
2218  011254  012767  011322  166602          MOV     #TR4,64         ;TTY OUTPUT
2219  011262  012767  011310  166530          MOV     #TR5,20         ;IOT
2220  011270  012767  000340  166524          MOV     #340,22         ;IOT PRIORITY
2221  011276  012704  000120                  MOV     #120,R4         ;SET UP DELAY IN CASE ON PDT-11 (IT TAKES LONG
2222  011302  077401                          SOB     R4,.            ;TIME FOR INTERRUPT REQUEST TO BE SEEN BY CPU)
2223  011304  104400                          TRAP                    ;THE ACT OF TRAPPING LOWER PRIORITY
2224  011306  000004                  TR3:    IOT                     ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
2225  011310                          TR5:
2226  011310  012737  000231  000402          MOV     #231,@#$FATAL   ;MOVE TO MAILBOX #  *******  231  *******
2227  011316  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2228  011320  000000                          HALT                    ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $TESTN
2229                                                                  ; TO SCOPE REPLACE HALT W/ 240
2230                                                                  ; AND REPLACE NEXT INST W/ 725
2231  011322  005067  166474          TR4:    CLR     22              ;CLR IOT PRIORITY
2232  011326  005067  166534                  CLR     66
2233  011332  012767  000066  166524          MOV     #66,64
2234  011340  012767  000036  166466          MOV     #36,34
2235  011346  012767  000022  166444          MOV     #22,20
2236
```

```
2237
2238                                    ;*****************************************************************************
2239                                    ;TEST 65 THAT "RESET" GOES TO OUTSIDE WORLD
2240                                    ;*****************************************************************************
2241  011354  005237  000404          . TST65:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2242  011360  022737  000065  000404            CMP     #65,@#$TESTN    ;SEQUENCE ERROR?
2243  011366  001031                           BNE     TST66-12        ;BR TO ERROR HALT ON SEQ ERROR
2244  011370  106427  000340                   MTPS    #340
2245  011374  012767  000100  166162           MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
2246  011402  012767  000100  166150           MOV     #100,TRCSR      ;SET INTERRUPT ENABLE
2247  011410  000005                           RESET                   ;SHOULD CLEAR INTERRUPT ENABLE
2248  011412  012704  000014                   MOV     #14,R4          ;DELAY AFTER THE RESET IN CASE ON PDT-11 TO
2249  011416  077401                           SOB     R4,.            ;ALLOW 8085 TO BE READY FOR I/O PAGE REFERENCE
2250  011420  032767  000100  166136           BIT     #100,TTCSR      ;TEST FOR CLEAR
2251  011426  001405                           BEQ     1$
2252  011430  012737  000232  000402           MOV     #232,@#$FATAL   ;MOVE TO MAILBOX #  *******  232  *******
2253  011436  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2254  011440  000000                           HALT                    ;RESET FAILED TO CLEAR TTCSR
2255                                                                    ; TO SCOPE REPLACE HALT W/ 240
2256                                                                    ; AND REPLACE NEXT INST W/ 752
2257  011442  032767  000100  166110  1$:      BIT     #100,TRCSR      ;TEST FOR CLEAR
2258  011450  001405                           BEQ     TST66
2259  011452  012737  000233  000402           MOV     #233,@#$FATAL   ;MOVE TO MAILBOX #  *******  233  *******
2260  011460  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2261  011462  000000                           HALT                    ;RESET FAILED TO CLEAR TRCSR,OR WRONG $TESTN
2262                                                                    ; TO SCOPE REPLACE HALT W/ 240
2263                                                                    ; AND REPLACE NEXT INST W/ 741
```

```
2264
2265                                    ;*****************************************************************************
2266                                    ;TEST 66 THAT RESET HAS NO EFFECT ON THE TRACE TRAP
2267                                    ;*****************************************************************************
2268  011464  005237  000404           TST66:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2269  011470  022737  000066  000404          CMP     #66,@#$TESTN    ;SEQUENCE ERROR?
2270  011476  001014                          BNE     RSTP3           ;BR TO ERROR HALT ON SEQ ERROR
2271  011500  012706  000500                  MOV     #BUFF,%6        ;SET STACK
2272  011504  012767  011542  166302          MOV     #RESET2,14      ;SET UP TRACE VECTOR
2273  011512  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
2274  011516  012746  011524                  MOV     #.+6,-(SP)      ;PUSH PC
2275  011522  000006                          RTT                     ;SET T BIT
2276  011524  000005                          RESET                   ;SHOULD HAVE NO EFFECT
2277  011526  000005                          RESET                   ;NO EFFECT
2278  011530                          RSTP3:
2279  011530  012737  000234  000402          MOV     #234,@#$FATAL   ;MOVE TO MAILBOX #  *******  234  *******
2280  011536  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2281  011540  000000                          HALT                    ;TRACE TRAP FAILED,OR WRONG $TESTN
2282                                                                  ; TO SCOPE REPLACE HALT W/ 240
2283                                                                  ; AND REPLACE NEXT INST W/ 756
2284  011542  005067  001540          RESET2: CLR     STATUS          ;CLEAR TRACK
2285  011546  106467  001534                  MTPS    STATUS
2286  011552  012767  000016  166234          MOV     #16,14
2287  011560  005067  166232                  CLR     16              ;TRACE STATUS
```

```
2288
2289                                    ;*****************************************************************************
2290                                    ;TEST 67 THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
2291                                    ;*****************************************************************************
2292  011564  005237  000404           TST67:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2293  011570  022737  000067  000404          CMP     #67,@#$TESTN    ;SEQUENCE ERROR?
2294  011576  001103                          BNE     RSTP4           ;BR TO ERROR HALT ON SEQ ERROR
2295  011600  032767  000001  166612          BIT     #1,$ENV         ; CHECK IF ON APT
2296  011606  001403                          BEQ     NOAPT2          ; IF NOT ON APT
2297  011610  005767  166572                  TST     $PASS           ;CHECK IF FIRST PASS
2298  011614  001106                          BNE     TST70           ; IF NOT
2299  011616                           NOAPT2:
2300  011616  000005                          RESET
2301  011620  012704  000012                  MOV     #12,R4          ;DELAY AFTER THE RESET IN CASE ON PDT-11 TO
2302  011624  077401                          SOB     R4,.            ;ALLOW 8085 TO BE READY FOR I/O PAGE REFERENCE
2303  011626  012706  000500                  MOV     #BUFF,%6        ;SET UP STACK
2304  011632  012767  011700  166224          MOV     #TTY3,64        ;INTERRUPT VECTOR
2305  011640  106427  000000                  MTPS    #0
2306  011644  012767  000357  166214          MOV     #357,66         ;HIGH PRIORITY ON INTERRUPT
2307  011652  052767  000100  165704          BIS     #100,TTCSR      ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
2308  011660  012704  000120                  MOV     #120,R4         ;SET UP DELAY IN CASE ON PDT-11 (IT TAKES LONG
2309  011664  077401                          SOB     R4,.            ;TIME FOR INTERRUPT REQUEST TO BE SEEN BY CPU)
2310  011666  012737  000235  000402          MOV     #235,@#$FATAL   ;MOVE TO MAILBOX #  *******  235  *******
2311  011674  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2312  011676  000000                          HALT                    ;NO INTERRUPT
2313                                                                   ; TO SCOPE REPLACE HALT W/ 240
2314                                                                   ; AND REPLACE NEXT INST W/ 737
2315  011700  106767  001402           TTY3:   MFPS    STATUS
2316  011704  022767  000357  001374          CMP     #357,STATUS
2317  011712  001405                          BEQ     1$
2318  011714  012737  000236  000402          MOV     #236,@#$FATAL   ;MOVE TO MAILBOX #  *******  236  *******
2319  011722  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2320  011724  000000                          HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS
2321                                                                   ; TO SCOPE REPLACE HALT W/ 240
2322                                                                   ; AND REPLACE NEXT INST W/ 724
2323  011726  000005                   1$:     RESET                   ;CLR NTERRUPT ENABLE
2324  011730  012704  000012                  MOV     #12,R4          ;DELAY AFTER THE RESET IN CASE ON PDT-11 TO
2325  011734  077401                          SOB     R4,.            ;ALLOW 8085 TO BE READY FOR I/O PAGE REFERENCE
2326  011736  012706  000500                  MOV     #BUFF,%6        ;STACK SET UP
2327  011742  012767  011774  166114          MOV     #TTY4,64        ;INTERRUPT VECTOR
2328  011750  005067  166112                  CLR     66              ;CLR NEW STATUS
2329  011754  106427  000017                  MTPS    #17
2330  011760  052767  000100  165576          BIS     #100,TTCSR      ;SET INTERRUPT ENABLE
2331  011766  012704  000120                  MOV     #120,R4         ;SET UP DELAY IN CASE ON PDT-11
2332  011772  077401                          SOB     R4,.            ;WAIT FOR TTY INTERRUPT REQUEST TO GET THRU TO CPU (ON T
2333  011774  106767  001306           TTY4:   MFPS    STATUS
2334  012000  005767  001302                  TST     STATUS
2335  012004  001405                          BEQ     RST4
2336  012006                           RSTP4:
2337  012006  012737  000237  000402          MOV     #237,@#$FATAL   ;MOVE TO MAILBOX #  *******  237  *******
2338  012014  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2339  012016  000000                          HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS,OR WRONG $TESTN
2340                                                                   ; TO SCOPE REPLACE HALT W/ 240
2341                                                                   ; AND REPLACE NEXT INST W/ 667
2342  012020  005067  165540           RST4:   CLR     TTCSR
2343  012024  012767  000066  166032          MOV     #66,64
```

```
2344
2345                                    ;THIS ROUTINE TESTS THAT NO LEGAL ADDRESS TRAPS AND THAT AN ILLEGAL
2346                                    ;ADDRESS TRAPS TO LOCATION 4.  THIS WILL RUN ON 30K SYSTEMS.  IF SWITCH
2347                                    ;REGISTER BIT 1 = 0, THEN THE MEMORY FROM 28K-30K IS NOT LOOKED
2348                                    ;AT, SINCE IT MAY HAVE I/O DEVICES.  IF SWR BIT 1 = 1, THEN THAT
2349                                    ;AREA IS CHECKED. (IT SHOULD EITHER ALL TRAP OR ALL NOT TRAP).  LOC 160000
2350                                    ;IS NO LONGER GUARANTEED TO TRAP, SINCE IT MAY CONTAIN MEMORY.  LOCATION
2351                                    ;177700 (THE UNIBUS ADDRESS FOR R0 ON OLDER SYSTEMS) IS USED FOR FORCING
2352                                    ;A TIMEOUT IN THE EVENT THAT THERE WAS NONE FROM 0K-28K(30K).
2353                                    ;THIS ROUTINE WILL ALSO WORK IF THERE IS A ROM ABOVE THE HIGHEST
2354                                    ;MEMORY LOCATION (WHETHER CONTIGUOUS WITH R/W MEMORY OR NOT).
2355                                    ;*****************************************************************************
2356                                    ;TEST 70 NON-EXISTENT ADDRESS TRAPS
2357                                    ;*****************************************************************************
2358  012032  005237  000404           TST70:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2359  012036  022737  000070  000404           CMP     #70,@#$TESTN    ;SEQUENCE ERROR?
2360  012044  001141                          BNE     AUTO1           ;BR TO ERROR HALT ON SEQ ERROR
2361
2362                                    ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM STOP
2363  012046  042737  010000  012116           BIC     #10000,@#HICORE ;SET HIGH CORE LIMIT TO 160000
2364  012054  032737  000002  000422           BIT     #2,@#$SWREG     ;CHECK IF BIT 1 IS SET
2365  012062  001403                          BEQ     1$              ;BRANCH IF IT IS, LEAVE LIMIT=160000
2366  012064  052737  010000  012116           BIS     #10000,@#HICORE ;SET UPPER CORE LIMIT TO 30K (170000)
2367  012072  005000                    1$:     CLR     R0
2368  012074  005067  165706                   CLR     6
2369  012100  012767  012222  165676           MOV     #ATRAP,4        ;SET UP ADDRESS TRAP ENTRANCE
2370  012106  012706  000500                   MOV     #BUFF,SP
2371  012112  105720                    NOR:    TSTB    (0)+            ;IF OUTSIDE OF CORE, TRAP TO 4
2372  012114  020027                           CMP     R0,(PC)+        ;IS POINTER INSIDE 28K (30K) CORE
2373  012116  160000                    HICORE: .WORD   160000          ;MAY BE CHANGED TO 170000 IF 30K
2374  012120  103774                           BLO     NOR             ;TEST THE REST OF CORE
2375  012122  013737  012116  012266           MOV     @#HICORE,@#CORH ;FOR USE BY END OF PASS CHECKER IF ON TIM
2376  012130  012737  012154  000004           MOV     #ROTRAP,@#4     ;SET UP NEW VECTOR POINTER
2377  012136  105737  177700                   TSTB    @#177700        ;CHECK R0 UNIBUS ADDRESS--SHOULD TRAP ON LSI
2378  012142                            TRPADR:
2379  012142  012737  000240  000402           MOV     #240,@#$FATAL   ;MOVE TO MAILBOX #  *******  240  *******
2380  012150  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2381  012152  000000                           HALT                    ;SHOULD HAVE TRAPED
2382                                                                    ; TO SCOPE REPLACE HALT W/ 240
2383                                                                    ; AND REPLACE NEXT INST W/ 734
2384
2385                                    ;TRAP TO HERE IF FORCING TRAP BY TESTING 177700
2386  012154  106767  001126           ROTRAP: MFPS    STATUS
2387  012160  005767  001122                   TST     STATUS
2388  012164  001405                           BEQ     1$
2389  012166  012737  000241  000402           MOV     #241,@#$FATAL   ;MOVE TO MAILBOX #  *******  241  *******
2390  012174  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2391  012176  000000                           HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2392                                                                    ; TO SCOPE REPLACE HALT W/ 240
2393                                                                    ; AND REPLACE NEXT INST W/ 722
2394  012200  026727  166270  012142    1$:     CMP     BUFF-4,#TRPADR
2395  012206  001465                           BEQ     TRAPB
2396  012210  012737  000242  000402           MOV     #242,@#$FATAL   ;MOVE TO MAILBOX #  *******  242  *******
2397  012216  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2398  012220  000000                           HALT                    ;OLD PC WAS NOT SAVED
2399                                                                    ; TO SCOPE REPLACE HALT W/ 240
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                                                        ; AND REPLACE NEXT INST W/ 711
                        ;RETURN HERE ON AN ADDRESS TRAP FROM MEMORY BELOW 28K (OR 30K)
012222  005300          ATRAP:  DEC     R0
012224  010067  000036          MOV     R0,CORH         ;MOVE THE FIRST NXM LOCATION IN CORH
                        ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
012230  013700  012116          MOV     @#HICORE,R0     ;SET UP THE HIGHEST MEM LOCATION
012234  005300                  DEC     R0              ;MAKE 1 LESS THAN THE HIGHEST CORE BOUNDARY
012236  000402                  BR      NOSUB           ;DON'T SUBTRACT 1K FIRST TIME
012240  162700  001000  CTRAP:  SUB     #1000,R0        ;SUBTRACT 1K OCTAL BYTE FROM ADDRESS BECAUSE
                                                        ;IT TAKES FOREVER TO GET TIMEOUT ON TIM
012244  012767  012304  165532  NOSUB:  MOV     #BTRAP,4        ;SET UP THE VECTOR
012252  012706  000500          MOV     #BUFF,SP
012256  011005                  MOV     (R0),R5         ;SAVE THE WORD IF IT IS THERE--TRAP IF NOT
012260  005010          DTRAP1: CLR     (R0)            ;IT WAS THERE--TRAP IF IT IS ROM
012262  010510          DTRAP2: MOV     R5,(R0)         ;NOT ROM--RESTORE WORD
012264  020027                  CMP     R0,(PC)+        ;DO LOCATIONS MATCH?
012266  000000          CORH:   .WORD   0
012270  101434                  BLOS    TRAPB
012272  012737  000243  000402          MOV     #243,@#$FATAL   ;MOVE TO MAILBOX #  *******  243  *******
012300  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012302  000000                  HALT                    ;CONTENTS OF R0 SHOULD HAVE BEEN LESS THAN OR EQUAL TO C
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 660
                                                        ;IF THIS COMPARISON FAILS IT MEANS
                                                        ;THAT SOME LEGAL ADDRESS TRAPPED OR
                                                        ;THAT AN ILLEGAL ADDRESS DID NOT TRAP
012304  106767  000776  BTRAP:  MFPS    STATUS
012310  005767  000772          TST     STATUS
012314  001405                  BEQ     1$
012316  012737  000244  000402          MOV     #244,@#$FATAL   ;MOVE TO MAILBOX #  *******  244  *******
012324  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012326  000000                  HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 646
012330  026727  166140  012260  1$:     CMP     BUFF-4,#DTRAP1
012336  001740                  BEQ     CTRAP           ;BRANCH IF TRAP PC IS OK
012340  026727  166130  012262          CMP     BUFF-4,#DTRAP2  ;CHECK IF IT TRAPPED ON THE CLR INSTR
012346  001734                  BEQ     CTRAP
012350                  AUTO1:
012350  012737  000245  000402          MOV     #245,@#$FATAL   ;MOVE TO MAILBOX #  *******  245  *******
012356  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012360  000000                  HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 631
012362  012767  000006  165414  TRAPB:  MOV     #6,4
012370  005067  165412          CLR     6
```

```
2446
2447                                    ;*****************************************************************************
2448                                    ;TEST 71 THE 'WAIT' INSTRUCTION
2449                                    ;*****************************************************************************
2450  012374  005237  000404   TST71:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2451  012400  022737  000071  000404  CMP     #71,@#$TESTN    ;SEQUENCE ERROR?
2452  012406  001070                  BNE     REES1           ;BR TO ERROR HALT ON SEQ ERROR
2453  012410  032767  000001  166002  BIT     #1,$ENV ;CHECK IF ON APT
2454  012416  001403                  BEQ     NOAPT3          ;BR, IF NOT ON APT
2455  012420  005767  165762          TST     $PASS           ;CHECK IF FIRST PASS
2456  012424  001066                  BNE     REES            ;BR, IF NOT
2457  012426  042767  000100  165130 NOAPT3: BIC     #100,TPS        ;CLEAR INTERRUPT ENABLE
2458  012434  012706  000500          MOV     #BUFF,SP        ;SET UP THE STACK
2459  012440  012767  012534  165416  MOV     #WATE,64        ;SET UP THE INTERRUPT VECTOR
2460  012446  005067  165414          CLR     66
2461  012452  105767  165106 WATE1:  TSTB    TPS             ;WAIT FOR READY
2462  012456  100375                  BPL     WATE1           ;TO BE UP
2463  012460  012767  000015  165100  MOV     #15,TPB         ;DO A CARRIAGE RETURN
2464  012466  105767  165072 WATE2:  TSTB    TPS             ;WAIT FOR READY TO COME UP
2465  012472  100375                  BPL     WATE2
2466  012474  012767  000015  165064  MOV     #15,TPB         ;DO ANOTHER CARRIAGE RETURN
2467  012502  052767  000100  165054  BIS     #100,TPS        ;SET THE INTERRUPT ENABLE
2468  012510  005067  000572          CLR     STATUS          ;CLEAR THE PSW
2469  012514  106467  000566          MTPS    STATUS
2470  012520  000001          WATE3:  WAIT                    ;WAIT FOR THE INTERRUPT
2471  012522  012737  000246  000402  MOV     #246,@#$FATAL   ;MOVE TO MAILBOX #  *******  246  *******
2472  012530  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2473  012532  000000                  HALT                    ;WAIT INSTRUCTION DID NOT LOOP
2474                                                          ; TO SCOPE REPLACE HALT W/ 240
2475                                                          ; AND REPLACE NEXT INST W/ 725
2476  012534  106767  000546 WATE:   MFPS    STATUS
2477  012540  005767  000542          TST     STATUS          ;IS THE PSW CORRECT?
2478  012544  001405                  BEQ     1$
2479  012546  012737  000247  000402  MOV     #247,@#$FATAL   ;MOVE TO MAILBOX #  *******  247  *******
2480  012554  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2481  012556  000000                  HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2482                                                          ; TO SCOPE REPLACE HALT W/ 240
2483                                                          ; AND REPLACE NEXT INST W/ 713
2484  012560  026727  165710  012522 1$:     CMP     BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
2485  012566  001405                  BEQ     REES
2486  012570                  REES1:
2487  012570  012737  000250  000402  MOV     #250,@#$FATAL   ;MOVE TO MAILBOX #  *******  250  *******
2488  012576  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2489  012600  000000                  HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2490                                                          ; TO SCOPE REPLACE HALT W/ 240
2491                                                          ; AND REPLACE NEXT INST W/ 702
2492  012602  042767  000100  164754 REES:   BIC     #100,TPS        ;CLEAR THE INTERRUPT ENABLE
2493  012610  012767  000066  165246  MOV     #66,64
```

```
2494
2495                                    ;*****************************************************************************
2496                                    ;TEST 72 ,THAT ODD ADDRESSING WILL IGNORE BIT 0                              .
2497                                    ;*****************************************************************************
2498  012616  005237  000404            TST72:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2499  012622  022737  000072  000404            CMP     #72,@#$TESTN    ;SEQUENCE ERROR?
2500  012630  001002                            BNE     RSTP5           ;BR TO ERROR HALT ON SEQ ERROR
2501  012632  000167  000013                    JMP     ODD+1
2502  012636                            RSTP5:
2503  012636  012737  000251  000402            MOV     #251,@#$FATAL   ;MOVE TO MAILBOX #  *******  251  *******
2504  012644  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2505  012646  000000                            HALT                    ;SHOULD HAVE JUMPED,OR WRONG $TESTN
2506                                                                    ; TO SCOPE REPLACE HALT W/ 240
2507                                                                    ; AND REPLACE NEXT INST W/ 770
2508  012650  005307                    ODD:    DEC     PC
```

```
2509
2510                                    ;*****************************************************************************
2511                                    ;TEST 73 THAT ALL RESERVED INSTRUCTIONS TRAP
2512                                    ;*****************************************************************************
2513  012652  005237  000404           TST73:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2514  012656  022737  000073  000404          CMP     #73,@#$TESTN    ;SEQUENCE ERROR?
2515  012664  001142                          BNE     RET4            ;BR TO ERROR HALT ON SEQ ERROR
2516  012666  010267  000532                  MOV     R2,R2STOR       ; SAVE REG 2
2517  012672  010700                          MOV     PC,%0           ;SET THESE
2518  012674  010704                          MOV     PC,%4           ;REGISTERS
2519  012676  010705                          MOV     PC,%5           ;TO EXISTENT MEMORY LOCATIONS
2520  012700  012703  013222                  MOV     #TABLE,R3       ;TABLE POINTER
2521  012704  012302                  GIN1:   MOV     (R3)+,R2        ;FIRST OR CURRENT INSTRUCTION
2522  012706  012301                          MOV     (R3)+,R1        ;LAST INSTRUCTION OR GROUP
2523  012710  020267  000326                  CMP     R2,EISFIS       ;IS IT THE 'EISFIS' GROUP?
2524  012714  001020                          BNE     3$              ;NO
2525  012716  032767  000100  165476          BIT     #100,$SWREG     ;SUPPRESS EIS/FIS?
2526  012724  001004                          BNE     1$              ;BRANCH IF YES
2527  012726  032767  000300  165472          BIT     #300,$CPUOP     ;DO WE HAVE EISFIS OPTION?
2528  012734  001403                          BEQ     2$              ;BRANCH IF NOT
2529  012736  062703  000004          1$:     ADD     #4,R3           ;IF YES DO NO DO THE
2530  012742  000760                          BR      GIN1            ;EIS FIS OP CODES
2531  012744  032767  000004  165450  2$:     BIT     #4,$SWREG       ;DO WE HAVE DIS INSTRUCTION SET
2532  012752  001401                          BEQ     3$              ;NO
2533  012754  000753                          BR      GIN1            ;IF YES, DO NOT DO EIS OP CODES - DO JUST FIS
2534  012756  020267  000270          3$:     CMP     R2,STOP ;IS IT THE STOP GROUP
2535  012762  001007                          BNE     4$              ;NO
2536  012764  032767  000020  165430          BIT     #20,$SWREG      ;DO WE WANT TO DO IT?
2537  012772  001403                          BEQ     4$              ;YES
2538  012774  062703  000010                  ADD     #10,R3          ;SKIP ENTIRE STOP GROUP
2539  013000  000741                          BR      GIN1            ;NO
2540  013002  020267  000250          4$:     CMP     R2,DIS  ;IS THIS THE DIS GROUP?
2541  013006  001010                          BNE     5$              ;NO
2542  013010  032767  000040  165410          BIT     #40,$CPUOP      ;DIS PRESENT??
2543  013016  001332                          BNE     GIN1            ;BRANCH IF YES--DON'T DO DIS
2544  013020  032767  000004  165374          BIT     #4,$SWREG       ;SUPPRESS DIS OPTION?
2545  013026  001326                          BNE     GIN1            ;BRANCH IF YES, SKIP THE DIS GROUP
2546  013030  020267  000232          5$:     CMP     R2,STOP1        ;IS IT THE STOP1 GROUP?
2547  013034  001005                          BNE     6$              ;NO
2548  013036  032767  000010  165356          BIT     #10,$SWREG      ;DO WE WANT TO DO IT?
2549  013044  001401                          BEQ     6$              ;YES
2550  013046  000716                          BR      GIN1            ;NO
2551  013050  020267  000216          6$:     CMP     R2,FINISH       ;TESTED ALL
2552  013054  001524                          BEQ     GIN3            ;BRANCH IF YES, GO TO END OF PASS ROUTINE
2553  013056  010267  000212                  MOV     R2,INST ;SET UP INST
2554  013062  005267  000206          GIN2:   INC     INST
2555  013066  012767  013112  164714          MOV     #RET,10         ;SET UP RETURN FROM TRAP
2556  013074  012706  000500                  MOV     #BUFF,SP        ;SET UP STACK POINTER
2557  013100  005067  000202                  CLR     STATUS          ;CLEAR PRIORITY
2558  013104  106467  000176                  MTPS    STATUS
2559  013110  000471                          BR      INST            ;EXECUTE RESERVED INSTRUCTION
2560
2561                                    ;TRAPPING SHOULD SEND YOU HERE
2562  013112  010267  000102          RET:    MOV     R2,R2SAVE       ; SAVE REG 2
2563  013116  016702  000302                  MOV     R2STOR,R2       ; RESTORE MAILBOX POINTER
2564  013122  020627  000474                  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
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2565  013126  001405                        BEQ     RET1
2566  013130  012737  000252  000402        MOV     #252,@#$FATAL   ;MOVE TO MAILBOX #  *******  252  *******
2567  013136  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2568  013140  000000                        HALT                    ;WRONG DECREMENT
2569                                                                 ; TO SCOPE REPLACE HALT W/ 240
2570                                                                 ; AND REPLACE NEXT INST W/ 651
2571  013142  026727  165326  013276  RET1: CMP     BUFF-4,#INST+2  ;LOC OF INST UNINCREMENTED
2572  013150  001405                        BEQ     RET2
2573  013152  012737  000253  000402        MOV     #253,@#$FATAL   ;MOVE TO MAILBOX #  *******  253  *******
2574  013160  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2575  013162  000000                        HALT                    ;INST INC ON TRAP
2576                                                                 ; TO SCOPE REPLACE HALT W/ 240
2577                                                                 ; AND REPLACE NEXT INST W/ 640
2578  013164  005767  165306        RET2:   TST     BUFF-2
2579  013170  001405                        BEQ     RET3
2580  013172                         RET4:
2581  013172  012737  000254  000402        MOV     #254,@#$FATAL   ;MOVE TO MAILBOX #  *******  254  *******
2582  013200  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2583  013202  000000                        HALT                    ;CONDITION CODES SET ON TRAP,OR WRONG $TESTN
2584                                                                 ; TO SCOPE REPLACE HALT W/ 240
2585                                                                 ; AND REPLACE NEXT INST W/ 630
2586  013204  016702  000010        RET3:   MOV     R2SAVE,R2       ; RESTORE REG 2
2587  013210  026701  000060                CMP     INST,R1
2588  013214  001633                        BEQ     GIN1            ;SET UP NEW GROUP
2589  013216  000721                        BR      GIN2            ;FINISH OLD GROUP
2590  013220  000000                R2SAVE: .WORD   0
2591                                                                 ;END OF INSTRUCTION GROUP
2592  013222  000006                TABLE:  6
2593  013224  000077                        77
2594
2595  013226  106477                        106477
2596  013230  106677                        106677
2597
2598  013232  006777                        6777
2599  013234  007777                        7777
2600  013236  106777                        106777
2601  013240  107777                        107777
2602  013242  067777                EISFIS: 67777   ;IF WE HAVE THE EIS FIS OPTION
2603  013244  073777                        73777   ;THEN THE EISFIS GROUP
2604  013246  074777                FIS:    74777   ;WILL BE SKIPED
2605  013250  075037                        75037
2606  013252  075377                STOP:   75377
2607  013254  076027                        76027
2608  013256  076027                DIS:    76027
2609  013260  076057                        76057
2610  013262  076057                        76057
2611  013264  076777                        76777
2612  013266  167777                STOP1:  167777
2613  013270  177777                        177777
2614  013272  013272                FINISH: .                       ;END FLAG
2615  013274  000000                INST:   HALT                    ;WILL CONTINUE RESERVED INST
2616  013276  000404                        BR      TERR
2617  013300  000403                        BR      TERR
2618  013302  000402                        BR      TERR
2619  013304  000401                        BR      TERR
2620  013306  000000                STATUS: 0
```

```
2621  013310  016702  000110          TERR:   MOV     R2STOR,R2       ; RESTORE R2
2622  013314  012737  000255  000402          MOV     #255,@#$FATAL   ; INDICATE ERROR
2623  013322  005212                          INC     (R2)
2624  013324  000000                          HALT
2625
2626
2627  013326  005237  000406          GIN3:   INC     @#$PASS
2628  013332  005267  000070                  INC     PASSPT          ;SHOULD PRINT THIS PASS?
2629  013336  001013                          BNE     ACT             ;NO
2630  013340  032767  000040  165054          BIT     #40,$SWREG      ;TYPE END OF PASS?
2631  013346  001004                          BNE     1$              ;BRANCH IF NOT
2632  013350  004567  000276                  JSR     R5,TYPE
2633  013354  013766                            EOPMSG
2634  013356  000005                          RESET
2635  013360  012767  177761  000040  1$:     MOV     #177761,PASSPT  ;DO IT 15 DECIMAL TIMES
2636  013366  013700  000042          ACT:    MOV     @#42,R0         ;CHECK ACT
2637  013372  001405                          BEQ     GOAGIN          ;KEEP GOING
2638  013374  000005                          RESET
2639  013376  004710                  $ENDAD: JSR     PC,(R0)         ;ACT HOOKS
2640  013400  000240                          NOP
2641  013402  000240                          NOP
2642  013404  000240                          NOP
2643  013406  012767  000012  164374  GOAGIN: MOV     #12,10
2644  013414  005067  164372                  CLR     12
2645  013420  000167  165130                  JMP     RESTRT          ;DO NEXT PASS
2646  013424  000000                  R2STOR: .WORD   0
2647  013426  177777                  PASSPT: -1
```

```
                                ;*****************************************************************************
                                ;SIZE ROUTINE
                                ;*****************************************************************************

013430  010246          SIZE:   MOV     R2,-(SP)        ;SAVE R2
013432  010446                  MOV     R4,-(SP)        ;SAVE R4
013434  004567  000212          JSR     R5,TYPE         ;TYPE 'EIS/FIS OPTION ''
013440  014062                    FISOPT
013442  012702  013652          MOV     #FSTACK,R2      ;SET UP FLOATING POINT STACK
013446  005042                  CLR     -(R2)
013450  005042                  CLR     -(R2)
013452  005042                  CLR     -(R2)
013454  005042                  CLR     -(R2)
013456  012737  013504  000010  MOV     #1$,@#10        ;SET UP RESERVED INSTRUCTION VECTOR
013464  075002                  FADD    R2              ;EXECUTE FLOATING INSTR (0+0)
013466  012737  000012  000010  MOV     #12,@#10        ;RESTORE VECTOR
013474  052767  000300  164724  BIS     #300,$CPUOP     ;FLAG OPTION PRESENT
013502  000413                  BR      2$
                        ;TRAP TO HERE IF NO FIS
013504  012737  000012  000010  1$:     MOV     #12,@#10        ;RESTORE VECTOR
013512  062706  000004          ADD     #4,SP           ;POP TRAP PC/PSW OFF STACK
013516  042767  000300  164702  BIC     #300,$CPUOP     ;FLAG OPTION NOT PRESENT
013524  004567  000122          JSR     R5,TYPE         ;TYPE 'NOT ''
013530  014104                    NOT
013532  004567  000114  2$:     JSR     R5,TYPE         ;TYPE 'PRESENT<CR>''
013536  014111                    PRESENT

013540  004567  000106          JSR     R5,TYPE         ;TYPE 'DIBOL INSTRUCTION SET ''
013544  014123                    DISOPT
013546  005002                  CLR     R2              ;SET UP A 0 DEST LENGTH
013550  005004                  CLR     R4              ;HIGH BYTE MUST BE CLEAR
013552  012737  013600  000010  MOV     #3$,@#10        ;SET UP TRAP VECTOR
013560  076030                  MOVC                    ;MOVE CHARACTER INSTRUCTION
013562  012737  000012  000010  MOV     #12,@#10        ;RESTORE VECTOR
013570  052767  000040  164630  BIS     #40,$CPUOP      ;FLAG OPTION PRESENT
013576  000413                  BR      4$
                        ;TRAP HERE IF NO DIS
013600  012737  000012  000010  3$:     MOV     #12,@#10        ;RESTORE VECTOR
013606  042767  000040  164612  BIC     #40,$CPUOP      ;FLAG NO OPTION
013614  062706  000004          ADD     #4,SP           ;POP TRAP PC/PSW OFF STACK
013620  004567  000026          JSR     R5,TYPE         ;TYPE 'NOT ''
013624  014104                    NOT
013626  004567  000020  4$:     JSR     R5,TYPE         ;'PRESENT<CR>''
013632  014111                    PRESENT

013634  012604                  MOV     (SP)+,R4        ;RESTORE REGISTERS USED
013636  012602                  MOV     (SP)+,R2
013640  000207                  RTS     PC

                        ;FLOATING POINT STACK FOR FIS
013642  000004                  .BLKW   4
013652                  FSTACK:
```

```
                                ;*****************************************************************************************
                                ;TYPE ROUTINE
                                ;*****************************************************************************************

013652  010046                  TYPE:   MOV     R0,-(SP)        ;SAVE REGISTER
013654  012500                          MOV     (R5)+,R0        ;GET TEXT POINTER
013656  132767  000040  164535          BITB    #40,$ENVM       ;SUPPRESS OUTPUT??
013664  001011                          BNE     3$              ;BRANCH IF YES--RETURN
013666  105737  177564          1$:     TSTB    @#TPS           ;WAIT FOR TTY READY
013672  100375                          BPL     1$
013674  112037  177566                  MOVB    (R0)+,@#TPB     ;TYPE CHARACTER
013700  001372                          BNE     1$              ;BRANCH IF IT WAS NOT TERMINATOR
013702  105737  177564          2$:     TSTB    @#TPS           ;WAIT FOR READY
013706  100375                          BPL     2$
013710  012600                  3$:     MOV     (SP)+,R0        ;RESTORE REGISTER
013712  000205                          RTS     R5

                                ;*********************************
                                ;POWER FAIL ROUTINE
                                ;*********************************

013714  012767  013724  164102  PWRDWN: MOV     #PWRUP,24
013722  000000                          HALT

013724  012767  013714  164072  PWRUP:  MOV     #PWRDWN,24
013732  012706  000500                  MOV     #BUFF,SP
013736  005000                          CLR     R0              ;SET UP A DELAY
013740  012701  177750                  MOV     #-30,R1
013744  005200                  1$:     INC     R0
013746  001376                          BNE     1$
013750  005201                          INC     R1
013752  001374                          BNE     1$
013754  004567  177672                  JSR     R5,TYPE         ;TYPE POWER FAIL MESSAGE
013760  014004                            MSGPWF
013762  000167  164514                  JMP     START

013766  005015  047105  020104  EOPMSG: .ASCIZ  <15><12>.END OF PASS.
013774  043117  050040  051501
014002  000123
014004  005015  047520  042527  MSGPWF: .ASCIZ  <15><12>.POWER FAILED!.
014012  020122  040506  046111
014020  042105  000041
014024  005015  053103  040513  TITLE:  .ASCIZ  <15><12>.CVKADC0 LSI-11 TRAPS TEST.<15><12>
014032  041504  020060  051514
014040  026511  030461  052040
014046  040522  051520  052040
014054  051505  006524  000012
014062  005015  044505  027523  FISOPT: .ASCIZ  <15><12>.EIS/FIS OPTION .
014070  044506  020123  050117
014076  044524  047117  000040
014104  047516  020124     000  NOT:    .ASCIZ  .NOT .
014111     120  042522  042523  PRESENT: .ASCIZ .PRESENT.<15><12>
014116  052116  005015     000
014123     104  041111  046117  DISOPT: .ASCIZ  .DIBOL INSTRUCTION SET .
014130  044440  051516  051124
014136  041525  044524  047117
```

```
 2757  014144  051440  052105  000040
 2758          000001                          .END
```

```
ABASE = 000000            280
ACDW1 = 000000            280
ACDW2 = 000000            280
ACPUOP= 000000            280     295
ACT     013366           2629    2636#
ADDW0 = 000000            280
ADDW1 = 000000            280
ADDW10= 000000            280
ADDW11= 000000            280
ADDW12= 000000            280
ADDW13= 000000            280
ADDW14= 000000            280
ADDW15= 000000            280
ADDW2 = 000000            280
ADDW3 = 000000            280
ADDW4 = 000000            280
ADDW5 = 000000            280
ADDW6 = 000000            280
ADDW7 = 000000            280
ADDW8 = 000000            280
ADDW9 = 000000            280
ADEVCT= 000000            280     286
ADEVM = 000000            280
AENV  = 000000            280     291
AENVM = 000000            280     292
AFATAL= 000000            280     283
AMADR1= 000000            280     308
AMADR2= 000000            280     312
AMADR3= 000000            280     315
AMADR4= 000000            280     318
AMAMS1= 000000            280     302
AMAMS2= 000000            280     310
AMAMS3= 000000            280     313
AMAMS4= 000000            280     316
AMSGAD= 000000            280     288
AMSGLG= 000000            280     289
AMSGTY= 000000            280     282
AMTYP1= 000000            280     303
AMTYP2= 000000            280     311
AMTYP3= 000000            280     314
AMTYP4= 000000            280     317
APASS = 000000            280     285
APRIOR= 000000            280
ASWREG= 000000            280     293
ATESTN= 000000            280     284
ATRAP   012222           2369    2402#
AUNIT = 000000            280     287
AUSWR = 000000            280     294
AUTO1   012350           2360    2438#
AVECT1= 000000            280
AVECT2= 000000            280
BEGIN   000546            361     365#
BELL  = 000240            255#
BTRAP   012304           2410    2426#
BUFF    000500            351#    354     690     705     708     722     725     738     744     751     757     771     811
                          863     878     881     894     897     911     917     924     929     943     983    1034    1053
```

```
                    1068    1071    1085    1088    1101    1107    1114    1120    1134    1174    1226    1241    1244
                    1257    1260    1274    1280    1287    1293    1307    1347    1398    1417    1433    1436    1449
                    1452    1466    1472    1479    1485    1499    1539    1598    1613    1616    1630    1633    1646
                    1652    1659    1665    1679    1719    1767    1782    1785    1799    1802    1816    1822    1829
                    1835    1849    1889    1940    1958    1969    1983    1989    2005    2028    2059    2089    2120
                    2132    2145    2174    2213    2271    2303    2326    2370    2394    2411    2434    2436    2458
                    2484    2556    2564    2571    2578    2726
CORH    012266      2375*   2403*   2416#
CTRAP   012240      2408#   2435    2437
DIS     013256      2540    2608#
DISOPT  014123      2677    2754#
DTRAP1  012260      2413#   2434
DTRAP2  012262      2414#   2436
EISFIS  013242      2523    2602#
EMT   = 104000       243#   1396
EOPMSG  013766      2633    2737#
FINISH  013272      2551    2614#
FIS     013246      2604#
FISOPT  014062      2656    2748#
FSTACK  013652      2657    2700#
GIN1    012704      2521#   2530    2533    2539    2543    2545    2550    2588
GIN2    013062      2554#   2589
GIN3    013326      2552    2627#
GOAGIN  013406      2637    2643#
HERE    000624       381#    390*    400*    464
HICORE  012116      2363*   2366*   2373#   2375    2405
HLT   = 000000       241#
ILLA  = 004700       259#
ILLB  = 000100       260#
INST    013274      2553*   2554*   2559    2571    2587    2615#
INSTC   002252       724#
INSTK   007252      1801#   1802
ITRAP5= 000004       245#
K1      000600       371#    480*    481     484     493*    494     497     505*    507     518*    520     531*    533
                     536
K10     000616       378#    566     575     582     590     598     606
K11     000620       379#
K12     000622       380#
K2      000602       372#
K3      000604       373#
K4      000606       374#
K5      000610       375#    479*    482     492*    506*    508     510     519*    521     523     532*    534
K6      000612       376#    495     575
K7      000614       377#    550     558     566     582     606
MOVC  = 076030      2681#
MSGPWF  014004      2734    2740#
NOAPT   011030      2168    2171#
NOAPT1  011214      2208    2211#
NOAPT2  011616      2296    2299#
NOAPT3  012426      2454    2457#
NOP   = 000240       256#
NOR     012112      2371#   2374
NOSUB   012244      2407    2410#
NOT     014104      2672    2690    2751#
ODD     012650      2501    2508#
PASSPT  013426       365*   2628*   2635*   2647#
```

```
PRESEN  014111            2674    2692    2752#
PWRDWN  013714             352    2722#   2725
PWRUP   013724            2722    2725#
RA      005412            1397    1406#
RA1     003636            1033    1042#
RB      005376            1396*   1399#   1406*   1407
RBBB    005400            1395    1400#
RB1     003622            1032*   1035#   1042*   1043
RB1AA   003624            1031    1036#
RC      005372            1398#   1408
RC1     003616            1034#   1044
REES    012602            2456    2485    2492#
REES1   012570            2452    2486#
RESET2  011542            2272    2284#
RESTRT  000554             366#   2645
RET     013112            2555    2562#
RETA    002154             691     698#
RETAT   010014            1941    1951#
RETA1   003010             864     871#
RETA2   003726            1054    1061#
RETA3   004562            1227    1234#
RETA4   005502            1418    1425#
RETA5   006336            1599    1606#
RETB    002204             706     708#
RETBT   010070            1959    1969#
RETB1   003040             879     881#
RETB2   003756            1069    1071#
RETB3   004612            1242    1244#
RETB4   005532            1434    1436#
RETB5   006366            1614    1616#
RETC    002254             723     725#
RETCT   010150            1984    1989#
RETC1   003110             895     897#
RETC2   004026            1086    1088#
RETC3   004662            1258    1260#
RETC4   005602            1450    1452#
RETC5   006436            1631    1633#
RETD    002340             739     744#
RETD1   003174             912     917#
RETD2   004112            1102    1107#
RETD3   004746            1275    1280#
RETD4   005666            1467    1472#
RETD5   006522            1647    1652#
RETE    002412             752     757#
RETE1   003244             925     929#
RETE2   004164            1115    1120#
RETE3   005020            1288    1293#
RETE4   005740            1480    1485#
RETE5   006574            166C    1665#
RETF    002470             772     775#
RETF1   003322             944     947#
RETF2   004242            1135    1138#
RETF3   005076            1308    1311#
RETF4   006016            1500    1503#
RETF5   006652            1680    1683#
RETG    002620             812     815#
```

```
RETG1   003452            984     987#
RETG2   004372           1175    1178#
RETG3   005226           1348    1351#
RETG4   006146           1540    1543#
RETG5   007002           1720    1723#
RETH5   007154           1768    1775#
RETJ    007204           1783    1785#
RETK    007254           1800    1802#
RETL    007340           1817    1822#
RETM    007412           1830    1835#
RETN    007470           1850    1853#
RETO    007616           1890    1893#
RET1    013142           2565    2571#
RET2    013164           2572    2578#
RET3    013204           2579    2586#
RET4    013172           2515    2580#
RSTP1   002722            770     848#
RSTP2   006250           1498    1576#
RSTP3   011530           2270    2278#
RSTP4   012006           2294    2336#
RSTP5   012636           2500    2502#
RST1    002734            847     854#
RST2    006262           1575    1582#
RST4    012020           2335    2342#
RTI1    010424           2061    2065#
RTI2    010440           2062    2071#
RTRAP = 000010            258#    691*    706*    723*    739*    752*    772*    773*    812*    813*
RTRAP1= 000034            250#    864*    879*    895*    912*    925*    944*    945*    984*    985*
RTRAP2= 000020            249#   1054*   1069*   1086*   1102*   1115*   1135*   1136*   1175*   1176*
RTRAP3= 000030            248#   1227*   1242*   1258*   1275*   1288*   1308*   1309*   1348*   1349*
RTRAP4= 000014            247#   1418*   1434*   1450*   1467*   1480*   1500*   1501*   1540*   1541*   1941*   1959*   1984*
RTRAP5= 000004            246#   1599*   1614*   1631*   1647*   1660*   1680*   1681*   1720*   1721*   1768*   1783*   1800*
                         1817*   1830*   1850*   1851*   1890*   1891*
RTT1    010234           2008    2011#
RTT2    010252           2009    2019#
RTT3    010320           2030    2034#
RTT4    010340           2031    2042#
RTT5    010272           2028#   2036    2045
RTT6    010362           2043    2051#
ROTRAP  012154           2376    2386#
R2SAVE  013220           2562*   2586    2590#
R2STOR  013424           2516*   2563    2621    2646#
R6TST   000642            389#
SIZE    013430            362    2653#
START   000502            346     349     352#    2735
STATUS  013306            621*    622*    652*    653*    654*    740*    741*    753*    754*    803*    804     843*    84/
                          913*    914*    926*    927*    975*    976    1015*   1016    1103*   1104*   1116*   1117*   1166*
                         1167    1206*   1207    1276*   1277*   1289*   1290*   1339*   1340    1379*   1380    1468*   1469*
                         1481*   1482*   1531*   1532    1571*   1572    1648*   1649*   1661*   1662*   1711*   1712    1751*
                         1752    1818*   1819*   1831*   1832*   1881*   1882    1921*   1922    2175*   2176*   2184*   2185*
                         2214*   2215*   2284*   2285*   2315*   2316    2333*   2334    2386*   2387    2426*   2427    2468*
                         2469*   2476*   2477    2557*   2558*   2620#
STOP    013252           2534    2606#
STOP1   013266           2546    2612#
STP     004474           1133    1211#
STPA    004506           1210    1217#
```

```
STPBB   007726          1924    1931#
STP1    007714          1848    1925#
TABLE   013222          2520    2592#
TERR    013310          2616    2617    2618    2619    2621#
TITLE   014024           359    2743#
TONT1   010572          2093    2111#
TPB   = 177566           254#   2463*   2466*   2711*
TPS   = 177564           253#    355    2172    2457*   2461    2464    2467*   2492*   2709    2713
TRACE   010560          2085    2105#
TRACE1  010554          2090    2103#
TRAP  = 104400           242#   1032
TRAPA = 000007           257#    692     707     724     743     756     774     814
TRAPB   012362          2395    2417    2444#
TRCSR = 177560           252#   2246*   2257
TRC1    010666          2121    2132#
TRC2    010750          2147    2151#
TRC3    010764          2148    2158#
TRPADR  012142          2378#   2394
TRPTRP  010476          2089#   2104
TRT   = 000003           244#   1419    1435    1451    1471    1484    1502    1542
TR0     011132          2177    2187#
TR1     011144          2166    2181    2193#
TR2     011156          2182    2199#
TR3     011306          2217    2224#
TR4     011322          2218    2231#
TR5     011310          2206    2219    2225#
TST1    000626           370     386#
TST10   002276           721     726     735#
TST11   002434           737     758     768#
TST12   002746           860#
TST13   003010           862     875#
TST14   003060           877     882     891#
TST15   003132           893     898     908#
TST16   003266           910     930     940#
TST17   003566           942    1019    1029#
TST2    001124           388     466     476#
TST20   003664          1050#
TST21   003726          1052    1065#
TST22   003776          1067    1072    1082#
TST23   004050          1084    1089    1098#
TST24   004206          1100    1121    1131#
TST25   004520          1223#
TST26   004562          1225    1238#
TST27   004632          1240    1245    1254#
TST3    001450           478     537     547#
TST30   004704          1256    1261    1271#
TST31   005042          1273    1294    1304#
TST32   005342          1306    1383    1393#
TST33   005440          1414#
TST34   005502          1416    1430#
TST35   005552          1432    1437    1446#
TST36   005624          1448    1453    1463#
TST37   005762          1465    1486    1496#
TST4    001704           549     568     607     617#
TST40   006274          1595#
TST41   006336          1597    1610#
```

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WATE3   012520            2470#   2484
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	1427	1429	1443	1445	1460	1462	1493	1495	1592	1594	1607	1609	1624	1626	1640
	1642	1673	1675	1761	1763	1776	1778	1793	1795	1810	1812	1843	1845	1934	1936
	1952	1954	1977	1979	1998	2000	2021	2023	2053	2055	2080	2082	2114	2116	2139
	2141	2161	2163	2201	2203	2238	2240	2265	2267	2289	2291	2355	2357	2447	2449
	2495	2497	2510	2512	2649	2651	2701	2703							
$$ERCD	234#	393	403	413	424	435	446	457	467	486	499	512	525	538	552
	560	569	577	584	592	600	608	624	631	638	645	657	664	671	678
	693	710	727	746	759	777	784	791	798	806	817	824	831	838	849
	866	883	899	919	931	949	956	963	970	978	989	996	1003	1010	1020
	1037	1056	1073	1090	1109	1122	1140	1147	1154	1161	1169	1180	1187	1194	1201
	1212	1229	1246	1262	1282	1295	1313	1320	1327	1334	1342	1353	1360	1367	1374
	1384	1401	1420	1438	1454	1474	1487	1505	1512	1519	1526	1534	1545	1552	1559
	1566	1577	1601	1618	1635	1654	1667	1685	1692	1699	1706	1714	1725	1732	1739
	1746	1755	1770	1787	1804	1824	1837	1855	1862	1869	1876	1884	1895	1902	1909
	1916	1926	1946	1964	1971	1991	2013	2037	2046	2066	2074	2098	2106	2127	2134
	2152	2188	2194	2226	2252	2259	2279	2310	2318	2337	2379	2389	2396	2418	2429
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            1566    1577    1601    1618    1635    1654    1667    1685    1692    1699    1706    1714    1725    1732    1739
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            2152    2188    2194    2226    2252    2259    2279    2310    2318    2337    2379    2389    2396    2418    2429
            2439    2471    2479    2487    2503    2566    2573    2581
$$ERRO       234#    466     537     568     607     677     709     726     758     882     898     930    1019    1072    1089
            1121    1245    1261    1294    1383    1437    1453    1486    1617    1634    1666    1754    1786    1803    1836
            1970    1990    2012    2073    2133    2258
$$LOOP       234#    396     406     416     427     438     449     460     470     489     502     515     528     541     555
             563     572     580     587     595     603     611     627     634     641     648     660     667     674     681
             696     713     730     749     762     780     787     794     801     809     820     827     834     841     852
             869     886     902     922     934     952     959     966     973     981     992     999    1006    1013    1023
            1040    1059    1076    1093    1112    1125    1143    1150    1157    1164    1172    1183    1190    1197    1204
            1215    1232    1249    1265    1285    1298    1316    1323    1330    1337    1345    1356    1363    1370    1377
            1387    1404    1423    1441    1457    1477    1490    1508    1515    1522    1529    1537    1548    1555    1562
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            1919    1929    1949    1967    1974    1994    2016    2040    2049    2069    2077    2101    2109    2130    2137
            2155    2191    2197    2229    2255    2262    2282    2313    2321    2340    2382    2392    2399    2421    2432
            2442    2474    2482    2490    2506    2569    2576    2584
$$N          234#    383     473     544     614     684     699     716     732     765     857     872     888     905     937
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            1460    1493    1592    1607    1624    1640    1673    1761    1776    1793    1810    1843    1934    1952    1977
            1998    2021    2053    2080    2114    2139    2161    2201    2238    2265    2289    2355    2447    2495    2510
.$ACT1       264#    267
.$APTB       264#    277
.$APTH       264#    321

. ABS.  014152     000

 ERRORS DETECTED:  0

 CVKADC,CVKADC.SEQ/CRF/SOL/NL:TOC=CVKADC.MAC
 RUN-TIME: 17 11 1 SECONDS
 RUN-TIME RATIO: 126/30=4.1
 CORE USED:  10K  (.9 PAGES)
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