PDP11/34

TRAPS TEST

MD-11-DFKAB-B

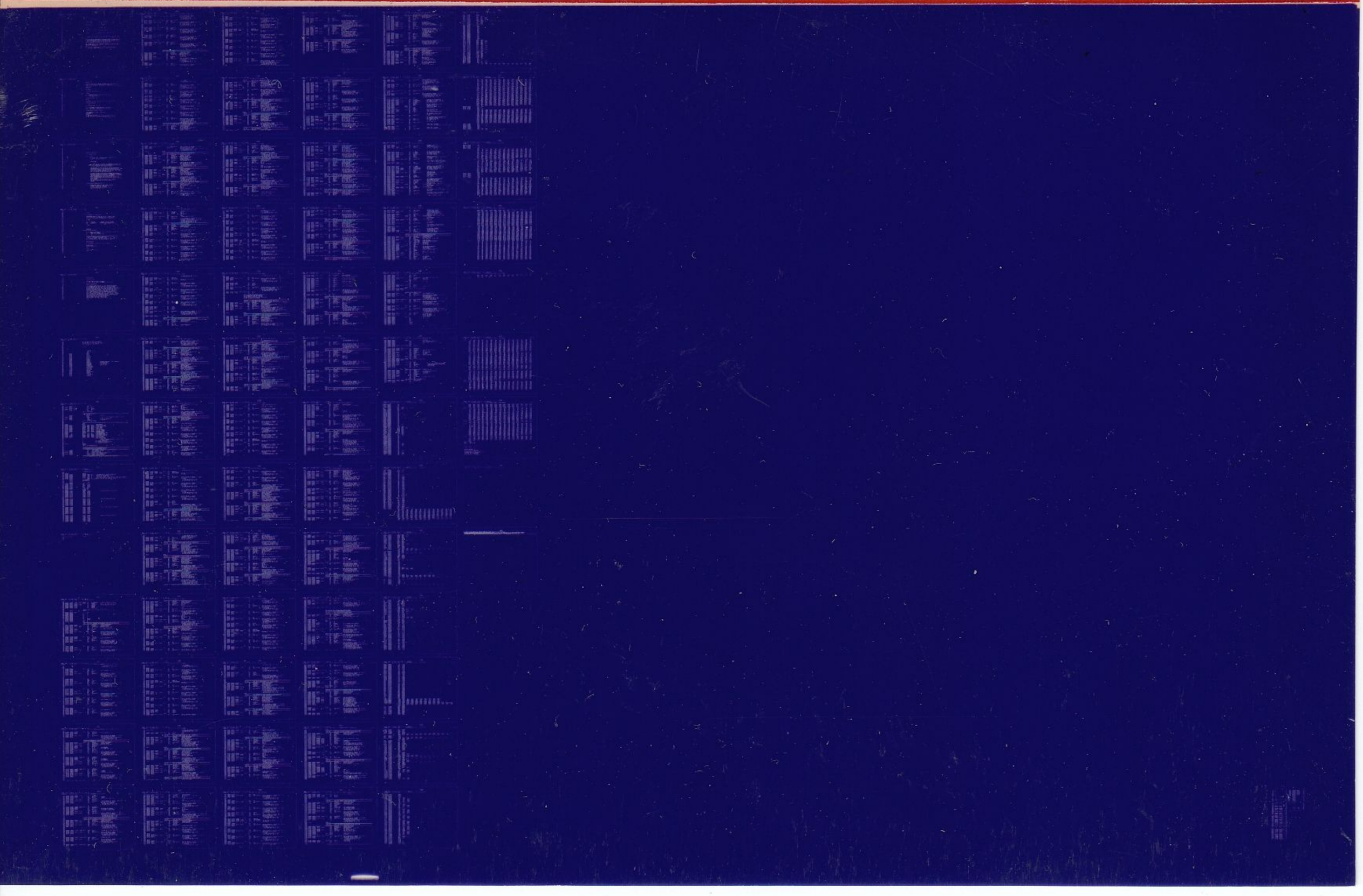
EP-DFKAB-B-DL-B

FICHE 1 OF 1

DEC 1976

digital

MADE IN USA



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000000
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.REPT 0

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DFKAB-B-D

PRODUCT NAME: 11/34 TRAP TEST

DATE : DECEMBER 1976

MAINTAINER: DIAGNOSTIC GROUP

AUTHOR: GLENN JOHNSON/ODES CHOATE

1. ABSTRACT

THIS IS A TEST OF ALL OPERATIONS AND INSTRUCTIONS THAT CAUSE
TRAPS. ALSO TESTED ARE TRAP OVERFLOW CONDITIONS,
ODDITIES OF REGISTER 6, INTERRUPTS , THE RESET AND WAIT INSTRUCTIONS.

2. REQUIREMENTS

2.1 EQUIPMENT

11/04 STANDARD COMPUTER

2.2 STORAGE

2.2.1 PROGRAM STORAGE - THE ROUTINE USES MEMORY
FROM 0000 TO 17500.

3. LOADING PROCEDURE

3.1 METHOD

PROCEDURE FOR NORMAL ABSOLUTE TAPES SHOULD BE FOLLOWED.

4. STARTING PROCEDURE

THE PROGRAM STARTS AT 200.

IF IT IS DESIRED TO RESET THE PASS COUNT BACK TO
ZERO ; THEN START THIS PROGRAM AT LOCATION 210

4.2 PROGRAM AND/OR OPERATOR ACTION

LOAD PROGRAM INTO MEMORY. (BOTTOM 4K)
LOAD ADDRESS.
START.
THE PROGRAM WILL LOOP.
IT WILL PRINT "END OF DFKAB" AFTER THE FIRST ITERATION
AND THEN PRINTS IT EVERY 15 TIMES(APROXIMATELY A MINUTE)

5. OPERATION

5.2 SUBROUTINE ABSTRACTS

5.2.1 BEGIN AT 200

5.2.2 SCOPE

IF A SCOPE LOOP IS NEEDED INSERT A BRANCH AS THE COMMENT TO THE HALT EXPLAINS.

5.2.3 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 CONTAIN A HALT (000000) (THIS LOCATION IS ALSO THE STATUS WORD FOR THAT VECTOR ENTRANCE. BUT THIS WILL HAVE NO EFFECT ON IT ALSO BEING THE NEXT INSTRUCTION).

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 WHERE THE PROGRAM WAS. WHEN THE INTERRUPT OR TRAP OCCURRED; MEMORY AS SPECIFIED BY R6 CONTAINS THE PC OF THE INSTRUCTION FOLLOWING THE INSTRUCTION WHERE THE TRAP OCCURRED.
THE CONTENTS OF LOCATION '$TESTN'(304) CONTAINS 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.
NOTE:IF A SCOPE LOOP IS NEEDED
THE COMMENT SECTION OF THE HALT EXPLAINS
HOW TO UTILIZE THIS LOOP.

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                        6.      ERRORS

                        6.1     ALL ERRORS WILL CAUSE A HALT.

                        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 SEQUENCIAL INCREMENT AND COMPARE COUNT.

                                EXAMPLE

                        TSTA:   INC     @#$TSTNM        ;INCREMENT THE TEST NUMBER
                                CMP     #A,@#$TSTNM     ;COMPARE FOR THE RIGHT TEST
                                BNE     TSTA+1-12       ;IF NOT CORRECT BRACNH TO A HALT
                                ----
                                CODE



                                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

                        7.      RESTRICTIONS
                        7.1     STARTING RESTRICTION

                                NONE

                        7.2     OPERATIONAL RESTRICTION

                                NONE
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                                8.      MISCELLANEOUS

                                8.1     EXECUTION TIME

                                        FOR ONE ITERATION ABOUT 5 SECONDS.
                                        IT TYPES "END OF DFKAB" APROXIMATELY EVERY MINUTE.

                                9.      PROGRAM DESCRIPTION

                                        THIS PROGRAM CHECKS THAT ON ALL TRAP OPERATIONS REGISTER
                                        6 IS DECREMENTED THE CORRECT AMOUNT, THAT THE CORRECT
                                        PC IS SAVED ON THE STACK, THAT THE OLD CONDITION CODES AND
                                        PRIORITY ARE PLACED ON THE STACK AND THAT THE NEW STATUS AND
                                        CONDITION CODES ARE CORRECT.  BOTH THE "TRAP" AND "EMT"
                                        TRAP INSTRUCTIONS ARE TESTED TO SEE THAT ALL COMBINATIONS WILL
                                        TRAP.  CHECKED ALSO IS THAT ALL RESERVED INSTRUCTIONS
                                        WILL TRAP.  VERIFICATION OF THE "TRT" INSTRUCTION (00003)
                                        WHICH IS USED FOR SOFTWARE DEBUG ROUTINES: ODT,DDT, IS DONE.
                                        ALSO, THE TRACE BIT IS CHECKED TO SEE IF IT CAUSES A TRAP.
                                        THE RTI AND RTT INSTRUCTIONS ARE CHECKED. STACK OVERFLOW IS
                                        ALSO CHECKED FOR ALL THE TRAP INSTRUCTIONS.
                                        SPECIAL CHECKS ARE MADE TO SEE IF BUS
                                        ERROR TRAPS OCCUR ON NON-EXISTENT MEMORY.

                                        .ENDR
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                        ;ALL INSTRUCTIONS THAT ARE RESERVED
                        ;SHOULD TRAP TO LOCATION 10, AND THE
                        ;PC THAT POINTS TO THE TRAPPING INSTRUCTION
                        ;SHOULD BE PLACED ON THE STACK


                        :LISTING



                                .LIST ME
                                .NLIST MC,MD,CND
                                .ABS
000006                          SP=%6
000006                          R6=%6
000003                          TAB=%3
000001                          LAST=%1
000005                          FIRST=%5
000002                          R2=%2
000000                          HLT=HALT
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
177776                          STATUS=177776
000007                          TRAPA=7
000010                          RTRAP=10
004700                          ILLA=004700
000100                          ILLB=100
177776                          CC=177776
```

```
                000200                  .=200
        000200  000167  000414          JMP     BEGIN
                000210                  .=210
        000210  005037  000306          CLR     @#$PASS
        000214  000167  000400          JMP     BEGIN
                000300                  .=300
                                .SBTTL  ACT11 HOOKS

                                ;*************************************************************************
                                ;HOOKS REQUIRED BY ACT11
                000300                  $SVPC=.                 ;SAVE PC
                000046                  .=46
        000046  015424                  $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
                000052                  .=52
        000052  000000                  .WORD   0               ;;2)SET LOC.52 TO ZERO
                000300                  .=$SVPC                 ;; RESTORE PC
                                .SBTTL  APT MAILBOX-ETABLE

                                ;*************************************************************************
                                .EVEN
        000300                  $MAIL:                  ;;APT MAILBOX
        000300  000000          $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
        000302  000000          $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
        000304  000000          $TESTN: .WORD   ATESTN  ;;TEST NUMBER
        000306  000000          $PASS:  .WORD   APASS   ;;PASS COUNT
        000310  000000          $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
        000312  000000          $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
        000314  000000          $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
        000316  000000          $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
        000320                  $ETABLE:                ;;APT ENVIRONMENT TABLE
        000320     000          $ENV:   .BYTE   AENV    ;;ENVIRONMENT BYTE
        000321     000          $ENVM:  .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
        000322  000000          $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
        000324  000000          $USWR:  .WORD   AUSWR   ;;USER SWITCHES
        000326  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
        000330                  $ETEND:
                                .MEXIT
                                .SBTTL  APT PARAMETER BLOCK

                                ;*************************************************************************
                                ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
                                ;*************************************************************************
                000330                  .$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  000330                  $APTHDR ;;POINT TO APT HEADER BLOCK
                000330                  .=.$X   ;;RESET LOCATION COUNTER
                                ;*************************************************************************
                                ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
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                                ;INTERFACE SPEC.

000330                          $APTHD:
000330  000000                 $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
000332  000300                 $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
000334  000002                 $TSTM:  .WORD   2       ;;RUN TIM OF LONGEST TEST
000336  000002                 $PASTM: .WORD   2       ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
000340  000000                 $UNITM: .WORD   0       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
000342  000014                         .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
        000304                 $TSTNM=$TESTN
        000302                 $ERROR=$FATAL

        000500                          .=500
000500  000000                 BUFF:   0
000502  177572                 SR0:    177572
000504  177573                 SR0H:   177573
000506  177574                 SR1:    177574
000510  177576                 SR2:    177576
000512  000250                 KTVEC:  250
000514  000252                 KTSTA:  252
000516                          ADRTAB:
000516  177600                 UPDR0:  177600                  ;USER PAGE DESCRIPTOR REGISTERS
000520  177602                 UPDR1:  177602
000522  177604                 UPDR2:  177604
000524  177606                 UPDR3:  177606
000526  177610                 UPDR4:  177610
000530  177612                 UPDR5:  177612
000532  177614                 UPDR6:  177614
000534  177616                 UPDR7:  177616
                               ;
000536  177640                 UPAR0:  177640          ;USER PAGE ADDRESS REGISTERS
000540  177642                 UPAR1:  177642
000542  177644                 UPAR2:  177644
000544  177646                 UPAR3:  177646
000546  177650                 UPAR4:  177650
000550  177652                 UPAR5:  177652
000552  177654                 UPAR6:  177654
000554  177656                 UPAR7:  177656
                               ;
000556  172300                 KPDR0:  172300          ;KERNEL PAGE DESCRIPTOR REGISTERS
000560  172302                 KPDR1:  172302
000562  172304                 KPDR2:  172304
000564  172306                 KPDR3:  172306
000566  172310                 KPDR4:  172310
000570  172312                 KPDR5:  172312
000572  172314                 KPDR6:  172314
000574  172316                 KPDR7:  172316
                               ;
000576  172340                 KPAR0:  172340          ;KERNEL PAGE ADDRESS REGISTERS
000600  172342                 KPAR1:  172342
000602  172344                 KPAR2:  172344
000604  172346                 KPAR3:  172346
000606  172350                 KPAR4:  172350
000610  172352                 KPAR5:  172352
000612  172354                 KPAR6:  172354
000614  172356                 KPAR7:  172356
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J01


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   347  000616  000614                  ADREND: .-2
   348
   349
   350
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  000620  012737  177777  015452  BEGIN:  MOV     #-1,@#PASSPT    ;CLEAR THE ITERATION COUNTER
  000626  005067  177446          RESTRT: CLR     $MSGTY
  000632  012767  015630  177164          MOV     #PWRDWN,24      ;SET UP THE POWER DOWN VECTOR
  000640  012767  000340  177160          MOV     #340,26         ;SET UP POWER DOWN PRIORITY
  000646  005067  177432                  CLR     $TSTNM
  000652  005067  177424                  CLR     $ERROR
  000656  012702  000300                  MOV     #$MSGTY,R2

                                  ;SPECIAL CASE OF ODD;.EVEN .BYTE AND REGISTER 6
          000000                  HERE=0

  000662  000167  000024                  JMP     TST1
  000666  000000                  K1:     0
  000670  000000                  K2:     0
  000672  000000                  K3:     0
  000674  000000                  K4:     0
  000676  000000                  K5:     0
  000700  000000                  K6:     0
  000702  052525                  K7:     052525
  000704  052400                  K10:    052400
  000706  000000                  K11:    0
  000710  000000                  K12:    0
                                  ;*************************************************************************
                                  ;TEST 1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES
                                  ;*************************************************************************
  000712  005237  000304          TST1:   INC     @#$TESTN        ;UPDATE TEST NUMBER
  000716  022737  000001  000304          CMP     #1,@#$TESTN     ;SEQUENCE ERROR?
  000724  001137                          BNE     TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
  000726  005006                          CLR     %6
  000730  112667  177044                  MOVB    (6)+,HERE       ;SIX SHOULD INCREMENT BY TWO
  000734  020627  000002                  CMP     %6,#2
  000740  001405                          BEQ     BR1
  000742  012737  000001  000302          MOV     #1,@#$FATAL     ;MOVE TO MAILBOX #  *******  1  *******
  000750  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  000752  000000                          HALT                    ;R6 DID NOT AUTO INCREMENT BY TWO
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 764

  000754  012706  001000          BR1:    MOV     #1000,%6
  000760  114627  000000                  MOVB    -(6),#HERE      ;SHOULD DECREMENT BY TWO
  000764  020627  000776                  CMP     %6,#776
  000770  001405                          BEQ     BR2
  000772  012737  000002  000302          MOV     #2,@#$FATAL     ;MOVE TO MAILBOX #  *******  2  *******
  001000  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  001002  000000                          HALT                    ;R6 DID NOT AUTO DECREMENT BY 2
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 750

  001004  005006                  BR2:    CLR     %6
  001006  112626                          MOVB    (6)+,(6)+       ;DOUBLES AUTO INCREMENT OF R6
  001010  020627  000004                  CMP     %6,#4
  001014  001405                          BEQ     BR3
  001016  012737  000003  000302          MOV     #3,@#$FATAL     ;MOVE TO MAILBOX #  *******  3  *******
  001024  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  001026  000000                          HALT                    ;WRONG AUTO INCREMENT OF R6
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                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 736

001030  005006                        BR3:    CLR     %6
001032  005004                                CLR     %4
001034  122624                                CMPB    (6)+,(4)+       ;TEST INCREMENT OF R6
001036  020627  000002                        CMP     %6,#2
001042  001405                                BEQ     BR4
001044  012737  000004  000302                MOV     #4,@#$FATAL     ;MOVE TO MAILBOX #  *******  4  *******
001052  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001054  000000                                HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 723

001056  005006                        BR4:    CLR     %6
001060  005004                                CLR     %4
001062  122426                                CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
001064  020627  000002                        CMP     %6,#2
001070  001405                                BEQ     BR5
001072  012737  000005  000302                MOV     #5,@#$FATAL     ;MOVE TO MAILBOX #  *******  5  *******
001100  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001102  000000                                HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 710

001104  005036                        BR5:    CLR     %6
001106  005004                                CLR     %4
001110  122624                                CMPB    (6)+,(4)+       ;TEST INCREMENT OF R4
001112  020427  000001                        CMP     %4,#1
001116  001405                                BEQ     BR6
001120  012737  000006  000302                MOV     #6,@#$FATAL     ;MOVE TO MAILBOX #  *******  6  *******
001126  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001130  000000                                HALT                    ;WRONG INCREMENT OF R4
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 675

001132  005006                        BR6:    CLR     %6
001134  005004                                CLR     %4
001136  122426                                CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
001140  020627  000002                        CMP     %6,#2
001144  001405                                BEQ     BR7
001146  012737  000007  000302                MOV     #7,@#$FATAL     ;MOVE TO MAILBOX #  *******  7  *******
001154  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001156  000000                                HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 662

001160  005006                        BR7:    CLR     %6
001162  005004                                CLR     %4
001164  122426                                CMPB    (4)+,(6)+       ;TEST INCREMENT OF R4
001166  020427  000001                        CMP     %4,#1
001172  001405                                BEQ     BR10
001174  012737  000010  000302                MOV     #10,@#$FATAL    ;MOVE TO MAILBOX #  *******  10  *******
001202  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001204  000000                                HALT                    ;WRONG INCREMENT OF R4
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 647
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                                ;*****************************************************************************
                                ;TEST 2 TEST TRANSFER OF .BYTE USING R6
                                ;******* *****************************************************************************
001236  005237  000304  TST2:   INC     @#$TESTN        ;UPDATE TEST NUMBER
001242  022737  000002  000304  CMP     #2,@#$TESTN     ;SEQUENCE ERROR?
001250  001137                  BNE     TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
001252  012767  123456  177416  MOV     #123456,K5
001260  012767  050505  177400  MOV     #050505,K1
001266  012705  000666          MOV     #K1,%5          ;%5=(050505)K1
001272  012706  000676          MOV     #K5,%6          ;%6=(123456)K5
001276  112625                  MOVB    (6)+,(5)+       ;LOW .BYTE OF R6 TO R5
001300  022767  050456  177360  CMP     #050456,K1
001306  001405                  BEQ     BR11
001310  012737  000012  000302  MOV     #12,@#$FATAL    ;MOVE TO MAILBOX #  *******  12  *******
001316  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001320  000000                  HALT                    ;FALSE TRANSFER OF .BYTE
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 753

001322  012767  123456  177346  BR11:   MOV     #123456,K5
001330  012767  050505  177330          MOV     #050505,K1
001336  012705  000666          MOV     #K1,%5          ;%5(050505)K1
001342  012706  000700          MOV     #K6,%6          ;%6(123456)K5
001346  114625                  MOVB    -(6),(5)+       ;LOW .BYTE OF R6 TO R5 (DECREMENT)
001350  026727  177312  050456  CMP     K1,#050456
001356  001405                  BEQ     BR12
001360  012737  000013  000302  MOV     #13,@#$FATAL    ;MOVE TO MAILBOX #  *******  13  *******
001366  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001370  000000                  HALT                    ;FALSE R6 .BYTE TRANSFER
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 727

001372  012767  123456  177266  BR12:   MOV     #123456,K1
001400  012767  050505  177270          MOV     #050505,K5
001406  012705  000666          MOV     #K1,%5          ;(123456)
001412  012706  000676          MOV     #K5,%6          ;(050505)
001416  112526                  MOVB    (5)+,(6)+       ;LOW OF R5 TO LOW OF R6
001420  022767  050456  177250  CMP     #050456,K5
001426  001405                  BEQ     BR13
001430  012737  000014  000302  MOV     #14,@#$FATAL    ;MOVE TO MAILBOX #  *******  14  *******
001436  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001440  000000                  HALT                    ;FALSE R6 .BYTE TRANSFER
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 703

001442  012767  123456  177216  BR13:   MOV     #123456,K1
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   519  001450  012767  050505  177220          MOV     #050505,K5
   520  001456  012705  000667                  MOV     #K1+1,%5        ;123456
   521  001462  012706  000676                  MOV     #K5,%6          ;050505
   522  001466  112526                          MOVB    (5)+,(6)+       ;HIGH OF R5 TO LOW OF R6
   523  001470  026727  177202  050647          CMP     K5,#050647
   524  001476  001405                          BEQ     BR14
   525  001500  012737  000015  000302          MOV     #15,@#$FATAL    ;MOVE TO MAILBOX #  *******  15  *******
   526  001506  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   527  001510  000000                          HALT                    ;FALSE R6 .BYTE TRANSFER
   528                                                                  ; TO SCOPE REPLACE HALT W/ 240
   529                                                                  ; AND REPLACE NEXT INST W/ 657
   530
   531  001512  012767  123456  177146  BR14:   MOV     #123456,K1
   532  001520  012767  050505  177150          MOV     #050505,K5
   533  001526  012705  000667                  MOV     #K1+1,%5        ;R5-123456-ODD ADDRESS
   534  001532  012706  000676                  MOV     #K5,%6          ;R6-050505--.EVEN ADDRESS
   535  001536  112625                          MOVB    (6)+,(5)+       ;LOW OF R6 TO HIGH OF R5
   536  001540  022767  042456  177120          CMP     #042456,K1
   537  001546  001405                          BEQ     TST3
   538  001550  012737  000016  000302          MOV     #16,@#$FATAL    ;MOVE TO MAILBOX #  *******  16  *******
   539  001556  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   540  001560  000000                          HALT                    ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TSTNM
   541                                                                  ; TO SCOPE REPLACE HALT W/ 240
   542                                                                  ; AND REPLACE NEXT INST W/ 633
   543                          ;***************************************************************************
   544                          ;TEST 3 TEST BYTE OPERATION WITH SEQUENTIAL ODD-EVEN ADDRESS
   545                          ;***************************************************************************
   546  001562  005237  000304  TST3:   INC     @#$TESTN        ;UPDATE TEST NUMBER
   547  001566  022737  000003  000304          CMP     #3,@#$TESTN     ;SEQUENCE ERROR?
   548  001574  001103                          BNE     TST4-12 ;BR TO ERROR HALT ON SEQ ERROR
   549  001576  126767  177100  177077          CMPB    K7,K7+1         ;SAME .WORD LOW TO HIGH
   550  001604  001405                          BEQ     BR15
   551  001606  012737  000017  000302          MOV     #17,@#$FATAL    ;MOVE TO MAILBOX #  *******  17  *******
   552  001614  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   553  001616  000000                          HALT                    ;SHOULD COMPARE LOW TO HIGH
   554                                                                  ; TO SCOPE REPLACE HALT W/ 240
   555                                                                  ; AND REPLACE NEXT INST W/ 766
   556
   557  001620  126767  177057  177054  BR15:   CMPB    K7+1,K7         ;COMPARE ODD TO .EVEN SAME .WORD
   558  001626  001405                          BEQ     BR16
   559  001630  012737  000020  000302          MOV     #20,@#$FATAL    ;MOVE TO MAILBOX #  *******  20  *******
   560  001636  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   561  001640  000000                          HALT                    ;ODD TO .EVEN .BYTE FAILURE
   562                                                                  ; TO SCOPE REPLACE HALT W/ 240
   563                                                                  ; AND REPLACE NEXT INST W/ 755
   564
   565  001642  126767  177037  177032  BR16:   CMPB    K10+1,K7        ;SEQUENTIAL .BYTES
   566  001650  001405                          BEQ     BR17
   567  001652  012737  000021  000302          MOV     #21,@#$FATAL    ;MOVE TO MAILBOX #  *******  21  *******
   568  001660  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   569  001662  000000                          HALT                    ;ODD TO .EVEN FAILED
   570                                                                  ; TO SCOPE REPLACE HALT W/ 240
   571                                                                  ; AND REPLACE NEXT INST W/ 744
   572
   573  001664  126767  177014  177006  BR17:   CMPB    K10,K6
   574  001672  001405                          BEQ     BR20
```

```
001674  012737  000022  000302          MOV     #22,@#$FATAL    ;MOVE TO MAILBOX #  *******  22  *******
001702  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001704  000000                          HALT                    ;.EVEN TO EVEN FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 733

001706  126767  176771  176771  BR20:   CMPB    K7+1,K10+1
001714  001405                          BEQ     BR21
001716  012737  000023  000302          MOV     #23,@#$FATAL    ;MOVE TO MAILBOX #  *******  23  *******
001724  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001726  000000                          HALT                    ;ODD TO ODD FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 722

001730  126767  176750  176747  BR21:   CMPB    K10,K10+1
001736  001005                          BNE     BR22
001740  012737  000024  000302          MOV     #24,@#$FATAL    ;MOVE TO MAILBOX #  *******  24  *******
001746  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001750  000000                          HALT                    ;LOW TO HIGH IN SAME .WORD FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 711

001752  126767  176727  176725  BR22:   CMPB    K10+1,K10+1
001760  001405                          BEQ     BR23
001762  012737  000025  000302          MOV     #25,@#$FATAL    ;MOVE TO MAILBOX #  *******  25  *******
001770  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001772  000000                          HALT                    ;HIGH TO LOW IN SAME .WORD FAILED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 700

001774  126767  176704  176701  BR23:   CMPB    K10,K7+1
002002  001005                          BNE     TST4
002004  012737  000026  000302          MOV     #26,@#$FATAL    ;MOVE TO MAILBOX #  *******  26  *******
002012  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002014  000000                          HALT                    ;.EVEN TO ODD FAILED,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 667



                                ;*****************************************************************************
                                ;TEST 4 TEST THE CC BITS
                                ;*****************************************************************************
002016  005237  000304          TST4:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002022  022737  000004  000304          CMP     #4,@#$TESTN     ;SEQUENCE ERROR?
002030  001062                          BNE     TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
002032  000277                          SCC                     ;SET STATUS
002034  005067  175736                  CLR     STATUS          ;CLEAR STATUS
002040  103005                          BCC     BR33
002042  012737  000027  000302          MOV     #27,@#$FATAL    ;MOVE TO MAILBOX #  *******  27  *******
002050  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002052  000000                          HALT                    ;C NOT CLEAR
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 766

002054                          BR33:
002054  102005                          BVC     BR34
002056  012737  000030  000302          MOV     #30,@#$FATAL    ;MOVE TO MAILBOX #  *******  30  *******
002064  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

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        002066  000000                                  HALT                            ;V NOT CLEAR
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 760
        002070                                  BR34:
        002070  001005                                  BNE     BR35
        002072  012737  000031  000302                  MOV     #31,@#$FATAL            ;MOVE TO MAILBOX #  *******  31  *******
        002100  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002102  000000                                  HALT                            ;Z NOT CLEAR
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 752
        002104                                  BR35:
        002104  100005                                  BPL     BR36
        002106  012737  000032  000302                  MOV     #32,@#$FATAL            ;MOVE TO MAILBOX #  *******  32  *******
        002114  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002116  000000                                  HALT                            ;N NOT CLEAR
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 744
        002120  000257                          BR36:   CCC                             ;CLEAR CONDITION CODES
        002122  052767  000017  175646                  BIS     #17,STATUS              ;SET STATUS TO ONES

        002130  103405                                  BCS     BR37
        002132  012737  000033  000302                  MOV     #33,@#$FATAL            ;MOVE TO MAILBOX #  *******  33  *******
        002140  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002142  000000                                  HALT                            ;C NOT SET
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 732
        002144                                  BR37:
        002144  102405                                  BVS     BR40
        002146  012737  000034  000302                  MOV     #34,@#$FATAL            ;MOVE TO MAILBOX #  *******  34  *******
        002154  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002156  000000                                  HALT                            ;V NOT SET
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 724
        002160                                  BR40:
        002160  001405                                  BEQ     BR41
        002162  012737  000035  000302                  MOV     #35,@#$FATAL            ;MOVE TO MAILBOX #  *******  35  *******
        002170  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002172  000000                                  HALT                            ;Z NOT SET
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 716
        002174                                  BR41:
        002174  100405                                  BMI     TST5
        002176  012737  000036  000302                  MOV     #36,@#$FATAL            ;MOVE TO MAILBOX #  *******  36  *******
        002204  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        002206  000000                                  HALT                            ;N NOT SET,OR WRONG $TSTNM
                                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                                        ; AND REPLACE NEXT INST W/ 710
                                                ;*******************************************************************************
                                                ;TEST 5 TEST THAT A TRAP OCCURS ON A RESERVED INSTRUCTION
                                                ;*******************************************************************************
        002210  005237  000304                  TST5:   INC     @#$TESTN                ;UPDATE TEST NUMBER
        002214  022737  000005  000304                  CMP     #5,@#$TESTN             ;SEQUENCE ERROR?
        002222  001006                                  BNE     RETA                    ;BR TO ERROR HALT ON SEQ ERROR
        002224  012706  000500                          MOV     #BUFF,SP                ;STACK POINTER SETUP
        002230  012767  002252  175552                  MOV     #RETAH,RTRAP            ;RETURN LOCATION
        002236  000007                                  TRAPA                           ;RESERVED INSTRUCTION, SHOULD TRAP
```

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002240                                  RETA:
002240  012737  000037  000302                  MOV     #37,@#$FATAL    ;MOVE TO MAILBOX #  *******  37  *******
002246  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002250  000000                                  HALT                    ;RESERVE INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 764
002252                                  RETAH:
                                        ;*************************************************************************
                                        ;TEST 6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                        ;*************************************************************************
002252  005237  000304                  TST6:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002256  022737  000006  000304                  CMP     #6,@#$TESTN     ;SEQUENCE ERROR?
002264  001011                                  BNE     TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
002266  012706  000500                          MOV     #BUFF,SP        ;STACK POINTER SETUP
002272  012767  002302  175510                  MOV     #RETB,RTRAP     ;RETURN POINTER
002300  000007                                  TRAPA                   ;RESERVED INSTRUCTION
002302  020627  000474                  RETB:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
002306  001405                                  BEQ     TST7
002310  012737  000040  000302                  MOV     #40,@#$FATAL    ;MOVE TO MAILBOX #  *******  40  *******
002316  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002320  000000                                  HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND [illegible]E NEXT INST W/ 76[illegible]
                                        ;*************************************************************************
                                        ;TEST 7 TEST THAT PROPER P.C. IS SAVE[illegible]
                                        ;*************************************************************************
002322  005237  000304                  TST7:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002326  022737  000007  000304                  CMP     #7,@#$TESTN     ;SEQUENCE ERROR?
002334  001012                                  BNE     TST10-12        ;BR TO ERROR HALT ON SEQ ERROR
002336  012706  000500                          MOV     #BUFF,SP        ;STACK POINTER SETUP
002342  012767  002352  175440                  MOV     #RETC,RTRAP     ;RETURN FROM TRAP POINTER
002350  000007                          INSTC:  TRAPA                   ;TRAP ON THIS INSTRUCTION
002352  022767  002352  176114          RETC:   CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
002360  001405                                  BEQ     TST10
002362  012737  000041  000302                  MOV     #41,@#$FATAL    ;MOVE TO MAILBOX #  *******  41  *******
002370  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002372  000000                                  HALT                    ;INCORRECT P.C., OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 760
                                        ;*************************************************************************
                                        ;TEST 10        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
                                        ;*************************************************************************
002374  005237  000304                  TST10:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002400  022737  000010  000304                  CMP     #10,@#$TESTN    ;SEQUENCE ERROR?
002406  001040                                  BNE     TST11-12        ;BR TO ERROR HALT ON SEQ ERROR
002410  012706  000500                          MOV     #BUFF,SP        ;SET UP
002414  012767  002432  175366                  MOV     #RETD,RTRAP     ;SET UP
002422  005067  175350                          CLR     CC              ;CLEAR CC AND PRIORITY
002426  000257                                  CCC
002430  000007                                  TRAPA                   ;TRAP
002432  026727  176040  000000          RETD:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
002440  001405                                  BEQ     1$
002442  012737  000042  000302                  MOV     #42,@#$FATAL    ;MOVE TO MAILBOX #  *******  42  *******
002450  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002452  000000                                  HALT                    ;INCORRECT STATUS
                                                                        ; TO SCOPE REPLACE HALT W/ 240
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                                                        ; AND REPLACE NEXT INST W/ 755
002454  012706  000500          1$:     MOV     #BUFF,SP        ;SET JP
002460  012767  002500  175322          MOV     #RETE,RTRAP     ;SET UP
002466  012767  000357  175302          MOV     #357,CC         ;SET PRIORITY
002474  000277                          SCC                     ;SET CC
002476  000007                          TRAPA                   ;TRAP
002500  026727  175772  000357  RETE:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
002506  001405                          BEQ     TST11
002510  012737  000043  000302          MOV     #43,@#$FATAL    ;MOVE TO MAILBOX #  *******  43  *******
002516  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002520  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 732
                                ;***************************************************************************
                                ;TEST 11         TEST THAT "NEW" STATUS IS CORRECT
                                ;***************************************************************************
002522  005237  000304          TST11:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002526  022737  000011  000304          CMP     #11,@#$TESTN    ;SEQUENCE ERROR?
002534  001121                          BNE     STPP            ;BR TO ERROR HALT ON SEQ ERROR
002536  012706  000500                  MOV     #BUFF,SP
002542  012767  002556  175240          MOV     #RETF,RTRAP
002550  005067  175236                  CLR     RTRAP+2         ;CLEAR FUTURE PRIORITY AND CC
002554  000007                          TRAPA
002556                          RETF:                           ;TEST FOR "C" CLEARED
002556  100005                          BPL     1$
002560  012737  000044  000302          MOV     #44,@#$FATAL    ;MOVE TO MAILBOX #  *******  44  *******
002566  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002570  000000                          HALT                    ;N NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
002572                          1$:
002572  001005                          BNE     2$
002574  012737  000045  000302          MOV     #45,@#$FATAL    ;MOVE TO MAILBOX #  *******  45  *******
002602  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002604  000000                          HALT                    ;Z NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 753
002606                          2$:
002606  102005                          BVC     3$
002610  012737  000046  000302          MOV     #46,@#$FATAL    ;MOVE TO MAILBOX #  *******  46  *******
002616  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002620  000000                          HALT                    ;V NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 745
002622                          3$:
002622  103005                          BCC     4$
002624  012737  000047  000302          MOV     #47,@#$FATAL    ;MOVE TO MAILBOX #  *******  47  *******
002632  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002634  000000                          HALT                    ;C NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 737
002636  032767  000340  175132  4$:     BIT     #340,CC         ;TEST PRIORITY
002644  001405                          BEQ     5$
002646  012737  000050  000302          MOV     #50,@#$FATAL    ;MOVE TO MAILBOX #  *******  50  *******
002654  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002656  000000                          HALT                    ;PRIORITY NOT ZERO
```

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                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 726
002660  012706  000500          5$:    MOV     #BUFF,SP
002664  012767  002702  175116         MOV     #RETG,RTRAP
002672  012767  000357  175112         MOV     #357,RTRAP+2       ;SET NEW "CC" AND PRIORITY
002700  000007                         TRAPA                      ;TRAP HERE
002702                          RETG:
002702  100405                         BMI     1$
002704  012737  000051  000302         MOV     #51,@#$FATAL       ;MOVE TO MAILBOX #  *******  51  *******
002712  005212                         INC     (R2)               ;SET MSGTYP TO FATAL ERROR
002714  000000                         HALT                       ;N NOT SET
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 707
002716                          1$:
002716  001405                         BEQ     2$
002720  012737  000052  000302         MOV     #52,@#$FATAL       ;MOVE TO MAILBOX #  *******  52  *******
002726  005212                         INC     (R2)               ;SET MSGTYP TO FATAL ERROR
002730  000000                         HALT                       ;Z NOT SET
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 701
002732                          2$:
002732  102405                         BVS     3$
002734  012737  000053  000302         MOV     #53,@#$FATAL       ;MOVE TO MAILBOX #  *******  53  *******
002742  005212                         INC     (R2)               ;SET MSGTYP TO FATAL ERROR
002744  000000                         HALT                       ;V NOT SET
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 673
002746                          3$:
002746  103405                         BCS     4$
002750  012737  000054  000302         MOV     #54,@#$FATAL       ;MOVE TO MAILBOX #  *******  54  *******
002756  005212                         INC     (R2)               ;SET MSGTYP TO FATAL ERROR
002760  000000                         HALT                       ;C NOT SET
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 665
002762  016706  175010          4$:    MOV     CC,SP
002766  042706  000017                 BIC     #17,SP
002772  022706  000340                 CMP     #340,SP
002776  001405                         BEQ     STPPA
003000                          STPP:
003000  012737  000055  000302         MOV     #55,@#$FATAL       ;MOVE TO MAILBOX #  *******  55  *******
003006  005212                         INC     (R2)               ;SET MSGTYP TO FATAL ERROR
003010  000000                         HALT                       ;PRIORITY WAS CHANGED OR WRONG $TSTNM
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 651
003012  012767  000012  174770  STPPA: MOV     #12,10
003020  005067  174766                 CLR     12
                                ;*******************************************************************************
                                ;TEST 12          TEST THAT A TRAP OCCURS FOR A "TRAP" INSTRUCTION
                                ;*******************************************************************************
003024  005237  000304          TST12: INC     @#$TESTN           ;UPDATE TEST NUMBER
003030  022737  000012  000304         CMP     #12,@#$TESTN       ;SEQUENCE ERROR?
003036  001013                         BNE     TST13-12           ;BR TO ERROR HALT ON SEQ ERROR
003040  012767  000012  174742         MOV     #12,10
003046  005067  174740                 CLR     12
003052  012706  000500                 MOV     #BUFF,SP           ;STACK POINTER SETUP
003056  012767  003100  174750         MOV     #RETA1,RTRAP1      ;RETURN LOCATION
```

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000855  003064  104400                          TRAP                    ;RESERVED INSTRUCTION, SHOULD TRAP
000856  003066  012737  000056  000302          MOV     #56,@#$FATAL    ;MOVE TO MAILBOX #  *******  56  *******
000857  003074  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000858  003076  000000                          HALT                    ;TRAP DIDN'T TRAP,OR WRONG $TSTNM
000859                                                                  ; TO SCOPE REPLACE HALT W/ 240
000860                                                                  ; AND REPLACE NEXT INST W/ 757
000861  003100                          RETA1:
000862                                  ;*****************************************************************************
000863                                  ;TEST 13        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
000864                                  ;*****************************************************************************
000865  003100  005237  000304          TST13:  INC     @#$TESTN        ;UPDATE TEST NUMBER
000866  003104  022737  000013  000304          CMP     #13,@#$TESTN    ;SEQUENCE ERROR?
000867  003112  001011                          BNE     TST14-12        ;BR TO ERROR HALT ON SEQ ERROR
000868  003114  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
000869  003120  012767  003130  174706          MOV     #RETB1,RTRAP1   ;RETURN POINTER
000870  003126  104400                          TRAP                    ;RESERVED INSTRUCTION
000871  003130  020627  000474          RETB1:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
000872  003134  001405                          BEQ     TST14
000873  003136  012737  000057  000302          MOV     #57,@#$FATAL    ;MOVE TO MAILBOX #  *******  57  *******
000874  003144  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000875  003146  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
000876                                                                  ; TO SCOPE REPLACE HALT W/ 240
000877                                                                  ; AND REPLACE NEXT INST W/ 761
000878                                  ;*****************************************************************************
000879                                  ;TEST 14        TEST THAT PROPER P.C. IS SAVED
000880                                  ;*****************************************************************************
000881  003150  005237  000304          TST14:  INC     @#$TESTN        ;UPDATE TEST NUMBER
000882  003154  022737  000014  000304          CMP     #14,@#$TESTN    ;SEQUENCE ERROR?
000883  003162  001012                          BNE     TST15-12        ;BR TO ERROR HALT ON SEQ ERROR
000884  003164  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
000885  003170  012767  003200  174636          MOV     #RETC1,RTRAP1   ;RETURN FROM TRAP POINTER
000886  003176  104400                          TRAP                    ;TRAP ON THIS INSTRUCTION
000887  003200  022767  003200  175266  RETC1:  CMP     .,BUFF-4        ;CHECK INCREMENTED P.C.
000888  003206  001405                          BEQ     TST15
000889  003210  012737  000060  000302          MOV     #60,@#$FATAL    ;MOVE TO MAILBOX #  *******  60  *******
000890  003216  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000891  003220  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
000892                                                                  ; TO SCOPE REPLACE HALT W/ 240
000893                                                                  ; AND REPLACE NEXT INST W/ 760
000894                                  ;*****************************************************************************
000895                                  ;TEST 15        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
000896                                  ;*****************************************************************************
000897  003222  005237  000304          TST15:  INC     @#$TESTN        ;UPDATE TEST NUMBER
000898  003226  022737  000015  000304          CMP     #15,@#$TESTN    ;SEQUENCE ERROR?
000899  003234  001037                          BNE     TST16-12        ;BR TO ERROR HALT ON SEQ ERROR
000900  003236  012706  000500                  MOV     #BUFF,SP        ;SET UP
000901  003242  012767  003260  174564          MOV     #RETD1,RTRAP1   ;SET UP
000902  003250  005067  174522                  CLR     CC              ;CLEAR CC AND PRIORITY
000903  003254  000257                          CCC
000904  003256  104400                          TRAP                    ;TRAP
000905  003260  026727  175212  000000  RETD1:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
000906  003266  001405                          BEQ     1$
000907  003270  012737  000061  000302          MOV     #61,@#$FATAL    ;MOVE TO MAILBOX #  *******  61  *******
000908  003276  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000909  003300  000000                          HALT                    ;INCORRECT STATUS
000910                                                                  ; TO SCOPE REPLACE HALT W/ 240
```

H02


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                                                        ; AND REPLACE NEXT INST W/ 755
003302  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
003306  012767  003324  174520          MOV     #RETE1,RTRAP1   ;SET UP
003314  012767  000357  174454          MOV     #357,CC         ;SET PRIORITY
003322  104400                          TRAP                    ;SET CC
003324  026727  175146  000357  RETE1:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
003332  001405                          BEQ     TST16
003334  012737  000062  000302          MOV     #62,@#$FATAL    ;MOVE TO MAILBOX #  *******  62  *******
003342  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003344  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 733
                        ;*****************************************************************************
                        ;TEST 16        TEST THAT "NEW" STATUS IS CORRECT
                        ;*****************************************************************************
003346  005237  000304  TST16:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003352  022737  000016  000304          CMP     #16,@#$TESTN    ;SEQUENCE ERROR?
003360  001121                          BNE     TST17-12        ;BR TO ERROR HALT ON SEQ ERROR
003362  012706  000500                  MOV     #BUFF,SP
003366  012767  003402  174440          MOV     #RETF1,RTRAP1
003374  005067  174436                  CLR     RTRAP1+2        ;CLEAR FUTURE PRIORITY AND CC
003400  104400                          TRAP
003402                          RETF1:                          ;TEST FOR "C" CLEARED
003402  100005                          BPL     1$
003404  012737  000063  000302          MOV     #63,@#$FATAL    ;MOVE TO MAILBOX #  *******  63  *******
003412  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003414  000000                          HALT                    ;C NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
003416                          1$:
003416  001005                          BNE     2$
003420  012737  000064  000302          MOV     #64,@#$FATAL    ;MOVE TO MAILBOX #  *******  64  *******
003426  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003430  000000                          HALT                    ;Z NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 753
003432                          2$:
003432  102005                          BVC     3$
003434  012737  000065  000302          MOV     #65,@#$FATAL    ;MOVE TO MAILBOX #  *******  65  *******
003442  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003444  000000                          HALT                    ;V NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 745
003446                          3$:
003446  103005                          BCC     4$
003450  012737  000066  000302          MOV     #66,@#$FATAL    ;MOVE TO MAILBOX #  *******  66  *******
003456  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003460  000000                          HALT                    ;C NOT CLEARED
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 737
003462  032767  000340  174306  4$:     BIT     #340,CC         ;TEST PRIORITY
003470  001405                          BEQ     5$
003472  012737  000067  000302          MOV     #67,@#$FATAL    ;MOVE TO MAILBOX #  *******  67  *******
003500  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003502  000000                          HALT                    ;PRIORITY NOT ZERO
                                                        ; TO SCOPE REPLACE HALT W/ 240
```

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                                                        ; AND REPLACE NEXT INST W/ 726
003504  012706  000500          5$:     MOV     #BUFF,SP
003510  012767  003526  174316          MOV     #RETG1,RTRAP1
003516  012767  000357  174312          MOV     #357,RTRAP1+2   ;SET NEW "CC" AND PRIORITY
003524  104400                          TRAP                    ;TRAP HERE
003526                          RETG1:
003526  100405                          BMI     1$
003530  012737  000070  000302          MOV     #70,@#$FATAL    ;MOVE TO MAILBOX #  *******  70  *******
003536  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003540  000000                          HALT                    ;N NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 707
003542                          1$:
003542  001405                          BEQ     2$
003544  012737  000071  000302          MOV     #71,@#$FATAL    ;MOVE TO MAILBOX #  *******  71  *******
003552  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003554  000000                          HALT                    ;Z NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 701
003556                          2$:
003556  102405                          BVS     3$
003560  012737  000072  000302          MOV     #72,@#$FATAL    ;MOVE TO MAILBOX #  *******  72  *******
003566  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003570  000000                          HALT                    ;V NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 673
003572                          3$:
003572  103405                          BCS     4$
003574  012737  000073  000302          MOV     #73,@#$FATAL    ;MOVE TO MAILBOX #  *******  73  *******
003602  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003604  000000                          HALT                    ;C NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 665
003606  016706  174164          4$:     MOV     CC,SP
003612  042706  000017                  BIC     #17,SP
003616  022706  000340                  CMP     #340,SP
003622  001405                          BEQ     TST17
003624  012737  000074  000302          MOV     #74,@#$FATAL    ;MOVE TO MAILBOX #  *******  74  *******
003632  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003634  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 651
                        ;*****************************************************************************
                        ;TEST 17        TEST THAT ALL COMBINATION OF "TRAP" WILL CAUSE A TRAP
                        ;*****************************************************************************
003636  005237  000304  TST17:  INC     @#$TESTN        ;UPDATE TEST NUMBER
003642  022737  000017  000304          CMP     #17,@#$TESTN    ;SEQUENCE ERROR?
003650  001011                          BNE     BR4$            ;BR TO ERROR HALT ON SEQ ERROR
003652  012767  104400  000012          MOV     #TRAP,RB1       ;INITIALIZE BASE TRAP INSTRUCTION
003660  012767  003706  174146          MOV     #RA1,34         ;RETURN FROM TRAP TO RA1
003666  012706  000500          RC1:    MOV     #BUFF,SP        ;SET UP STACK POINTER
003672  104400                  RB1:    TRAP                    ;TRAP INST WILL BE MODIFIED TO TRAP+377
003674                          BR4$:
003674  012737  000075  000302          MOV     #75,@#$FATAL    ;MOVE TO MAILBOX #  *******  75  *******
003702  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003704  000000                          HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
```

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                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
003706  005267  177760          RA1:    INC     RB1     ;INCREMENT TRAP INSTRUCTION
003712  022767  104777  177752        CMP     #104777,RB1     ;TRAP+377 TO UPPER LIMIT
003720  103362                      BHIS    RC1     ;HAVE WE TESTED ALL
003722  012767  000036  174104      MOV     #36,34
003730  005067  174102              CLR     36
                        ;*******************************************************************************
                        ;TEST 20        TEST THAT A TRAP OCCURES ON AN "IOT" INSTRUCTION
                        ;*******************************************************************************
003734  005237  000304  TST20:     INC     @#$TESTN        ;UPDATE TEST NUMBER
003740  022737  000020  000304      CMP     #20,@#$TESTN    ;SEQUENCE ERROR?
003746  001006                      BNE     TST21-12        ;BR TO ERROR HALT ON SEQ ERROR
003750  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
003754  012767  003776  174036      MOV     #RETA2,RTRAP2   ;RETURN LOCATION
003762  000004                      IOT                     ;RESERVE INSTRUCTION, SHOULD TRAP
003764  012737  000076  000302      MOV     #76,@#$FATAL    ;MOVE TO MAILBOX #  *******  76  *******
003772  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
003774  000000                      HALT                    ;IOT DIDN'T TRAP,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 764
003776                          RETA2:
                        ;*******************************************************************************
                        ;TEST 21        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                        ;*******************************************************************************
003776  005237  000304  TST21:     INC     @#$TESTN        ;UPDATE TEST NUMBER
004002  022737  000021  000304      CMP     #21,@#$TESTN    ;SEQUENCE ERROR?
004010  001011                      BNE     TST22-12        ;BR TO ERROR HALT ON SEQ ERROR
004012  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
004016  012767  004026  173774      MOV     #RETB2,RTRAP2   ;RETURN POINTER
004024  000004                      IOT                     ;RESERVED INSTRUCTION
004026  020627  000474  RETB2:     CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
004032  001405                      BEQ     TST22
004034  012737  000077  000302      MOV     #77,@#$FATAL    ;MOVE TO MAILBOX #  *******  77  *******
004042  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004044  000000                      HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
                        ;*******************************************************************************
                        ;TEST 22        TEST THAT PROPER P.C. IS SAVED
                        ;*******************************************************************************
004046  005237  000304  TST22:     INC     @#$TESTN        ;UPDATE TEST NUMBER
004052  022737  000022  000304      CMP     #22,@#$TESTN    ;SEQUENCE ERROR?
004060  001012                      BNE     TST23-12        ;BR TO ERROR HALT ON SEQ ERROR
004062  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
004066  012767  004076  173724      MOV     #RETC2,RTRAP2   ;RETURN FROM TRAP POINTER
004074  000004                      IOT                     ;TRAP ON THIS INSTRUCTION
004076  022767  004076  174370  RETC2:     CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
004104  001405                      BEQ     TST23
004106  012737  000100  000302      MOV     #100,@#$FATAL   ;MOVE TO MAILBOX #  *******  100  *******
004114  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004116  000000                      HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 760
                        ;*******************************************************************************
                        ;TEST 23        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
```

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                                          ;*************************************************************************
004120  005237  000304          TST23:    INC     @#$TESTN          ;UPDATE TEST NUMBER
004124  022737  000023  000304            CMP     #23,@#$TESTN      ;SEQUENCE ERROR?
004132  001040                            BNE     TST24-12          ;BR TO ERROR HALT ON SEQ ERROR
004134  012706  000500                    MOV     #BUFF,SP          ;SET UP
004140  012767  004156  173652            MOV     #RETD2,RTRAP2     ;SET UP
004146  005067  173624                    CLR     CC                ;CLEAR CC AND PRIORITY
004152  000257                            CCC
004154  000004                            IOT                       ;TRAP
004156  026727  174314  000000  RETD2:    CMP     BUFF-2,#0         ;TEST THAT OLD STATUS WENT TO STACK
004164  001405                            BEQ     1$
004166  012737  000101  000302            MOV     #101,@#$FATAL     ;MOVE TO MAILBOX #  *******  101  *******
004174  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004176  000000                            HALT                      ;INCORRECT STATUS
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 755
004200  012706  000500          1$:       MOV     #BUFF,SP          ;SET UP
004204  012767  004224  173606            MOV     #RETE2,RTRAP2     ;SET UP
004212  012767  000357  173556            MOV     #357,CC           ;SET PRIORITY
004220  000277                            SCC                       ;SET CC
004222  000004                            IOT                       ;TRAP
004224  026727  174246  000357  RETE2:    CMP     BUFF-2,#357       ;COMPARES STATUS ON STACK
004232  001405                            BEQ     TST24
004234  012737  000102  000302            MOV     #102,@#$FATAL     ;MOVE TO MAILBOX #  *******  102  *******
004242  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004244  000000                            HALT                      ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 732
                                          ;*************************************************************************
                                          ;TEST 24          TEST THAT "NEW" STATUS IS CORRECT
                                          ;*************************************************************************
004246  005237  000304          TST24:    INC     @#$TESTN          ;UPDATE TEST NUMBER
004252  022737  000024  000304            CMP     #24,@#$TESTN      ;SEQUENCE ERROR?
004260  001121                            BNE     BR46              ;BR TO ERROR HALT ON SEQ ERROR
004262  012706  000500                    MOV     #BUFF,SP
004266  012767  004302  173524            MOV     #RETF2,RTRAP2
004274  005067  173522                    CLR     RTRAP2+2          ;CLEAR FUTURE PRIORITY AND CC
004300  000004                            IOT
004302                          RETF2:                              ;TEST FOR "C" CLEARED
004302  100005                            BPL     1$
004304  012737  000103  000302            MOV     #103,@#$FATAL     ;MOVE TO MAILBOX #  *******  103  *******
004312  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004314  000000                            HALT                      ;N NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 761
004316                          1$:
004316  001005                            BNE     2$
004320  012737  000104  000302            MOV     #104,@#$FATAL     ;MOVE TO MAILBOX #  *******  104  *******
004326  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004330  000000                            HALT                      ;Z NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 753
004332                          2$:
004332  102005                            BVC     3$
004334  012737  000105  000302            MOV     #105,@#$FATAL     ;MOVE TO MAILBOX #  *******  105  *******
004342  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
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1135  004344  000000                          HALT                    ;V NOT CLEARED
1136                                                                  ; TO SCOPE REPLACE HALT W/ 240
1137                                                                  ; AND REPLACE NEXT INST W/ 745
1138  004346                          3$:
1139  004346  103005                         BCC     4$
1140  004350  012737  000106  000302        MOV     #106,@#$FATAL   ;MOVE TO MAILBOX #  *******  106  *******
1141  004356  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1142  004360  000000                         HALT                    ;C NOT CLEARED
1143                                                                  ; TO SCOPE REPLACE HALT W/ 240
1144                                                                  ; AND REPLACE NEXT INST W/ 737
1145  004362  032767  000340  173406  4$:    BIT     #340,CC         ;TEST PRIORITY
1146  004370  001405                         BEQ     5$
1147  004372  012737  000107  000302        MOV     #107,@#$FATAL   ;MOVE TO MAILBOX #  *******  107  *******
1148  004400  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1149  004402  000000                         HALT                    ;PRIORITY NOT ZERO
1150                                                                  ; TO SCOPE REPLACE HALT W/ 240
1151                                                                  ; AND REPLACE NEXT INST W/ 726
1152  004404  012706  000500          5$:    MOV     #BUFF,SP
1153  004410  012767  004426  173402        MOV     #RETG2,RTRAP2
1154  004416  012767  000357  173376        MOV     #357,RTRAP2+2   ;SET NEW "CC" AND PRIORITY
1155  004424  000004                         IOT                     ;TRAP HERE
1156  004426                          RETG2:
1157  004426  100405                         BMI     1$
1158  004430  012737  000110  000302        MOV     #110,@#$FATAL   ;MOVE TO MAILBOX #  *******  110  *******
1159  004436  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1160  004440  000000                         HALT                    ;N NOT SET
1161                                                                  ; TO SCOPE REPLACE HALT W/ 240
1162                                                                  ; AND REPLACE NEXT INST W/ 707
1163  004442                          1$:
1164  004442  001405                         BEQ     2$
1165  004444  012737  000111  000302        MOV     #111,@#$FATAL   ;MOVE TO MAILBOX #  *******  111  *******
1166  004452  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1167  004454  000000                         HALT                    ;Z NOT SET
1168                                                                  ; TO SCOPE REPLACE HALT W/ 240
1169                                                                  ; AND REPLACE NEXT INST W/ 701
1170  004456                          2$:
1171  004456  102405                         BVS     3$
1172  004460  012737  000112  000302        MOV     #112,@#$FATAL   ;MOVE TO MAILBOX #  *******  112  *******
1173  004466  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1174  004470  000000                         HALT                    ;V NOT SET
1175                                                                  ; TO SCOPE REPLACE HALT W/ 240
1176                                                                  ; AND REPLACE NEXT INST W/ 673
1177  004472                          3$:
1178  004472  103405                         BCS     4$
1179  004474  012737  000113  000302        MOV     #113,@#$FATAL   ;MOVE TO MAILBOX #  *******  113  *******
1180  004502  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1181  004504  000000                         HALT                    ;C NOT SET
1182                                                                  ; TO SCOPE REPLACE HALT W/ 240
1183                                                                  ; AND REPLACE NEXT INST W/ 665
1184  004506  016706  173264          4$:    MOV     CC,SP
1185  004512  042706  000017                 BIC     #17,SP
1186  004516  022706  000340                 CMP     #340,SP
1187  004522  001405                         BEQ     BR46A
1188  004524                          BR46:
1189  004524  012737  000114  000302        MOV     #114,@#$FATAL   ;MOVE TO MAILBOX #  *******  114  *******
1190  004532  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
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1191  004534  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1192                                                                  ; TO SCOPE REPLACE HALT W/ 240
1193                                                                  ; AND REPLACE NEXT INST W/ 651
1194  004536  012767  000022  173254  BR4EA:  MOV     #22,20          ;.+2
1195  004544  005067  173252                 CLR     22              ;HALT
1196                                  ;*************************************************************************
1197                                  ;TEST 25        TEST THAT A TRAP OCCURS ON AN EMT  INSTRUCTION
1198                                  ;*************************************************************************
1199  004550  005237  000304          TST25: INC     @#$TESTN        ;UPDATE TEST NUMBER
1200  004554  022737  000025  000304         CMP     #25,@#$TESTN    ;SEQUENCE ERROR?
1201  004562  001006                         BNE     TST26-12        ;BR TO ERROR HALT ON SEQ ERROR
1202  004564  012706  000500                 MOV     #BUFF,SP        ;STACK POINTER SETUP
1203  004570  012767  004612  173232         MOV     #RETA3,RTRAP3   ;RETURN LOCATION
1204  004576  104000                         EMT                     ;RESERVE INSTRUCTIOM, SHOULD TRAP
1205  004600  012737  000115  000302         MOV     #115,@#$FATAL   ;MOVE TO MAILBOX #  *******  115  *******
1206  004606  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1207  004610  000000                         HALT                    ;EMT DIDN'T TRAP,OR WRONG $TSTNM
1208                                                                  ; TO SCOPE REPLACE HALT W/ 240
1209                                                                  ; AND REPLACE NEXT INST W/ 764
1210  004612                          RETA3:
1211                                  ;*************************************************************************
1212                                  ;TEST 26        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1213                                  ;*************************************************************************
1214  004612  005237  000304          TST26: INC     @#$TESTN        ;UPDATE TEST NUMBER
1215  004616  022737  000026  000304         CMP     #26,@#$TESTN    ;SEQUENCE ERROR?
1216  004624  001011                         BNE     TST27-12        ;BR TO ERROR HALT ON SEQ ERROR
1217  004626  012706  000500                 MOV     #BUFF,SP        ;STACK POINTER SETUP
1218  004632  012767  004642  173170         MOV     #RETB3,RTRAP3   ;RETURN POINTER
1219  004640  104000                         EMT                     ;RESERVED INSTRUCTION
1220  004642  020627  000474          RETB3: CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1221  004646  001405                         BEQ     TST27
1222  004650  012737  000116  000302         MOV     #116,@#$FATAL   ;MOVE TO MAILBOX #  *******  116  *******
1223  004656  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1224  004660  000000                         HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1225                                                                  ; TO SCOPE REPLACE HALT W/ 240
1226                                                                  ; AND REPLACE NEXT INST W/ 761
1227                                  ;*************************************************************************
1228                                  ;TEST 27        TEST THAT PROPER P.C. IS SAVED
1229                                  ;*************************************************************************
1230  004662  005237  000304          TST27: INC     @#$TESTN        ;UPDATE TEST NUMBER
1231  004666  022737  000027  000304         CMP     #27,@#$TESTN    ;SEQUENCE ERROR?
1232  004674  001012                         BNE     TST30-12        ;BR TO ERROR HALT ON SEQ ERROR
1233  004676  012706  000500                 MOV     #BUFF,SP        ;STACK POINTER SETUP
1234  004702  012767  004712  173120         MOV     #RETC3,RTRAP3   ;RTURN FROM TRAP POINTER
1235  004710  104000                         EMT                     ;TRAP ON THIS INSTRICTION
1236  004712  022767  004712  173554  RETC3: CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
1237  004720  001405                         BEQ     TST30
1238  004722  012737  000117  000302         MOV     #117,@#$FATAL   ;MOVE TO MAILBOX #  *******  117  *******
1239  004730  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1240  004732  000000                         HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
1241                                                                  ; TO SCOPE REPLACE HALT W/ 240
1242                                                                  ; AND REPLACE NEXT INST W/ 760
1243                                  ;*************************************************************************
1244                                  ;TEST 30        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
1245                                  ;*************************************************************************
1246  004734  005237  000304          TST30: INC     @#$TESTN        ;UPDATE TEST NUMBER
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1247  004740  022737  000030  000304          CMP     #30,@#$TESTN    ;SEQUENCE ERROR?
1248  004746  001040                          BNE     TST31-12        ;BR TO ERROR HALT ON SEQ ERROR
1249  004750  012706  000500                  MOV     #BUFF,SP        ;SET UP
1250  004754  012767  004772  173046          MOV     #RETD3,RTRAP3   ;SET UP
1251  004762  005067  173010                  CLR     CC              ;CLEAR CC AND PRIORITY
1252  004766  000257                          CCC
1253  004770  104000                          EMT                     ;TRAP
1254  004772  026727  173500  000000  RETD3:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1255  005000  001405                          BEQ     1$
1256  005002  012737  000120  000302          MOV     #120,@#$FATAL   ;MOVE TO MAILBOX #  *******  120  *******
1257  005010  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1258  005012  000000                          HALT                    ;INCORRECT STATUS
1259                                                                  ; TO SCOPE REPLACE HALT W/ 240
1260                                                                  ; AND REPLACE NEXT INST W/ 755
1261  005014  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
1262  005020  012767  005040  173002          MOV     #RETE3,RTRAP3   ;SET UP
1263  005026  012767  000357  172742          MOV     #357,CC         ;SET PRIORITY
1264  005034  000277                          SCC                     ;SET CC
1265  005036  104000                          EMT                     ;TRAP
1266  005040  026727  173432  000357  RETE3:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1267  005046  001405                          BEQ     TST31
1268  005050  012737  000121  000302          MOV     #121,@#$FATAL   ;MOVE TO MAILBOX #  *******  121  *******
1269  005056  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1270  005060  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1271                                                                  ; TO SCOPE REPLACE HALT W/ 240
1272                                                                  ; AND REPLACE NEXT INST W/ 732
1273                                  ;*****************************************************************************
1274                                  ;TEST 31        TEST THAT "NEW" STATUS IS CORRECT
1275                                  ;*****************************************************************************
1276  005062  005237  000304  TST31:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1277  005066  022737  000031  000304          CMP     #31,@#$TESTN    ;SEQUENCE ERROR?
1278  005074  001117                          BNE     TST32-12        ;BR TO ERROR HALT ON SEQ ERROR
1279  005076  012706  000500                  MOV     #BUFF,SP
1280  005102  012767  005116  172720          MOV     #RETF3,RTRAP3
1281  005110  005067  172716                  CLR     RTRAP3+2        ;CLEAR FUTURE PRIORITY AND CC
1282  005114  104000                          EMT
1283  005116                          RETF3:                          ;TEST FOR "C" CLEARED
1284  005116  100005                          BPL     1$
1285  005120  012737  000122  000302          MOV     #122,@#$FATAL   ;MOVE TO MAILBOX #  *******  122  *******
1286  005126  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1287  005130  000000                          HALT                    ;C NOT CLEARED
1288                                                                  ; TO SCOPE REPLACE HALT W/ 240
1289                                                                  ; AND REPLACE NEXT INST W/ 761
1290  005132                          1$:
1291  005132  001005                          BNE     2$
1292  005134  012737  000123  000302          MOV     #123,@#$FATAL   ;MOVE TO MAILBOX #  *******  123  *******
1293  005 42  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1294  005144  000000                          HALT                    ;Z NOT CLEARED
1295                                                                  ; TO SCOPE REPLACE HALT W/ 240
1296                                                                  ; AND REPLACE NEXT INST W/ 753
1297  005146                          2$:
1298  005146  102005                          BVC     3$
1299  005150  012737  000124  000302          MOV     #124,@#$FATAL   ;MOVE TO MAILBOX #  *******  124  *******
1300  005156  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1301  005160  000000                          HALT                    ;V NOT CLEARED
1302                                                                  ; TO SCOPE REPLACE HALT W/ 240
```

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                                                                ; AND REPLACE NEXT INST W/ 745
005162                                  3$:
005162  103005                                 BCC     4$
005164  012737  000125  000302                 MOV     #125,@#$FATAL   ;MOVE TO MAILBOX #  *******  125  *******
005172  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005174  000000                                 HALT                    ;C NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 737
005176  032767  000340  172572  4$:     BIT     #340,CC         ;TEST PRIORITY
005204  001405                                 BEQ     5$
005206  012737  000126  000302                 MOV     #126,@#$FATAL   ;MOVE TO MAILBOX #  *******  126  *******
005214  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005216  000000                                 HALT                    ;PRIORITY NOT ZERO
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 726
005220  012706  000500          5$:     MOV     #BUFF,SP
005224  012767  005242  172576                 MOV     #RETG3,RTRAP3
005232  012767  000357  172572                 MOV     #357,RTRAP3+2   ;SET NEW "CC" AND PRIORITY
005240  104000                                 EMT                     ;TRAP HERE
005242                                  RETG3:
005242  100405                                 BMI     1$
005244  012737  000127  000302                 MOV     #127,@#$FATAL   ;MOVE TO MAILBOX #  *******  127  *******
005252  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005254  000000                                 HALT                    ;N NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 707
005256                                  1$:
005256  001405                                 BEQ     2$
005260  012737  000130  000302                 MOV     #130,@#$FATAL   ;MOVE TO MAILBOX #  *******  130  *******
005266  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005270  000000                                 HALT                    ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 701
005272                                  2$:
005272  102405                                 BVS     3$
005274  012737  000131  000302                 MOV     #131,@#$FATAL   ;MOVE TO MAILBOX #  *******  131  *******
005302  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005304  000000                                 HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 673
005306                                  3$:
005306  103405                                 BCS     4$
005310  012737  000132  000302                 MOV     #132,@#$FATAL   ;MOVE TO MAILBOX #  *******  132  *******
005316  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005320  000000                                 HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 665
005322  000257                          4$:     CCC
005324  022767  000340  172444                 CMP     #340,CC
005332  001405                                 BEQ     TST32
005334  012737  000133  000302                 MOV     #133,@#$FATAL   ;MOVE TO MAILBOX #  *******  133  *******
005342  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005344  000000                                 HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 653
                                        ;*******************************************************************************
```

```
                                        ;TEST 32        TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
                                        ;*****************************************************************************
005346  005237  000304                TST32:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005352  022737  000032  000304              CMP     #32,@#$TESTN    ;SEQUENCE ERROR?
005360  001011                            BNE     BR47            ;BR TO ERROR HALT ON SEQ ERROR
005362  012767  104000  000012            MOV     #EMT,RB         ;INITIALIZE BASE EMT INSTRUCTION
005370  012767  005416  172432            MOV     #RA,30          ;RETURN FROM TRAP TO RA
005376  012706  000500              RC:   MOV     #BUFF,SP        ;SET UP STACK POINTER
005402  104000                      RB:   EMT                     ;TRAP INST. WILL BE MODIFIED TO EMT+377
005404                              BR47:
005404  012737  000134  000302            MOV     #134,@#$FATAL   ;MOVE TO MAILBOX #  *******  134  *******
005412  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005414  000000                            HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 761
005416  005267  177760              RA:   INC     RB              ;INCREMENT TRAP INSTRUCTION
005422  022767  104377  177752            CMP     #104377,RB      ;EMT+377 TO EMT?
005430  103362                            BHIS    RC              ;HAVE WE TESTED ALL
                                                                    ;YES
005432  012767  000032  172370            MOV     #32,30          ;.+
005440  005067  172366                    CLR     32              ;HALT
                                        ;*****************************************************************************
                                        ;TEST 33        TEST THAT A TRAP OCCURES ON AN "TRACE-TRT" INSTRUCTION
                                        ;*****************************************************************************
005444  005237  000304                TST33:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005450  022737  000033  000304              CMP     #33,@#$TESTN    ;SEQUENCE ERROR?
005456  001006                            BNE     TST34-12        ;BR TO ERROR HALT ON SEQ ERROR
005460  012706  000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
005464  012767  005536  172322            MOV     #RETA4,RTRAP4   ;RETURN LOCATION
005472  000003                            TRT                     ;RESERVED INSTRUCTION, SHOULD TRAP
005474  012737  000135  000302            MOV     #135,@#$FATAL   ;MOVE TO MAILBOX #  *******  135  *******
005502  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005504  000000                            HALT                    ;TRT DIDN'T TRAP,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 764
005506                              RETA4:
                                        ;*****************************************************************************
                                        ;TEST 34        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                        ;*****************************************************************************
005506  005237  000304                TST34:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005512  022737  000034  000304              CMP     #34,@#$TESTN    ;SEQUENCE ERROR?
005520  001011                            BNE     TST35-12        ;BR TO ERROR HALT ON SEQ ERROR
005522  012706  000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
005526  012767  005536  172260            MOV     #RETB4,RTRAP4   ;RETURN POINTER
005534  000003                            TRT                     ;RESERVED INSTRUCTION
005536  020627  000474              RETB4:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
005542  001405                            BEQ     TST35
005544  012737  000136  000302            MOV     #136,@#$FATAL   ;MOVE TO MAILBOX #  *******  136  *******
005552  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005554  000000                            HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 761
                                        ;*****************************************************************************
                                        ;TEST 35        TEST THAT PROPER P.C. IS SAVED
                                        ;*****************************************************************************
005556  005237  000304                TST35:  INC     @#$TESTN        ;UPDATE TEST NUMBER
```

D03


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 1415  005562  022737  000035  000304          CMP     #35,@#$TESTN    ;SEQUENCE ERROR?
 1416  005570  001012                          BNE     TST36-12        ;BR TO ERROR HALT ON SEQ ERROR
 1417  005572  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
 1418  005576  012767  005606  172210          MOV     #RETC4,RTRAP4   ;RETURN FROM TRAP POINTER
 1419  005604  000003                          TRT                     ;TRAP ON THIS INSTRUCTION
 1420  005606  022767  005606  172660  RETC4:  CMP     .,BUFF-4        ;CHECK FOR INCREMENTED P.C.
 1421  005614  001405                          BEQ     TST36
 1422  005616  012737  000137  000302          MOV     #137,@#$FATAL   ;MOVE TO MAILBOX #  *******  137  *******
 1423  005624  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1424  005626  000000                          HALT                    ;INCORRECT P.C. OR WRONG $TSTNM
 1425                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1426                                                                  ; AND REPLACE NEXT INST W/ 760
 1427                          ;#################################################################################
 1428                          ;TEST 36        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
 1429                          ;#################################################################################
 1430  005630  005237  000304  TST36:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 1431  005634  022737  000036  000304          CMP     #36,@#$TESTN    ;SEQUENCE ERROR?
 1432  005642  001040                          BNE     TST37-12        ;BR TO ERROR HALT ON SEQ ERROR
 1433  005644  012706  000500                  MOV     #BUFF,SP        ;SET UP
 1434  005650  012767  005666  172136          MOV     #RETD4,RTRAP4   ;SET UP
 1435  005656  005067  172114                  CLR     CC              ;CLEAR CC AND PRIORITY
 1436  005662  000257                          CCC
 1437  005664  000003                          TRT                     ;TRAP
 1438  005666  026727  172604  000000  RETD4:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 1439                                                                  ;TEST FOR ALL ZEROS
 1440  005674  001405                          BEQ     1$
 1441  005676  012737  000140  000302          MOV     #140,@#$FATAL   ;MOVE TO MAILBOX #  *******  140  *******
 1442  005704  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1443  005706  000000                          HALT                    ;INCORRECT STATUS
 1444                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1445                                                                  ; AND REPLACE NEXT INST W/ 755
 1446  005710  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
 1447  005714  012767  005734  172072          MOV     #RETE4,RTRAP4   ;SET UP
 1448  005722  012767  000357  172046          MOV     #357,CC         ;SET PRIORITY
 1449  005730  000277                          SCC                     ;SET-SET CC
 1450  005732  000003                          TRT                     ;TRAP
 1451  005734  026727  172536  000357  RETE4:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
 1452  005742  001405                          BEQ     TST37
 1453  005744  012737  000141  000302          MOV     #141,@#$FATAL   ;MOVE TO MAILBOX #  *******  141  *******
 1454  005752  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1455  005754  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
 1456                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1457                                                                  ; AND REPLACE NEXT INST W/ 732
 1458                          ;#################################################################################
 1459                          ;TEST 37        TEST THAT "NEW" STATUS IS CORRECT
 1460                          ;#################################################################################
 1461  005756  005237  000304  TST37:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 1462  005762  022737  000037  000304          CMP     #37,@#$TESTN    ;SEQUENCE ERROR?
 1463  005770  001121                          BNE     BR51            ;BR TO ERROR HALT ON SEQ ERROR
 1464  005772  012706  000500                  MOV     #BUFF,SP
 1465  005776  012767  006012  172010          MOV     #RETF4,RTRAP4
 1466  006004  005067  172006                  CLR     RTRAP4+2        ;CLEAR FUTURE PRIORITY AND CC
 1467  006010  000003                          TRT
 1468  006012                          RETF4:                          ;TEST FOR "C" CLEARED
 1469  006012  100005                          BPL     1$
 1470  006014  012737  000142  000302          MOV     #142,@#$FATAL   ;MOVE TO MAILBOX #  *******  142  *******
```

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1471  006022  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1472  006024  000000                          HALT                    ;C NOT CLEARED
1473                                                                  ; TO SCOPE REPLACE HALT W/ 240
1474                                                                  ; AND REPLACE NEXT INST W/ 761
1475  006026                          1$:
1476  006026  001005                          BNE     2$
1477  006030  012737  000143  000302          MOV     #143,@#$FATAL   ;MOVE TO MAILBOX #  *******  143  *******
1478  006036  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1479  006040  000000                          HALT                    ;Z NOT CLEARED
1480                                                                  ; TO SCOPE REPLACE HALT W/ 240
1481                                                                  ; AND REPLACE NEXT INST W/ 753
1482  006042                          2$:
1483  006042  102005                          BVC     3$
1484  006044  012737  000144  000302          MOV     #144,@#$FATAL   ;MOVE TO MAILBOX #  *******  144  *******
1485  006052  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1486  006054  000000                          HALT                    ;V NOT CLEARED
1487                                                                  ; TO SCOPE REPLACE HALT W/ 240
1488                                                                  ; AND REPLACE NEXT INST W/ 745
1489  006056                          3$:
1490  006056  103005                          BCC     4$
1491  006060  012737  000145  000302          MOV     #145,@#$FATAL   ;MOVE TO MAILBOX #  *******  145  *******
1492  006066  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1493  006070  000000                          HALT                    ;C NOT CLEARED
1494                                                                  ; TO SCOPE REPLACE HALT W/ 240
1495                                                                  ; AND REPLACE NEXT INST W/ 737
1496  006072  032767  000340  171676  4$:     BIT     #340,CC         ;TEST PRIORITY
1497  006100  001405                          BEQ     5$
1498  006102  012737  000146  000302          MOV     #146,@#$FATAL   ;MOVE TO MAILBOX #  *******  146  *******
1499  006110  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1500  006112  000000                          HALT                    ;PRIORITY NOT ZERO
1501                                                                  ; TO SCOPE REPLACE HALT W/ 240
1502                                                                  ; AND REPLACE NEXT INST W/ 726
1503  006114  012706  000500          5$:     MOV     #BUFF,SP
1504  006120  012767  006136  171666          MOV     #RETG4,RTRAP4
1505  006126  012767  000357  171662          MOV     #357,RTRAP4+2   ;SET NEW "CC" AND PRIORITY
1506  006134  000003                          TRT                     ;TRAP HERE
1507  006136                          RETG4:
1508  006136  100405                          BMI     1$
1509  006140  012737  000147  000302          MOV     #147,@#$FATAL   ;MOVE TO MAILBOX #  *******  147  *******
1510  006146  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1511  006150  000000                          HALT                    ;N NOT SET
1512                                                                  ; TO SCOPE REPLACE HALT W/ 240
1513                                                                  ; AND REPLACE NEXT INST W/ 707
1514  006152                          1$:
1515  006152  001405                          BEQ     2$
1516  006154  012737  000150  000302          MOV     #150,@#$FATAL   ;MOVE TO MAILBOX #  *******  150  *******
1517  006162  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1518  006164  000000                          HALT                    ;Z NOT SET
1519                                                                  ; TO SCOPE REPLACE HALT W/ 240
1520                                                                  ; AND REPLACE NEXT INST W/ 701
1521  006166                          2$:
1522  006166  102405                          BVS     3$
1523  006170  012737  000151  000302          MOV     #151,@#$FATAL   ;MOVE TO MAILBOX #  *******  151  *******
1524  006176  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1525  006200  000000                          HALT                    ;V NOT SET
1526                                                                  ; TO SCOPE REPLACE HALT W/ 240
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                                                          ; AND REPLACE NEXT INST W/ 673
 006202                             3$:
 006202  103405                            BCS     4$
 006204  012737  000152  000302            MOV     #152,@#$FATAL    ;MOVE TO MAILBOX #  *******  152  *******
 006212  005212                            INC     (R2)             ;SET MSGTYP TO FATAL ERROR
 006214  000000                            HALT                     ;C NOT SET
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 665
 006216  016706  171554             4$:    MOV     CC,SP
 006222  042706  000017                    BIC     #17,SP
 006226  022706  000340                    CMP     #340,SP
 006232  001405                            BEQ     BR51A
 006234                             BR51:
 006234  012737  000153  000302            MOV     #153,@#$FATAL    ;MOVE TO MAILBOX #  *******  153  *******
 006242  005212                            INC     (R2)             ;SET MSGTYP TO FATAL ERROR
 006244  000000                            HALT                     ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 651
 006246  012767  000016  171540     BR51A: MOV     #16,14
 006254  005067  171536                    CLR     16

                                    ;PDP-11 ILLEGAL AND ADDRESS INSTRUCTION TEST
                                    ;ALL INSTRUCTIONS THAT ARE RESERVED
                                    ;SHOULD TRAP TO LOCATION 4, AND THE
                                    ;PC THAT POINTS TO THE TRAPPING INSTRUCTION
                                    ;SHOULD BE PLACED ON THE STACK

                                    ;*************************************************************************
                                    ;TEST 40        TEST THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
                                    ;*************************************************************************
 006260  005237  000304             TST40: INC     @#$TESTN         ;UPDATE TEST NUMBER
 006264  022737  000040  000304            CMP     #40,@#$TESTN     ;SEQUENCE ERROR?
 006272  001006                            BNE     TST41-12         ;BR TO ERROR HALT ON SEQ ERROR
 006274  012706  000500                    MOV     #BUFF,SP         ;STACK POINTER SETUP
 006300  012767  006322  171476            MOV     #RETAS,RTRAPS    ;RETURN LOCATION
 006306  000100                            JMP     %0               ;ILLEGAL INSTRUCTION, SHOULD TRAP
 006310  012737  000154  000302            MOV     #154,@#$FATAL    ;MOVE TO MAILBOX #  *******  154  *******
 006316  005212                            INC     (R2)             ;SET MSGTYP TO FATAL ERROR
 006320  000000                            HALT                     ;ILLEGAL INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 764
 006322                             RETAS:
                                    ;*************************************************************************
                                    ;TEST 41        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                    ;*************************************************************************
 006322  005237  000304             TST41: INC     @#$TESTN         ;UPDATE TEST NUMBER
 006326  022737  000041  000304            CMP     #41,@#$TESTN     ;SEQUENCE ERROR?
 006334  001011                            BNE     TST42-12         ;BR TO ERROR HALT ON SEQ ERROR
 006336  012706  000500                    MOV     #BUFF,SP         ;STACK POINTER SETUP
 006342  012767  006352  171434            MOV     #RETBS,RTRAPS    ;RETURN POINTER
 006350  000100                            JMP     %0               ;RESERVED INSTRUCTION
 006352  020627  000474             RETBS: CMP     SP,#BUFF-4       ;TEST DECREMENT OF SP
 006356  001405                            BEQ     TST42
 006360  012737  000155  000302            MOV     #155,@#$FATAL    ;MOVE TO MAILBOX #  *******  155  *******
 006366  005212                            INC     (R2)             ;SET MSGTYP TO FATAL ERROR
 006370  000000                            HALT                     ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
```

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                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 761
                                ;***************************************************************************
                                ;TEST 42         TEST THAT PROPER P.C. IS SAVED
                                ;***************************************************************************
006372  005237  000304        TST42:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006376  022737  000042  000304        CMP     #42,@#$TESTN    ;SEQUENCE ERROR?
006404  001012                      BNE     TST43-12        ;BR TO ERROR HALT ON SEQ ERROR
006406  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
006412  012767  006422  171364      MOV     #RETC5,RTRAP5   ;RETURN FROM TRAP POINTER
006420  000100                      JMP     %0              ;TRAP ON THIS INSTRUCTION
006422  022767  006422  172044  RETC5:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
006430  001405                      BEQ     TST43
006432  012737  000156  000302      MOV     #156,@#$FATAL   ;MOVE TO MAILBOX #  *******  156  *******
006440  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006442  000000                      HALT                    ;INCORRECT P.C. OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 760
                                ;***************************************************************************
                                ;TEST 43         TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
                                ;***************************************************************************
006444  005237  000304        TST43:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006450  022737  000043  000304        CMP     #43,@#$TESTN    ;SEQUENCE ERROR?
006456  001040                      BNE     TST44-12        ;BR TO ERROR HALT ON SEQ ERROR
006460  012706  000500              MOV     #BUFF,SP        ;SET UP
006464  012767  006502  171312      MOV     #RETD5,RTRAP5   ;SET UP
006472  005067  171300              CLR     CC              ;CLEAR CC AND PRIORITY
006476  000257                      CCC
006500  000100                      JMP     %0              ;TRAP
006502  026727  171770  000000  RETD5:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
006510  001405                      BEQ     1$
006512  012737  000157  000302      MOV     #157,@#$FATAL   ;MOVE TO MAILBOX #  *******  157  *******
006520  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006522  000000                      HALT                    ;INCORRECT STATUS
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 755
006524  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
006530  012767  006550  171246      MOV     #RETE5,RTRAP5   ;SET UP
006536  012767  000357  171232      MOV     #357,CC         ;SET PRIORITY
006544  000277                      SCC                     ;SET CC
006546  000100                      JMP     %0              ;TRAP
006550  026727  171722  000357  RETE5:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
006556  001405                      BEQ     TST44
006560  012737  000160  000302      MOV     #160,@#$FATAL   ;MOVE TO MAILBOX #  *******  160  *******
006566  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006570  000000                      HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 732
                                ;***************************************************************************
                                ;TEST 44         TEST THAT "NEW" STATUS IS CORRECT
                                ;***************************************************************************
006572  005237  000304        TST44:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006576  022737  000044  000304        CMP     #44,@#$TESTN    ;SEQUENCE ERROR?
006604  001117                      BNE     TST45-12        ;BR TO ERROR HALT ON SEQ ERROR
006606  012706  000500              MOV     #BUFF,SP
006612  012767  006626  171164      MOV     #RETF5,RTRAP5
```

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1639  006620  005067  171162          CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
1640  006624  000100                  JMP     %0
1641  006626                  RETF5:                          ;TEST FOR "C" CLEARED
1642  006626  100005                  BPL     1$
1643  006630  012737  000161  000302  MOV     #161,@#$FATAL   ;MOVE TO MAILBOX #  *******  161  *******
1644  006636  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1645  006640  000000                  HALT                    ;C NOT CLEARED
1646                                                          ; TO SCOPE REPLACE HALT W/ 240
1647                                                          ; AND REPLACE NEXT INST W/ 761
1648  006642                  1$:
1649  006642  001005                  BNE     2$
1650  006644  012737  000162  000302  MOV     #162,@#$FATAL   ;MOVE TO MAILBOX #  *******  162  *******
1651  006652  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1652  006654  000000                  HALT                    ;Z NOT CLEARED
1653                                                          ; TO SCOPE REPLACE HALT W/ 240
1654                                                          ; AND REPLACE NEXT INST W/ 753
1655  006656                  2$:
1656  006656  102005                  BVC     3$
1657  006660  012737  000163  000302  MOV     #163,@#$FATAL   ;MOVE TO MAILBOX #  *******  163  *******
1658  006666  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1659  006670  000000                  HALT                    ;V NOT CLEARED
1660                                                          ; TO SCOPE REPLACE HALT W/ 240
1661                                                          ; AND REPLACE NEXT INST W/ 745
1662  006672                  3$:
1663  006672  103005                  BCC     4$
1664  006674  012737  000164  000302  MOV     #164,@#$FATAL   ;MOVE TO MAILBOX #  *******  164  *******
1665  006702  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1666  006704  000000                  HALT                    ;C NOT CLEARED
1667                                                          ; TO SCOPE REPLACE HALT W/ 240
1668                                                          ; AND REPLACE NEXT INST W/ 737
1669  006706  032767  000357  171062  4$:     BIT     #357,CC         ;TEST PRIORITY
1670  006714  001405                  BEQ     5$
1671  006716  012737  000165  000302  MOV     #165,@#$FATAL   ;MOVE TO MAILBOX #  *******  165  *******
1672  006724  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1673  006726  000000                  HALT                    ;PRIORITY NOT ZERO
1674                                                          ; TO SCOPE REPLACE HALT W/ 240
1675                                                          ; AND REPLACE NEXT INST W/ 726
1676  006730  012706  000500          5$:     MOV     #BUFF,SP
1677  006734  012767  006752  171042  MOV     #RETG5,RTRAP5
1678  006742  012767  000357  171036  MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
1679  006750  000100                  JMP     %0              ;TRAP HERE
1680  006752                  RETG5:
1681  006752  100405                  BMI     1$
1682  006754  012737  000166  000302  MOV     #166,@#$FATAL   ;MOVE TO MAILBOX #  *******  166  *******
1683  006762  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1684  006764  000000                  HALT                    ;N NOT SET
1685                                                          ; TO SCOPE REPLACE HALT W/ 240
1686                                                          ; AND REPLACE NEXT INST W/ 707
1687  006766                  1$:
1688  006766  001405                  BEQ     2$
1689  006770  012737  000167  000302  MOV     #167,@#$FATAL   ;MOVE TO MAILBOX #  *******  167  *******
1690  006776  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1691  007000  000000                  HALT                    ;Z NOT SET
1692                                                          ; TO SCOPE REPLACE HALT W/ 240
1693                                                          ; AND REPLACE NEXT INST W/ 701
1694  007002                  2$:
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```
1695  007002  102405                  BVS     3$
1696  007004  012737  000170  000302  MOV     #170,@#$FATAL   ;MOVE TO MAILBOX #  *******  170  *******
1697  007012  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1698  007014  000000                  HALT                    ;V NOT SET
1699                                                          ; TO SCOPE REPLACE HALT W/ 240
1700                                                          ; AND REPLACE NEXT INST W/ 673
1701  007016                  3$:
1702  007016  103405                  BCS     4$
1703  007020  012737  000171  000302  MOV     #171,@#$FATAL   ;MOVE TO MAILBOX #  *******  171  *******
1704  007026  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1705  007030  000000                  HALT                    ;C NOT SET
1706                                                          ; TO SCOPE REPLACE HALT W/ 240
1707                                                          ; AND REPLACE NEXT INST W/ 665
1708  007032  016706  170740  4$:     MOV     CC,SP
1709  007036  022706  000357          CMP     #357,SP
1710  007042  001405                  BEQ     TST45
1711  007044  012737  000172  000302  MOV     #172,@#$FATAL   ;MOVE TO MAILBOX #  *******  172  *******
1712  007052  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1713  007054  000000                  HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1714                                                          ; TO SCOPE REPLACE HALT W/ 240
1715                                                          ; AND REPLACE NEXT INST W/ 653
1716                          ;*****************************************************************************
1717                          ;TEST 45        TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCION
1718                          ;*****************************************************************************
1719  007056  005237  000304  TST45:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1720  007062  022737  000045  000304  CMP     #45,@#$TESTN    ;SEQUENCE ERROR?
1721  007070  001006                  BNE     TST46-12        ;BR TO ERROR HALT ON SEQ ERROR
1722  007072  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
1723  007076  012767  007120  170700  MOV     #RETH5,RTRAPS   ;RETURN LOCATION
1724  007104  004000                  JSR     %0,%0           ;RESERVED INSTRUCTION, SHOULD TRAP
1725  007106  012737  000173  000302  MOV     #173,@#$FATAL   ;MOVE TO MAILBOX #  *******  173  *******
1726  007114  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1727  007116  000000                  HALT                    ;DIDN'T TRAP,OR WRONG $TSTNM
1728                                                          ; TO SCOPE REPLACE HALT W/ 240
1729                                                          ; AND REPLACE NEXT INST W/ 764
1730  007120                  RETH5:
1731                          ;*****************************************************************************
1732                          ;TEST 46        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1733                          ;*****************************************************************************
1734  007120  005237  000304  TST46:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1735  007124  022737  000046  000304  CMP     #46,@#$TESTN    ;SEQUENCE ERROR?
1736  007132  001011                  BNE     TST47-12        ;BR TO ERROR HALT ON SEQ ERROR
1737  007134  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
1738  007140  012767  007150  170636  MOV     #RETJ,RTRAPS    ;RETURN POINTER
1739  007146  004000                  JSR     %0,%0           ;RESERVED INSTRUCTION
1740  007150  020627  000474  RETJ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1741  007154  001405                  BEQ     TST47
1742  007156  012737  000174  000302  MOV     #174,@#$FATAL   ;MOVE TO MAILBOX #  *******  174  *******
1743  007164  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1744  007166  000000                  HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1745                                                          ; TO SCOPE REPLACE HALT W/ 240
1746                                                          ; AND REPLACE NEXT INST W/ 761
1747                          ;*****************************************************************************
1748                          ;TEST 47        TEST THAT PROPER P.C. IS SAVED
1749                          ;*****************************************************************************
1750  007170  005237  000304  TST47:  INC     @#$TESTN        ;UPDATE TEST NUMBER
```

```
 1751  007174  022737  000047  000304          CMP     #47,@#$TESTN    ;SEQUENCE ERROR?
 1752  007202  001012                          BNE     TST50-12        ;BR TO ERROR HALT ON SEQ ERROR
 1753  007204  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
 1754  007210  012767  007220  170566          MOV     #RETK,RTRAPS    ;RETURN FROM TRAP POINTER
 1755  007216  004000                  INSTK:  JSR     %0,%0           ;TRAP ON THIS INSTRUCTION
 1756  007220  022767  007220  171246  RETK:   CMP     #INSTK+2,BUFF-4 ;CHECK FOR INCREMENED P.C.
 1757  007226  001405                          BEQ     TST50
 1758  007230  012737  000175  000302          MOV     #175,@#$FATAL   ;MOVE TO MAILBOX #  *******  175  *******
 1759  007236  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1760  007240  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
 1761                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1762                                                                  ; AND REPLACE NEXT INST W/ 760
 1763
 1764                          ;*************************************************************************
 1765                          ;TEST 50        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
 1766                          ;*************************************************************************
 1767  007242  005237  000304  TST50:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 1768  007246  022737  000050  000304          CMP     #50,@#$TESTN    ;SEQUENCE ERROR?
 1769  007254  001040                          BNE     TST51-12        ;BR TO ERROR HALT ON SEQ ERROR
 1770  007256  012706  000500                  MOV     #BUFF,SP        ;SET UP
 1771  007262  012767  007300  170514          MOV     #RETL,RTRAPS    ;SET UP
 1772  007270  005067  170502                  CLR     CC              ;CLEAR CC AND PRIORITY
 1773  007274  000257                          CCC
 1774  007276  004000                          JSR     %0,%0           ;TRAP
 1775  007300  026727  171172  000000  RETL:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 1776  007306  001405                          BEQ     1$
 1777  007310  012737  000176  000302          MOV     #176,@#$FATAL   ;MOVE TO MAILBOX #  *******  176  *******
 1778  007316  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1779  007320  000000                          HALT                    ;INCORRCT STATUS
 1780                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1781                                                                  ; AND REPLACE NEXT INST W/ 755
 1782  007322  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
 1783  007326  012767  007346  170450          MOV     #RETM,RTRAPS    ;SET UP
 1784  007334  012767  000357  170434          MOV     #357,CC         ;SET PRIORITY
 1785  007342  000277                          SCC                     ;SET CC
 1786  007344  004000                          JSR     %0,%0           ;TRAP
 1787  007346  026727  171124  000357  RETM:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
 1788  007354  001405                          BEQ     TST51
 1789  007356  012737  000177  000302          MOV     #177,@#$FATAL   ;MOVE TO MAILBOX #  *******  177  *******
 1790  007364  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1791  007366  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
 1792                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1793                                                                  ; AND REPLACE NEXT INST W/ 732
 1794                          ;*************************************************************************
 1795                          ;TEST 51        TEST THAT "NEW" STATUS IS CORRECT
 1796                          ;*************************************************************************
 1797  007370  005237  000304  TST51:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 1798  007374  022737  000051  000304          CMP     #51,@#$TESTN    ;SEQUENCE ERROR?
 1799  007402  001116                          BNE     TST52-12        ;BR TO ERROR HALT ON SEQ ERROR
 1800  007404  012706  000500                  MOV     #BUFF,SP
 1801  007410  012767  007424  170366          MOV     #RETN,RTRAPS
 1802  007416  005067  170364                  CLR     RTRAPS+2        ;CLEAR FUTURE PRIORITY AND CC
 1803  007422  004000                          JSR     %0,%0
 1804  007424                          RETN:                           ;TEST FOR "C" CLEARED
 1805  007424  100005                          BPL     1$
 1806  007426  012737  000200  000302          MOV     #200,@#$FATAL   ;MOVE TO MAILBOX #  *******  200  *******
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 1807  007434  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1808  007436  000000                          HALT                    ;C NOT CLEARED
 1809                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1810                                                                  ; AND REPLACE NEXT INST W/ 761
 1811  007440                          1$:
 1812  007440  001005                          BNE     2$
 1813  007442  012737  000201  000302          MOV     #201,@#$FATAL   ;MOVE TO MAILBOX #  *******  201  *******
 1814  007450  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1815  007452  000000                          HALT                    ;Z NOT CLEARED
 1816                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1817                                                                  ; AND REPLACE NEXT INST W/ 753
 1818  007454                          2$:
 1819  007454  102005                          BVC     3$
 1820  007456  012737  000202  000302          MOV     #202,@#$FATAL   ;MOVE TO MAILBOX #  *******  202  *******
 1821  007464  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1822  007466  000000                          HALT                    ;V NOT CLEARED
 1823                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1824                                                                  ; AND REPLACE NEXT INST W/ 745
 1825  007470                          3$:
 1826  007470  103005                          BCC     4$
 1827  007472  012737  000203  000302          MOV     #203,@#$FATAL   ;MOVE TO MAILBOX #  *******  203  *******
 1828  007500  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1829  007502  000000                          HALT                    ;C NOT CLEARED
 1830                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1831                                                                  ; AND REPLACE NEXT INST W/ 737
 1832  007504  016700  170266          4$:     MOV     CC,%0           ;TEMP STORAGE
 1833  007510  001405                          BEQ     5$
 1834  007512  012737  000204  000302          MOV     #204,@#$FATAL   ;MOVE TO MAILBOX #  *******  204  *******
 1835  007520  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1836  007522  000000                          HALT                    ;PRIORITY NOT ZERO
 1837                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1838                                                                  ; AND REPLACE NEXT INST W/ 727
 1839  007524  012706  000500          5$:     MOV     #BUFF,SP
 1840  007530  012767  007546  170246          MOV     #RET0,RTRAP5
 1841  007536  012767  000357  170242          MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
 1842  007544  004000                          JSR     %0,%0           ;TRAP HERE
 1843  007546                          RET0:
 1844  007546  100405                          BMI     1$
 1845  007550  012737  000205  000302          MOV     #205,@#$FATAL   ;MOVE TO MAILBOX #  *******  205  *******
 1846  007556  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1847  007560  000000                          HALT                    ;N NOT SET
 1848                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1849                                                                  ; AND REPLACE NEXT INST W/ 710
 1850  007562                          1$:
 1851  007562  001405                          BEQ     2$
 1852  007564  012737  000206  000302          MOV     #206,@#$FATAL   ;MOVE TO MAILBOX #  *******  206  *******
 1853  007572  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1854  007574  000000                          HALT                    ;Z NOT SET
 1855                                                                  ; TO SCOPE REPLACE HALT W/ 240
 1856                                                                  ; AND REPLACE NEXT INST W/ 702
 1857  007576                          2$:
 1858  007576  102405                          BVS     3$
 1859  007600  012737  000207  000302          MOV     #207,@#$FATAL   ;MOVE TO MAILBOX #  *******  207  *******
 1860  007606  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1861  007610  000000                          HALT                    ;V NOT SET
 1862                                                                  ; TO SCOPE REPLACE HALT W/ 240
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                                                        ; AND REPLACE NEXT INST W/ 674
007612                                  3$:
007612  103405                          BCS     4$
007614  012737  000210  000302          MOV     #210,@#$FATAL   ;MOVE TO MAILBOX #  *******  210  *******
007622  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007624  000000                          HALT                    ;C NOT SET
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 666
007626  016700  170144          4$:     MOV     CC,%0
007632  022700  000357                  CMP     #357,%0
007636  001405                          BEQ     TST52
007640  012737  000211  000302          MOV     #211,@#$FATAL   ;MOVE TO MAILBOX #  *******  211  *******
007646  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007650  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 654

                                        ;***************************************************************************
                                        ;TEST 52        TEST THAT A TRAP OCCURES ON AN ILLEGAL ADDRESS
                                        ;***************************************************************************
007652  005237  000304          TST52:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007656  022737  000052  000304          CMP     #52,@#$TESTN    ;SEQUENCE ERROR?
007664  001007                          BNE     TST53-12        ;BR TO ERROR HALT ON SEQ ERROR
007666  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
007672  012767  007716  170104          MOV     #RETP,RTRAPS    ;RETURN LOCATION
007700  005767  170075                  TST 1                   ;ILLEGAL ADDRESS INSTRUCTION, SHOULD TRAP
007704  012737  000212  000302          MOV     #212,@#$FATAL   ;MOVE TO MAILBOX #  *******  212  *******
007712  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007714  000000                          HALT                    ;ILLEGAL ADDRESS DID NOT TRAP,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 763
007716                          RETP:
                                        ;***************************************************************************
                                        ;TEST 53        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                        ;***************************************************************************
007716  005237  000304          TST53:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007722  022737  000053  000304          CMP     #53,@#$TESTN    ;SEQUENCE ERROR?
007730  001012                          BNE     TST54-12        ;BR TO ERROR HALT ON SEQ ERROR
007732  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
007736  012767  007750  170040          MOV     #RETQ,RTRAPS    ;RETURN POINTER
007744  005767  170031                  TST 1                   ;RESERVED INSTRUCTION
007750  020627  000474          RETQ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
007754  001405                          BEQ     TST54
007756  012737  000213  000302          MOV     #213,@#$FATAL   ;MOVE TO MAILBOX #  *******  213  *******
007764  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007766  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 760
                                        ;***************************************************************************
                                        ;TEST 54        TEST THAT PROPER P.C. IS SAVED
                                        ;***************************************************************************
007770  005237  000304          TST54:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007774  022737  000054  000304          CMP     #54,@#$TESTN    ;SEQUENCE ERROR?
010002  001013                          BNE     TST55-12        ;BR TO ERROR HALT ON SEQ ERROR
010004  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
010010  012767  010022  167766          MOV     #RETR,RTRAPS    ;RETURN FROM TRAP POINTER
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 1919  010016  005767  167757                    TST 1                   ;TRAP ON THIS INSTRUCTION
 1920  010022  022767  010022  170444  RETR:     CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
 1921  010030  001405                            BEQ     TST55
 1922  010032  012737  000214  000302            MOV     #214,@#$FATAL   ;MOVE TO MAILBOX #  *******  214  *******
 1923  010040  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1924  010042  000000                            HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
 1925                                                                    ; TO SCOPE REPLACE HALT W/ 240
 1926                                                                    ; AND REPLACE NEXT INST W/ 757
 1927                          ;*************************************************************************
 1928                          ;TEST 55        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
 1929                          ;*************************************************************************
 1930  010044  005237  000304  TST55:   INC     @#$TESTN        ;UPDATE TEST NUMBER
 1931  010050  022737  000055  000304            CMP     #55,@#$TESTN    ;SEQUENCE ERROR?
 1932  010056  001042                            BNE     TST56-12        ;BR TO ERROR HALT ON SEQ ERROR
 1933  010060  012706  000500                    MOV     #BUFF,SP        ;SET UP
 1934  010064  012767  010104  167712            MOV     #RETS,RTRAPS    ;SET UP
 1935  010072  005067  167700                    CLR     CC              ;CLEAR CC AND PRIORITY
 1936  010076  000257                            CCC
 1937  010100  005767  167675                    TST 1                   ;TRAP
 1938  010104  026727  170366  000000  RETS:     CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 1939  010112  001405                            BEQ     1$
 1940  010114  012737  000215  000302            MOV     #215,@#$FATAL   ;MOVE TO MAILBOX #  *******  215  *******
 1941  010122  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1942  010124  000000                            HALT                    ;INCORRECT STATUS
 1943                                                                    ; TO SCOPE REPLACE HALT W/ 240
 1944                                                                    ; AND REPLACE NEXT INST W/ 754
 1945  010126  012706  000500          1$:       MOV     #BUFF,SP        ;SET UP
 1946  010132  012767  010154  167644            MOV     #RETT,RTRAPS    ;SET UP
 1947  010140  012767  000357  167630            MOV     #357,CC         ;SET PRIORITY
 1948  010146  000277                            SCC                     ;SET CC
 1949  010150  005767  167625                    TST 1                   ;TRAP
 1950  010154  026727  170316  000357  RETT:     CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
 1951  010162  001405                            BEQ     TST56
 1952  010164  012737  000216  000302            MOV     #216,@#$FATAL   ;MOVE TO MAILBOX #  *******  216  *******
 1953  010172  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1954  010174  000000                            HALT                    ;INCORRCT STATUS ON STACK,OR WRONG $TSTNM
 1955                                                                    ; TO SCOPE REPLACE HALT W/ 240
 1956                                                                    ; AND REPLACE NEXT INST W/ 730
 1957                          ;*************************************************************************
 1958                          ;TEST 56        TEST THAT "NEW" STATUS IS CORRECT
 1959                          ;*************************************************************************
 1960  010176  005237  000304  TST56:   INC     @#$TESTN        ;UPDATE TEST NUMBER
 1961  010202  022737  000056  000304            CMP     #56,@#$TESTN    ;SEQUENCE ERROR?
 1962  010210  001121                            BNE     TST57-12        ;BR TO ERROR HALT ON SEQ ERROR
 1963  010212  012706  000500                    MOV     #BUFF,SP
 1964  010216  012767  010234  167560            MOV     #RETU,RTRAPS
 1965  010224  005067  167556                    CLR     RTRAPS+2        ;CLEAR FUTURE PRIORITY AND CC
 1966  010230  005767  167545                    TST 1                   ;TRAP HERE
 1967  010234                          RETU:                             ;TEST FOR "C" CLEARED
 1968  010234  100005                            BPL     1$
 1969  010236  012737  000217  000302            MOV     #217,@#$FATAL   ;MOVE TO MAILBOX #  *******  217  *******
 1970  010244  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 1971  010246  000000                            HALT                    ;C NOT CLEARED
 1972                                                                    ; TO SCOPE REPLACE HALT W/ 240
 1973                                                                    ; AND REPLACE NEXT INST W/ 760
 1974  010250                          1$:
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N03


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010250  001005                          BNE     2$
010252  012737  000220  000302          MOV     #220,@#$FATAL       ;MOVE TO MAILBOX #  *******  220  *******
010260  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010262  000000                          HALT                        ;Z NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 752
010264                          2$:
010264  102005                          BVC     3$
010266  012737  000221  000302          MOV     #221,@#$FATAL       ;MOVE TO MAILBOX #  *******  221  *******
010274  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010276  000000                          HALT                        ;V NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 744
010300                          3$:
010300  103005                          BCC     4$
010302  012737  000222  000302          MOV     #222,@#$FATAL       ;MOVE TO MAILBOX #  *******  222  *******
010310  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010312  000000                          HALT                        ;C NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 736
010314  032767  000357  167454  4$:     BIT     #357,CC             ;TEST PRIORITY FOR ZERO
010322  001405                          BEQ     5$
010324  012737  000223  000302          MOV     #223,@#$FATAL       ;MOVE TO MAILBOX #  *******  223  *******
010332  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010334  000000                          HALT                        ;PRIORITY NOT ZERO
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 725
010336  012706  000500          5$:     MOV     #BUFF,SP
010342  012767  010362  167434          MOV     #RETV,RTRAP5
010350  012767  000357  167430          MOV     #357,RTRAP5+2       ;SET NEW "CC" AND PRIORITY
010356  005767  167417                  TST 1                       ;TRACE HERE
010362                          RETV:
010362  100405                          BMI     1$
010364  012737  000224  000302          MOV     #224,@#$FATAL       ;MOVE TO MAILBOX #  *******  224  *******
010372  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010374  000000                          HALT                        ;N NOT SET
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 705
010376                          1$:
010376  001405                          BEQ     2$
010400  012737  000225  000302          MOV     #225,@#$FATAL       ;MOVE TO MAILBOX #  *******  225  *******
010406  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010410  000000                          HALT                        ;Z NOT SET
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 677
010412                          2$:
010412  102405                          BVS     3$
010414  012737  000226  000302          MOV     #226,@#$FATAL       ;MOVE TO MAILBOX #  *******  226  *******
010422  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
010424  000000                          HALT                        ;V NOT SET
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 671
010426                          3$:
010426  103405                          BCS     4$
010430  012737  000227  000302          MOV     #227,@#$FATAL       ;MOVE TO MAILBOX #  *******  227  *******
010436  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
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                010440  000000                  HALT                    ;C NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 663
                010442  016700  167330          4$:     MOV     CC,%0
                010446  022730  000357                  CMP     #357,%0
                010452  001405                          BEQ     TST57
                010454  012737  000230  000302        MOV     #230,@#$FATAL   ;MOVE TO MAILBOX #  *******  230  *******
                010462  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                010464  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 651
                                        ;*****************************************************************************
                                        ;TEST 57        TEST THAT DECREMENT R6 TO A VALUE LESS THAN 400 TRAPS
                                        ;*****************************************************************************
                010466  005237  000304  TST57:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                010472  022737  000057  000304          CMP     #57,@#$TESTN    ;SEQUENCE ERROR?
                010500  001006                          BNE     TST60-12        ;BR TO ERROR HALT ON SEQ ERROR
                010502  012706  000150                  MOV     #150,%6         ;R6 = 150
                010506  012767  010530  167270        MOV     #TDEC1,4        ;STACK OVERFLOW TRAP POINTER
                010514  005746                          TST     -(6)            ;WITH R6 = 150 SHOULD TRAP
                010516  012737  000231  000302        MOV     #231,@#$FATAL   ;MOVE TO MAILBOX #  *******  231  *******
                010524  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                010526  000000                          HALT                    ;SHOULD HAVE TRAPPED,OR WRONG $TSTNM
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 764
                010530                          TDEC1:
                                        ;*****************************************************************************
                                        ;TEST 60        TEST FOR DECREMENT OF R6 ON OVERFLOW TRAP
                                        ;*****************************************************************************
                010530  005237  000304  TST60:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                010534  022737  000060  000304          CMP     #60,@#$TESTN    ;SEQUENCE ERROR?
                010542  001011                          BNE     TST61-12        ;BR TO ERROR HALT ON SEQ ERROR
                010544  012706  000150                  MOV     #150,%6         ;R6 = 150
                010550  012767  010560  167226        MOV     #TDEC2,4        ;TRAP POINTER
                010556  005746                          TST     -(6)            ;WITH R6 = 150 SHOULD TRAP
                010560  020627  000142  TDEC2:  CMP     %6,#142         ;DID R6 DECREMENT
                010564  001405                          BEQ     TST61
                010566  012737  000232  000302        MOV     #232,@#$FATAL   ;MOVE TO MAILBOX #  *******  232  *******
                010574  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                010576  000000                          HALT                    ;R6 NOT = 142,OR WRONG $TSTNM
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 761
```

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                                        ;*************************************************************************
                                        ;TEST 61         TEST DIFFERENT TYPES OF OVERFLOW
                                        ;*************************************************************************
010600  005237  000304                  TST61:  INC     @#$TESTN                ;UPDATE TEST NUMBER
010604  022737  000061  000304                  CMP     #61,@#$TESTN            ;SEQUENCE ERROR?
010612  001043                                  BNE     TST62-12                ;BR TO ERROR HALT ON SEQ ERROR
010614  012706  000150                          MOV     #150,%6
010620  005067  167322                          CLR     146                     ;STATUS WORD OF LOC 10
010624  012767  010634  167152                  MOV     #TDEC3,4                ;RETURN TO LOC 4
010632  005246                                  INC     -(6)
010634  005767  167306                  TDEC3:  TST     146
010640  001005                                  BNE     1$
010642  012737  000233  000302                  MOV     #233,@#$FATAL           ;MOVE TO MAILBOX #  *******  233  *******
010650  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
010652  000000                                  HALT                            ;INCREMENT OPERATION NOT INHIBITED
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 757
010654  012705  001000                  1$:     MOV     #1000,%5
010660  012706  000400                          MOV     #400,%6
010664  012767  010706  167112                  MOV     #TDEC4,4
010672  124645                                  CMPB    -(6),-(5)
010674  012737  000234  000302                  MOV     #234,@#$FATAL           ;MOVE TO MAILBOX #  *******  234  *******
010702  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
010704  000000                                  HALT                            ;STACK = 400 AND DECREMENTED, SHOULD TRAP
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 742
010706  012706  000400                  TDEC4:  MOV     #400,%6
010712  012767  010734  167064                  MOV     #TDEC7,4
010720  134546                                  BITB    -(5),-(6)
010722                                  TDEC6:
010722  012737  000235  000302                  MOV     #235,@#$FATAL           ;MOVE TO MAILBOX #  *******  235  *******
010730  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
010732  000000                                  HALT                            ;NO STACK OVERFLOW,OR WRONG $TSTNM
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 727
010734                                  TDEC7:

                                        ;*************************************************************************
                                        ;TEST 62         TEST THAT AN 7 CAUSES AN OVERFLOW TRAP
                                        ;*************************************************************************
010734  005237  000304                  TST62:  INC     @#$TESTN                ;UPDATE TEST NUMBER
010740  022737  000062  000304                  CMP     #62,@#$TESTN            ;SEQUENCE ERROR?
010746  001011                                  BNE     VDEC2                   ;BR TO ERROR HALT ON SEQ ERROR
010750  012706  000400                          MOV     #400,%6                 ;SET UP STACK TO OVERFLOW
010754  012767  010772  167026                  MOV     #VDEC2,10               ;SET UP 7 VECTOR
010762  012767  011004  167014                  MOV     #VDEC1,4                ;SET UP OVERFLOW VECTOR
010770  000007                                  7                               ;THIS TRAP SHOULD CAUSE OVERFLOW
010772                                  VDEC2:
010772  012737  000236  000302                  MOV     #236,@#$FATAL           ;MOVE TO MAILBOX #  *******  236  *******
011000  005212                                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
011002  000000                                  HALT                            ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 761
011004  012767  000012  166776          VDEC1:  MOV     #10+2,10
                                        ;*************************************************************************
                                        ;TEST 63         TEST THAT AN IOT CAUSES AN OVERFLOW TRAP
```

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                                        ;*************************************************************************
011012  005237  000304          TST63:  INC     @#$TESTN                ;UPDATE TEST NUMBER
011016  022737  000063  000304          CMP     #63,@#$TESTN            ;SEQUENCE ERROR?
011024  001011                          BNE     VDEC4                   ;BR TO ERROR HALT ON SEQ ERROR
011026  012706  000400                  MOV     #400,%6                 ;SET UP STACK TO OVERFLOW
011032  012767  011050  166760          MOV     #VDEC4,20               ;SET UP IOT VECTOR
011040  012767  011062  166736          MOV     #VDEC3,4                ;SET UP OVERFLOW VECTOR
011046  000004                          IOT                             ;THIS TRAP SHOULD CAUSE OVERFLOW
011050                          VDEC4:
011050  012737  000237  000302          MOV     #237,@#$FATAL           ;MOVE TO MAILBOX #  *******  237  *******
011056  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
011060  000000                          HALT                            ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 761
011062  012767  000022  166730  VDEC3:  MOV     #20+2,20
                                        ;*************************************************************************
                                        ;TEST 64        TEST THAT AN EMT CAUSES AN OVERFLOW TRAP
                                        ;*************************************************************************
011070  005237  000304          TST64:  INC     @#$TESTN                ;UPDATE TEST NUMBER
011074  022737  000064  000304          CMP     #64,@#$TESTN            ;SEQUENCE ERROR?
011102  001011                          BNE     VDEC6                   ;BR TO ERROR HALT ON SEQ ERROR
011104  012706  000400                  MOV     #400,%6                 ;SET UP STACK TO OVERFLOW
011110  012767  011126  166712          MOV     #VDEC6,30               ;SET UP EMT VECTOR
011116  012767  011140  166660          MOV     #VDEC5,4                ;SET UP OVERFLOW VECTOR
011124  104000                          EMT                             ;THIS TRAP SHOULD CAUSE OVERFLOW
011126                          VDEC6:
011126  012737  000240  000302          MOV     #240,@#$FATAL           ;MOVE TO MAILBOX #  *******  240  *******
011134  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
011136  000000                          HALT                            ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 761
011140  012767  000032  166662  VDEC5:  MOV     #30+2,30
                                        ;*************************************************************************
                                        ;TEST 65        TEST THAT AN TRAP CAUSES AN OVERFLOW TRAP
                                        ;*************************************************************************
011146  005237  000304          TST65:  INC     @#$TESTN                ;UPDATE TEST NUMBER
011152  022737  000065  000304          CMP     #65,@#$TESTN            ;SEQUENCE ERROR?
011160  001011                          BNE     VDEC8                   ;BR TO ERROR HALT ON SEQ ERROR
011162  012706  000400                  MOV     #400,%6                 ;SET UP STACK TO OVERFLOW
011166  012767  011204  166640          MOV     #VDEC8,34               ;SET UP TRAP VECTOR
011174  012767  011216  166602          MOV     #VDEC7,4                ;SET UP OVERFLOW VECTOR
011202  104400                          TRAP                            ;THIS TRAP SHOULD CAUSE OVERFLOW
011204                          VDEC8:
011204  012737  000241  000302          MOV     #241,@#$FATAL           ;MOVE TO MAILBOX #  *******  241  *******
011212  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
011214  000000                          HALT                            ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 761
011216  012767  000036  166610  VDEC7:  MOV     #34+2,34
                                        ;*************************************************************************
                                        ;TEST 66        TEST THAT AN TRT CAUSES AN OVERFLOW TRAP
                                        ;*************************************************************************
011224  005237  000304          TST66:  INC     @#$TESTN                ;UPDATE TEST NUMBER
011230  022737  000066  000304          CMP     #66,@#$TESTN            ;SEQUENCE ERROR?
011236  001011                          BNE     VDEC10                  ;BR TO ERROR HALT ON SEQ ERROR
011240  012706  000400                  MOV     #400,%6                 ;SET UP STACK TO OVERFLOW
```

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                        T66     TEST THAT AN TRT CAUSES AN OVERFLOW TRAP                                SEQ 0045

  2187  011244  012767  011262  166542            MOV     #VDEC10,14      ;SET UP TRT VECTOR
  2188  011252  012767  011274  166524            MOV     #VDEC9,4        ;SET UP OVERFLOW VECTOR
  2189  011260  000003                            TRT                     ;THIS TRAP SHOULD CAUSE OVERFLOW
  2190  011262                                VDEC10:
  2191  011262  012737  000242  000302            MOV     #242,@#$FATAL   ;MOVE TO MAILBOX #  *******  242  *******
  2192  011270  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  2193  011272  000000                            HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
  2194                                                                    ; TO SCOPE REPLACE HALT W/ 240
  2195                                                                    ; AND REPLACE NEXT INST W/ 761
  2196  011274  012767  000016  166512  VDEC9:  MOV     #14+2,14
  2197                                ;*****************************************************************************
  2198                                ;TEST 67        TEST THAT AN ILLA CAUSES AN OVERFLOW TRAP
  2199                                ;*****************************************************************************
  2200  011302  005237  000304        TST67:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  2201  011306  022737  000067  000304        CMP     #67,@#$TESTN    ;SEQUENCE ERROR?
  2202  011314  001011                        BNE     VDEC11          ;BR TO ERROR HALT ON SEQ ERROR
  2203  011316  012706  000400                MOV     #400,%6         ;SET UP STACK TO OVERFLOW
  2204  011322  012767  011340  166454        MOV     #VDEC11,4       ;SET UP ILLA VECTOR
  2205  011330  012767  011352  166446        MOV     #VDEC12,4       ;SET UP OVERFLOW VECTOR
  2206  011336  004700                        ILLA                    ;THIS TRAP SHOULD CAUSE OVERFLOW
  2207  011340                                VDEC11:
  2208  011340  012737  000243  000302        MOV     #243,@#$FATAL   ;MOVE TO MAILBOX #  *******  243  *******
  2209  011346  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  2210  011350  000000                        HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
  2211                                                                  ; TO SCOPE REPLACE HALT W/ 240
  2212                                                                  ; AND REPLACE NEXT INST W/ 761
  2213  011352  012767  000006  166424  VDEC12: MOV     #4+2,4
  2214  011360  020627  000370                CMP     %6,#370         ;STACK PUSHED FOUR WORDS?
  2215  011364  001405                        BEQ     TST70
  2216  011366  012737  000244  000302        MOV     #244,@#$FATAL   ;MOVE TO MAILBOX #  *******  244  *******
  2217  011374  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  2218  011376  000000                        HALT                    ;TRAP OVERFLOW DID NOT OCCUR
  2219                                                                  ; TO SCOPE REPLACE HALT W/ 240
  2220                                                                  ; AND REPLACE NEXT INST W/ 746
  2221                                ;*****************************************************************************
  2222                                ;TEST 70        TEST THAT AN ILLB CAUSES AN OVERFLOW TRAP
  2223                                ;*****************************************************************************
  2224  011400  005237  000304        TST70:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  2225  011404  022737  000070  000304        CMP     #70,@#$TESTN    ;SEQUENCE ERROR?
  2226  011412  001011                        BNE     VDEC13          ;BR TO ERROR HALT ON SEQ ERROR
  2227  011414  012706  000400                MOV     #400,%6         ;SET UP STACK TO OVERFLOW
  2228  011420  012767  011436  166356        MOV     #VDEC13,4       ;SET UP ILLB VECTOR
  2229  011426  012767  011450  166350        MOV     #VDEC14,4       ;SET UP OVERFLOW VECTOR
  2230  011434  000100                        ILLB                    ;THIS TRAP SHOULD CAUSE OVERFLOW
  2231  011436                                VDEC13:
  2232  011436  012737  000245  000302        MOV     #245,@#$FATAL   ;MOVE TO MAILBOX #  *******  245  *******
  2233  011444  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  2234  011446  000000                        HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
  2235                                                                  ; TO SCOPE REPLACE HALT W/ 240
  2236                                                                  ; AND REPLACE NEXT INST W/ 761
  2237  011450  012767  000006  166326  VDEC14: MOV     #4+2,4
  2238
  2239                                ;*****************************************************************************
  2240                                ;TEST 71        TEST FOR FALSE OVERFLOW TRAP
  2241                                ;*****************************************************************************
  2242  011456  005237  000304        TST71:  INC     @#$TESTN        ;UPDATE TEST NUMBER
```

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 2243  011462  022737  000071  000304          CMP     #71,@#$TESTN    ;SEQUENCE ERROR?
 2244  011470  001023                          BNE     FOVER           ;BR TO ERROR HALT ON SEQ ERROR
 2245
 2246  011472  012767  011540  166304          MOV     #FOVER,4        ;SET UP OVERFLOW POINTER
 2247  011500  012706  001002                  MOV     #1002,%6
 2248  011504  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
 2249  011506  012706  002002                  MOV     #2002,%6
 2250  011512  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
 2251  011514  012706  004002                  MOV     #4002,%6
 2252  011520  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
 2253  011522  012706  010002                  MOV     #10002,%6
 2254  011526  005746                          TST     -(6)
 2255  011530  012706  020000                  MOV     #20000,%6       ;SHOULD NOT OVERFLOW
 2256  011534  005746                          TST     -(6)
 2257  011536  000405                          BR      STP
 2258  011540                          FOVER:
 2259  011540  012737  000246  000302          MOV     #246,@#$FATAL   ;MOVE TO MAILBOX #  *******  246  *******
 2260  011546  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2261  011550  000000                          HALT                    ;IT OVERFLOWED,OR WRONG $TSTNM
 2262                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2263                                                                  ; AND REPLACE NEXT INST W/ 747
 2264  011552  012767  000006  166224  STP:    MOV     #6,4
 2265  011560  005067  166222                  CLR     6
 2266                  ;*****************************************************************************
 2267                  ;TEST 72        TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
 2268                  ;*****************************************************************************
 2269  011564  005237  000304          TST72:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 2270  011570  022737  000072  000304          CMP     #72,@#$TESTN    ;SEQUENCE ERROR?
 2271  011576  001013                          BNE     TST73-12        ;BR TO ERROR HALT ON SEQ ERROR
 2272  011600  012706  000500                  MOV     #BUFF,SP
 2273  011604  012767  011640  166202          MOV     #RETAT,RTRAP4   ;SET UP TO TRAP TO 14
 2274  011612  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 2275  011616  012746  011624                  MOV     #.+6,-(SP)      ;PUSH PC
 2276  011622  000002                          RTI                     ;SET T BIT
 2277  011624  000240                          NOP                     ;TRAP HERE
 2278  011626  012737  000247  000302          MOV     #247,@#$FATAL   ;MOVE TO MAILBOX #  *******  247  *******
 2279  011634  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2280  011636  000000                          HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
 2281                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2282                                                                  ; AND REPLACE NEXT INST W/ 757
 2283  011640                          RETAT:
 2284                  ;*****************************************************************************
 2285                  ;TEST 73        TEST  STACK POINTER DECREMENTS
 2286                  ;*****************************************************************************
 2287  011640  005237  000304          TST73:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 2288  011644  022737  000073  000304          CMP     #73,@#$TESTN    ;SEQUENCE ERROR?
 2289  011652  001023                          BNE     TST74-12        ;BR TO ERROR HALT ON SEQ ERROR
 2290  011654  012706  000500                  MOV     #BUFF,SP
 2291  011660  012767  011714  166126          MOV     #RETBT,RTRAP4
 2292  011666  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 2293  011672  012746  011700                  MOV     #.+6,-(SP)      ;PUSH PC
 2294  011676  000002                          RTI                     ;SET T BIT
 2295  011700  000240                          NOP                     ;TRAP HERE
 2296  011702  012737  000250  000302          MOV     #250,@#$FATAL   ;MOVE TO MAILBOX #  *******  250  *******
 2297  011710  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2298  011712  000000                          HALT                    ;TRACE BIT DID NOT TRAP!
```

```
2299                                                            ; TO SCOPE REPLACE HALT W/ 240
2300                                                            ; AND REPLACE NEXT INST W/ 757
2301  011714  020627  000474          RETBT:  CMP     SP,#BUFF-4
2302  011720  001405                          BEQ     TST74
2303  011722  012737  000251  000302          MOV     #251,@#$FATAL   ;MOVE TO MAILBOX #  *******  251  *******
2304  011730  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2305  011732  000000                          HALT                    ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
2306                                                            ; TO SCOPE REPLACE HALT W/ 240
2307                                                            ; AND REPLACE NEXT INST W/ 747
2308                                  ;*************************************************************************
2309                                  ;TEST 74        TEST  FOR PROPER PC ON STACK
2310                                  ;*************************************************************************
2311  011734  005237  000304          TST74:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2312  011740  022737  000074  000304          CMP     #74,@#$TESTN    ;SEQUENCE ERROR?
2313  011746  001016                          BNE     TST75-12        ;BR TO ERROR HALT ON SEQ ERROR
2314  011750  012706  000500                  MOV     #BUFF,SP
2315  011754  012767  011774  166032          MOV     #RETCT,RTRAP4
2316  011762  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
2317  011766  012746  011774                  MOV     #.+6,-(SP)      ;PUSH PC
2318  011772  000002                          RTI                     ;SET T BIT
2319                                                            ;TRAP HERE
2320  011774  022767  011774  166472  RETCT:  CMP     #.,BUFF-4
2321  012002  001405                          BEQ     TST75
2322  012004  012737  000252  000302          MOV     #252,@#$FATAL   ;MOVE TO MAILBOX #  *******  252  *******
2323  012012  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2324  012014  000000                          HALT                    ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
2325                                                            ; TO SCOPE REPLACE HALT W/ 240
2326                                                            ; AND REPLACE NEXT INST W/ 754
2327
2328
2329                                  ;*************************************************************************
2330                                  ;TEST 75        TEST  THAT RTT POPS T- BIT
2331                                  ;*************************************************************************
2332  012016  005237  000304          TST75:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2333  012022  022737  000075  000304          CMP     #75,@#$TESTN    ;SEQUENCE ERROR?
2334  012030  001015                          BNE     TST76-12        ;BR TO ERROR HALT ON SEQ ERROR
2335
2336  012032  012706  000500                  MOV     #BUFF,SP
2337  012036  005001                          CLR     R1              ;CLEAR R1
2338  012040  012746  000020                  MOV     #20,-(SP)
2339  012044  012746  012060                  MOV     #RTT1,-(SP)
2340  012050  012767  012076  165736          MOV     #RTT2,14
2341  012056  000006                          RTT
2342  012060  000240                  RTT1:   NOP
2343  012062  001405                          BEQ     TST76
2344  012064  012737  000253  000302          MOV     #253,@#$FATAL   ;MOVE TO MAILBOX #  *******  253  *******
2345  012072  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2346  012074  000000                          HALT                    ;T-BIT DID NOT TRAP,OR WRONG $TESTN
2347                                                            ; TO SCOPE REPLACE HALT W/ 240
2348                                                            ; AND REPLACE NEXT INST W/ 755
2349
2350  012076                          RTT2:
2351                                  ;*************************************************************************
2352                                  ;TEST 76        TEST  THAT RTT ALLOWS ONE INST. BEFORE TRAP
2353                                  ;*************************************************************************
2354  012076  005237  000304          TST76:  INC     @#$TESTN        ;UPDATE TEST NUMBER
```

```
 2355  012102  022737  000076  000304          CMP     #76,@#$TESTN    ;SEQUENCE ERROR?
 2356  012110  001031                          BNE     TST77-12        ;BR TO ERROR HALT ON SEQ ERROR
 2357  012112  012705  177777                  MOV     #177777,%5
 2358  012116  012706  000500          RTT5:   MOV     #BUFF,SP
 2359  012122  012746  000020                  MOV     #20,-(SP)
 2360  012126  012746  012144                  MOV     #RTT3,-(SP)
 2361  012132  012767  012164  165654          MOV     #RTT4,14
 2362  012140  005001                          CLR     R1              ;CLEAR R0
 2363  012142  000006                          RTT                     ;SET T-BIT
 2364  012144  005201          RTT3:   INC     R1
 2365  012146  005205                          INC     %5
 2366  012150  001762                          BEQ     RTT5            ;DO THIS TEST NO MORE THAN 2 TIMES
 2367  012152  012737  000254  000302          MOV     #254,@#$FATAL   ;MOVE TO MAILBOX #  *******  254  *******
 2368  012160  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2369  012162  000000                          HALT                    ;DID NOT TRAP
 2370                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2371                                                                  ; AND REPLACE NEXT INST W/ 752
 2372  012164  005301          RTT4:   DEC     R1              ;SEE IF RTT ALLOWS 1 INST.
 2373  012166  001407                          BEQ     RTT6
 2374  012170  005205                          INC     %5              ;DO THIS TEST NO MORE THAN TWO TIMES
 2375  012172  001751                          BEQ     RTT5
 2376  012174  012737  000255  000302          MOV     #255,@#$FATAL   ;MOVE TO MAILBOX #  *******  255  *******
 2377  012202  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2378  012204  000000                          HALT                    ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
 2379                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2380                                                                  ; AND REPLACE NEXT INST W/ 741
 2381  012206                          RTT6:
 2382                                  ;#################################################################################
 2383                                  ;TEST 77        TEST  THAT RTI DOES NOT ALLOW 1 INST.
 2384                                  ;#################################################################################
 2385  012206  005237  000304          TST77:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 2386  012212  022737  000077  000304          CMP     #77,@#$TESTN    ;SEQUENCE ERROR?
 2387  012220  001023                          BNE     TST100-12       ;BR TO ERROR HALT ON SEQ ERROR
 2388  012222  012706  000500                  MOV     #BUFF,SP
 2389  012226  012746  000020                  MOV     #20,-(SP)
 2390  012232  012746  012250                  MOV     #RTI1,-(SP)
 2391  012236  012767  012264  165550          MOV     #RTI2,14
 2392  012244  005001                          CLR     R1
 2393  012246  000002                          RTI                     ;SET T-BIT
 2394  012250  005201          RTI1:   INC     R1              ;RTI SHOULD NOT ALLOW THIS
 2395  012252  012737  000256  000302          MOV     #256,@#$FATAL   ;MOVE TO MAILBOX #  *******  256  *******
 2396  012260  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2397  012262  000000                          HALT                    ;T- BIT DID NOT CAUSE TRAP
 2398                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2399                                                                  ; AND REPLACE NEXT INST W/ 756
 2400  012264  005701          RTI2:   TST     R1
 2401                                                                  ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
 2402  012266  001405                          BEQ     TST100
 2403  012270  012737  000257  000302          MOV     #257,@#$FATAL   ;MOVE TO MAILBOX #  *******  257  *******
 2404  012276  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2405  012300  000000                          HALT                    ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
 2406                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2407                                                                  ; AND REPLACE NEXT INST W/ 747
 2408
 2409                                  ;#################################################################################
 2410                                  ;TEST 100       DOES THE PROCESSOR TRAP WHEN %7 IS ODD?
```

```
2411                                    ;*************************************************************************
2412  012302  005237  000304            TST100: INC     @#$TESTN        ;UPDATE TEST NUMBER
2413  012306  022737  000100  000304            CMP     #100,@#$TESTN   ;SEQUENCE ERROR?
2414  012314  001120                            BNE     TST101-12       ;BR TO ERROR HALT ON SEQ ERROR
2415  012316  012706  000500                    MOV     #BUFF,%6        ;SET UP STACK POINTER
2416  012322  012767  012346  165454            MOV     #R7TR1,4        ;RETURN FROM TRAP
2417  012330  012707  000001                    MOV     #1,%7           ;PC EQUALS ONE
2418  012334  012737  000260  000302            MOV     #260,@#$FATAL   ;MOVE TO MAILBOX #  *******  260  *******
2419  012342  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2420  012344  000000                            HALT                    ;ODD ADDRESS SHOULD HAVE TRAPPED
2421                                                                    ; TO SCOPE REPLACE HALT W/ 240
2422                                                                    ; AND REPLACE NEXT INST W/ 763
2423  012346  022767  000001  166120  R7TR1:   CMP     #1,BUFF-4
2424  012354  001405                            BEQ     1$
2425  012356  012737  000261  000302            MOV     #261,@#$FATAL   ;MOVE TO MAILBOX #  *******  261  *******
2426  012364  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2427  012366  000000                            HALT                    ;CORRECT PC WAS NOT SAVED ON STACK
2428                                                                    ; TO SCOPE REPLACE HALT W/ 240
2429                                                                    ; AND REPLACE NEXT INST W/ 752
2430
2431  012370  012706  000500            1$:     MOV     #BUFF,%6        ;STACK POINTER
2432  012374  012767  012416  165402            MOV     #R7TR2,4
2433  012402  005207                            INC     %7              ;PC BECOMES ODD
2434  012404                            R7TR2A:
2435  012404  012737  000262  000302            MOV     #262,@#$FATAL   ;MOVE TO MAILBOX #  *******  262  *******
2436  012412  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2437  012414  000000                            HALT                    ;
2438                                                                    ; TO SCOPE REPLACE HALT W/ 240
2439                                                                    ; AND REPLACE NEXT INST W/ 737
2440  012416  022767  012405  166050  R7TR2:   CMP     #R7TR2A+1,BUFF-4
2441  012424  001405                            BEQ     1$
2442  012426  012737  000263  000302            MOV     #263,@#$FATAL   ;MOVE TO MAILBOX #  *******  263  *******
2443  012434  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2444  012436  000000                            HALT                    ;CORRECT PC NOT ON STACK
2445                                                                    ; TO SCOPE REPLACE HALT W/ 240
2446                                                                    ; AND REPLACE NEXT INST W/ 726
2447  012440  012706  000500            1$:     MOV     #BUFF,%6
2448  012444  012767  012466  165332            MOV     #R7TR3,4
2449  012452  005307                    BR60:   DEC     %7              ;MAKE PC ODD
2450  012454  012737  000264  000302            MOV     #264,@#$FATAL   ;MOVE TO MAILBOX #  *******  264  *******
2451  012462  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2452  012464  000000                            HALT                    ;SHOULD TRAP
2453                                                                    ; TO SCOPE REPLACE HALT W/ 240
2454                                                                    ; AND REPLACE NEXT INST W/ 713
2455  012466  022767  012453  166000  R7TR3:   CMP     #BR60+1,BUFF-4  ;CHECK VALUE OF PC ON STACK
2456  012474  001405                            BEQ     1$
2457  012476  012737  000265  000302            MOV     #265,@#$FATAL   ;MOVE TO MAILBOX #  *******  265  *******
2458  012504  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2459  012506  000000                            HALT                    ;WRONG VALUE ON STACK
2460                                                                    ; TO SCOPE REPLACE HALT W/ 240
2461                                                                    ; AND REPLACE NEXT INST W/ 702
2462
2463  012510  012706  000500            1$:     MOV     #BUFF,%6
2464  012514  012767  012540  165262            MOV     #R7TR4,4
2465  012522  000261                            SEC                     ;CARRY EQUALS A 1
2466  012524  006107                            ROL     %7              ;PC BECOMES ODD
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2467  012526                          TR4A:
2468  012526  012737  000266  000302          MOV     #266,@#$FATAL   ;MOVE TO MAILBOX #  *******  266  *******
2469  012534  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2470  012536  000000                          HALT                    ;ODD ADDRESS DIDN'T TRAP
2471                                                                  ; TO SCOPE REPLACE HALT W/ 240
2472                                                                  ; AND REPLACE NEXT INST W/ 666
2473  012540  012767  000006  165236  R7TR4:  MOV     #6,4            ;RESET UP A HALT FOR TRAP
2474  012546  022767  025255  165720          CMP     #<2*TR4A+1>,BUFF-4 ;CHECK FOR VALUE ON STACK
2475  012554  001405                          BEQ     TST101
2476  012556  012737  000267  000302          MOV     #267,@#$FATAL   ;MOVE TO MAILBOX #  *******  267  *******
2477  012564  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2478  012566  000000                          HALT                    ;WRONG VALUE ON STACK,OR WRONG $TSTNM
2479                                                                  ; TO SCOPE REPLACE HALT W/ 240
2480                                                                  ; AND REPLACE NEXT INST W/ 652
2481                                  ;***************************************************************************
2482                                  ;TEST 101       TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
2483                                  ;***************************************************************************
2484  012570  005237  000304          TST101: INC     @#$TESTN        ;UPDATE TEST NUMBER
2485  012574  022737  000101  000304          CMP     #101,@#$TESTN   ;SEQUENCE ERROR?
2486  012602  001027                          BNE     BR70            ;BR TO ERROR HALT ON SEQ ERROR
2487
2488  012604  012706  000500                  MOV     #BUFF,%6
2489  012610  012767  012650  165176          MOV     #TRACE,14       ;TRACE TRAP
2490  012616  005027  000016                  CLR     #16
2491  012622  005027  000022                  CLR     #22
2492  012626  012767  012674  165164          MOV     #TONT1,20       ;IOT TRAP
2493  012634  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
2494  012640  012746  012646                  MOV     #.+6,-(SP)      ;PUSH PC
2495  012644  000006                          RTT
2496  012646  000004                          IOT                     ;TRAP, NEW CC HAVE TRACE RESET
2497  012650                          TRACE:
2498  012650  012737  000270  000302          MOV     #270,@#$FATAL   ;MOVE TO MAILBOX #  *******  270  *******
2499  012656  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2500  012660  000000                          HALT                    ;TRACE TRAP WAS NOT INHIBITED
2501                                                                  ; TO SCOPE REPLACE HALT W/ 240
2502                                                                  ; AND REPLACE NEXT INST W/ 750
2503  012662                          BR70:
2504  012662  012737  000271  000302          MOV     #271,@#$FATAL   ;MOVE TO MAILBOX #  *******  271  *******
2505  012670  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2506  012672  000000                          HALT                    ;WRONG TSTNM,OR WRONG $TSTNM
2507                                                                  ; TO SCOPE REPLACE HALT W/ 240
2508                                                                  ; AND REPLACE NEXT INST W/ 743
2509  012674  012767  000016  165112  TONT1:  MOV     #16,14
2510  012702  012767  000022  165110          MOV     #22,20
2511                                  ;***************************************************************************
2512                                  ;TEST 102       TEST THAT THE TRACE BIT IS SAVED IN THE STACK
2513                                  ;***************************************************************************
2514  012710  005237  000304          TST102: INC     @#$TESTN        ;UPDATE TEST NUMBER
2515  012714  022737  000102  000304          CMP     #102,@#$TESTN   ;SEQUENCE ERROR?
2516  012722  001020                          BNE     STP3            ;BR TO ERROR HALT ON SEQ ERROR
2517  012724  012706  000500                  MOV     #BUFF,%6        ;SET UP STACK POINTER
2518  012730  012767  012754  165056          MOV     #TRC1,14        ;TRACE TRAP RETURN
2519  012736  005067  165054                  CLR     16
2520  012742  012746  000020                  MOV     #20,-(SP)       ;SET THE T BIT
2521  012746  012746  012754                  MOV     #TRC1,-(SP)
2522  012752  000002                          RTI
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012754  036727  165516  000020  TRC1:   BIT     BUFF-2,#20      ;CHECK FOR T BIT ON STACK
012762  001005                          BNE     STP3D
012764                          STP3:
012764  012737  000272  000302          MOV     #272,@#$FATAL   ;MOVE TO MAILBOX #  *******  272  *******
012772  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012774  000000                          HALT                    ;T BIT NOT SAVED ON THE STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 752
012776  012767  000016  165010  STP3D:  MOV     #16,14



                                ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
                                ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
                                ;*************************************************************************
                                ;TEST 103       TEST  NON-EXISTENT ADDRESS TRAPS
                                ;*************************************************************************
013004  005237  000304          TST103: INC     @#$TESTN        ;UPDATE TEST NUMBER
013010  022737  000103  000304          CMP     #103,@#$TESTN   ;SEQUENCE ERROR?
013016  001063                          BNE     AUTO1           ;BR TO ERROR HALT ON SEQ ERROR

                                ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM TRAP
013020  000402                          BR      ADALL
013022  000000                  TSL:    0
013024  000000                  CORH:   0
013026  005000                  ADALL:  CLR     %0
013030  005067  164752                  CLR     6
013034  012767  013070  164742          MOV     #ATRAP,4        ;SET UP ADDRESS TRAP ENTRANCE
013042  012706  000500          NOR:    MOV     #BUFF,SP
013046  105720                          TSTB    (0)+            ;IF OUTSIDE OF CORE, TRAP TO 4
013050  020027  160000                  CMP     %0,#160000              ;IS POINTER IN SIDE CORE
013054  101772                          BLOS    NOR             ;TEST THE REST OF CORE
013056                          AUTO:
013056  012737  000273  000302          MOV     #273,@#$FATAL   ;MOVE TO MAILBOX #  *******  273  *******
013064  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
013066  000000                          HALT                    ;SHOULD HAVE TRAPED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753
                                ;RETURN HERE ON AN ADDRESS TRAP
013070  010067  177730          ATRAP:  MOV     R0,CORH         ;MOVE THE FIRST NXM LOCATION IN CORH
                                ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
013074  012700  160001                  MOV     #160001,R0      ;SET UP THE HIGHEST MEM LOCATION
013100  012767  013136  164676  CTRAP:  MOV     #BTRAP,4        ;SET UP THE VECTOR
013106  012706  000500                  MOV     #BUFF,SP
013112  105740                          TSTB    -(R0)           ;DOES IT EXIST?
013114  005200                  DTRAP:  INC     R0              ;IF YES INCREMENT IT
013116  020067  177702                  CMP     R0,CORH         ;IS IT THE SAME LOCATION?
013122  001426                          BEQ     TRAPB
013124  012737  000274  000302          MOV     #274,@#$FATAL   ;MOVE TO MAILBOX #  *******  274  *******
013132  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
013134  000000                          HALT                    ;CONTENTS OF R0 AND CORH SHOULD HAVE BEEN EQUAL
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 730
                                                                ;IF THIS COMPARISON FAILS IT MEANS
                                                                ;THAT SOME LEGAL ADDRESS TRAPPED OR
                                                                ;THAT AN ILLEGAL ADDRESS DID NOT TRAP
013136  005767  164634          BTRAP:  TST     STATUS
```

```
2579  013142  001405                          BEQ     1$
2580  013144  012737  000275  000302          MOV     #275,@#$FATAL   ;MOVE TO MAILBOX #  *******  275  *******
2581  013152  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2582  013154  000000                          HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2583                                                                  ; TO SCOPE REPLACE HALT W/ 240
2584                                                                  ; AND REPLACE NEXT INST W/ 720
2585  013156  026727  165312  013114  1$:     CMP     BUFF-4,#DTRAP
2586  013164  001745                          BEQ     CTRAP
2587  013166                          AUTO1:
2588  013166  012737  000276  000302          MOV     #276,@#$FATAL   ;MOVE TO MAILBOX #  *******  276  *******
2589  013174  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2590  013176  000000                          HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2591                                                                  ; TO SCOPE REPLACE HALT W/ 240
2592                                                                  ; AND REPLACE NEXT INST W/ 707
2593  013200  012767  000006  164576  TRAPB:  MOV     #6,4
2594  013206  005067  164574                  CLR     6
2595                          ;THIS ROUTINE WILL FIGURE OUT IF YOU HAVE A DL11W
2596
2597  013212  005067  000020                  CLR     PROFTE
2598  013216  012706  000500                  MOV     #BUFF,SP        ;SET UP THE STACK POINTER
2599  013222  012767  013240  164554          MOV     #DL11W,4        ;SET UP THE TRAP VECTOR
2600  013230  005767  164330                  TST     TPS             ;TEST THE PUNCH STATUS REGISTER
2601  013234  000403                          BR      DL11W1          ;BRANCH IF IT EXISTS
2602  013236  000000                  PROFTE: 000000
2603  013240  005267  177772          DL11W:  INC     PROFTE          ;INCREMENT IF NO DL11W
2604  013244  012767  000006  164532  DL11W1: MOV     #6,4
2605
2606                          ;*************************************************************************************
2607                          ;TEST 104       TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
2608                          ;*************************************************************************************
2609  013252  005237  000304          TST104: INC     @#$TESTN        ;UPDATE TEST NUMBER
2610  013256  022737  000104  000304          CMP     #104,@#$TESTN   ;SEQUENCE ERROR?
2611  013264  001031                          BNE     TDEC8           ;BR TO ERROR HALT ON SEQ ERROR
2612  013266  005767  177744                  TST     PROFTE
2613  013272  001042                          BNE     R7TRX
2614  013274  000005                          RESET
2615  013276  012767  000340  164472          MOV     #340,STATUS     ;LOCK OUT INTERRUPT
2616  013304  012706  000400                  MOV     #400,%6         ;SET UP STACK TO OVERFLOW
2617  013310  012767  013362  164466          MOV     #TDEC77,4       ;SET UP OVERFLOW TRAP
2618  013316  012767  013350  164540          MOV     #TDEC8,64       ;SET UP INTERRUPT VECTOR
2619  013324  012767  000100  164232          MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
2620  013332  005067  164440                  CLR     STATUS          ;ALLOW INTERRUPT TO OCCUR
2621  013336  012737  000277  000302          MOV     #277,@#$FATAL   ;MOVE TO MAILBOX #  *******  277  *******
2622  013344  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2623  013346  000000                          HALT                    ;NO INTERRUPT OCCURRED
2624                                                                  ; TO SCOPE REPLACE HALT W/ 240
2625                                                                  ; AND REPLACE NEXT INST W/ 746
2626  013350                          TDEC8:
2627  013350  012737  000300  000302          MOV     #300,@#$FATAL   ;MOVE TO MAILBOX #  *******  300  *******
2628  013356  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2629  013360  000000                          HALT                    ;OVERFLOW TRAP DID NOT OCCUR OR WRONG $TSTNM
2630                                                                  ; TO SCOPE REPLACE HALT W/ 240
2631                                                                  ; AND REPLACE NEXT INST W/ 741
2632  013362  005067  164176          TDEC77: CLR     TTCSR           ;CLEAR INTERRUPT ENABLE
2633  013366  012767  000006  164410          MOV     #6,4
2634  013374  005067  164406                  CLR     6
```

```
2635  013400                                  R7TRX:
2636                                          ;*****************************************************************************
2637                                          ;TEST 105       TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2638                                          ;*****************************************************************************
2639  013400  005237  000304                 TST105: INC     @#$TESTN        ;UPDATE TEST NUMBER
2640  013404  022737  000105  000304                 CMP     #105,@#$TESTN   ;SEQUENCE ERROR?
2641  013412  001037                                BNE     BR71            ;BR TO ERROR HALT ON SEQ ERROR
2642  013414  005767  177616                       TST     PROFTE
2643  013420  001046                                BNE     NODL
2644  013422  012706  000500                       MOV     #BUFF,%6
2645  013426  012767  000340  164342               MOV     #340,STATUS     ;SET TO A HIGH PRIORITY LEVEL
2646  013434  012767  013500  164422               MOV     #TR0,64
2647  013442  012767  000100  164114               MOV     #100,TTCSR      ;INTERRUPT FOR TTY PUNCH/PRINTER
2648  013450  012767  013512  164356               MOV     #BR71,34        ;TRAP VECTOR
2649  013456  012767  013524  164400               MOV     #TR2,64         ;TTY VECTOR
2650  013464  012767  000340  164344               MOV     #340,36         ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2651  013472  005067  164300                       CLR     STATUS          ;SHOULD INTERRUPT AT END OF CLR INST
2652  013476  104400                               TRAP                    ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2653  013500                                  TR0:
2654  013500  012737  000301  000302               MOV     #301,@#$FATAL   ;MOVE TO MAILBOX #  *******  301  *******
2655  013506  005212                               INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2656  013510  000000                               HALT                    ;TTY SHOULDN'T HAVE INTERRUPTED
2657                                                                        ; TO SCOPE REPLACE HALT W/ 240
2658                                                                        ; AND REPLACE NEXT INST W/ 740
2659  013512                                  BR71:
2660  013512  012737  000302  000302               MOV     #302,@#$FATAL   ;MOVE TO MAILBOX #  *******  302  *******
2661  013520  005212                               INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2662  013522  000000                               HALT                    ;TRAP OCCURRED FIRST,OR WRONG $TSTNM
2663                                                                        ; TO SCOPE REPLACE HALT W/ 240
2664                                                                        ; AND REPLACE NEXT INST W/ 733
2665  013524  005067  164306                 TR2:  CLR     36
2666  013530  042767  000100  164026               BIC     #100,TTCSR
2667  013536                                  NODL:
2668                                          ;*****************************************************************************
2669                                          ;TEST 106       TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
2670                                          ;*****************************************************************************
2671  013536  005237  000304                 TST106: INC     @#$TESTN        ;UPDATE TEST NUMBER
2672  013542  022737  000106  000304                 CMP     #106,@#$TESTN   ;SEQUENCE ERROR?
2673  013550  001031                                BNE     TR5             ;BR TO ERROR HALT ON SEQ ERROR
2674  013552  005767  177460                       TST     PROFTE
2675  013556  001046                                BNE     NODL1
2676  013560  012706  000500                       MOV     #BUFF,%6
2677  013564  012767  000340  164204               MOV     #340,STATUS
2678  013572  012767  000100  163764               MOV     #100,TTCSR
2679  013600  012767  013632  164226               MOV     #TR3,34         ;TRAP
2680  013606  012767  013646  164250               MOV     #TR4,64         ;TTY OUTPUT
2681  013614  012767  013634  164176               MOV     #TR5,20         ;IOT
2682  013622  012767  000340  164172               MOV     #340,22         ;IOT PRIORITY
2683  013630  104400                               TRAP                    ;THE ACT OF TRAPPING LOWER PRIORITY
2684  013632  000004                          TR3:  IOT                     ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
2685  013634                                  TR5:
2686  013634  012737  000303  000302               MOV     #303,@#$FATAL   ;MOVE TO MAILBOX #  *******  303  *******
2687  013642  005212                               INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2688  013644  000000                               HALT                    ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $TSTNM
2689                                                                        ; TO SCOPE REPLACE HALT W/ 240
2690                                                                        ; AND REPLACE NEXT INST W/ 741
```

```
 2691  013646  005067  164150          TR4:    CLR     22              ;CLR IOT PRIORITY
 2692  013652  012767  000036  164154          MOV     #36,34
 2693  013660  012767  000066  164176          MOV     #66,64
 2694  013666  012767  000022  164124          MOV     #22,20
 2695  013674                          NODL1:
 2696
 2697                                  ;*************************************************************************************
 2698                                  ;TEST 107       TEST THAT "RESET" GOES TO OUTSIDE WORLD
 2699                                  ;*************************************************************************************
 2700  013674  005237  000304          TST107: INC     @#$TESTN        ;UPDATE TEST NUMBER
 2701  013700  022737  000107  000304          CMP     #107,@#$TESTN   ;SEQUENCE ERROR?
 2702  013706  001027                        BNE     TST110-12       ;BR TO ERROR HALT ON SEQ ERROR
 2703  013710  005767  177322                TST     PROFTE
 2704  013714  001031                        BNE     NODL2
 2705  013716  012767  000100  163640        MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
 2706  013724  012767  000100  163626        MOV     #100,TRCSR      ;SET INTERRUPT ENABLE
 2707  013732  000005                        RESET                   ;SHOULD CLEAR INTERRUPT ENABLE
 2708  013734  032767  000100  163622        BIT     #100,TTCSR      ;TEST FOR CLEAR
 2709  013742  001405                        BEQ     1$
 2710  013744  012737  000304  000302        MOV     #304,@#$FATAL   ;MOVE TO MAILBOX #  *******  304  *******
 2711  013752  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2712  013754  000000                        HALT                    ;RESET FAILED TO CLEAR TTCSR
 2713                                                                ;  TO SCOPE REPLACE HALT W/ 240
 2714                                                                ;  AND REPLACE NEXT INST W/ 754
 2715  013756  032767  000100  163574  1$:     BIT     #100,TRCSR      ;TEST FOR CLEAR
 2716  013764  001405                        BEQ     TST110
 2717  013766  012737  000305  000302        MOV     #305,@#$FATAL   ;MOVE TO MAILBOX #  *******  305  *******
 2718  013774  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2719  013776  000000                        HALT                    ;RESET FAILED TO CLEAR TRCSR,OR WRONG $TSTNM
 2720                                                                ;  TO SCOPE REPLACE HALT W/ 240
 2721                                                                ;  AND REPLACE NEXT INST W/ 743
 2722  014000                          NODL2:
 2723                                  ;*************************************************************************************
 2724                                  ;TEST 110       TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
 2725                                  ;*************************************************************************************
 2726  014000  005237  000304          TST110: INC     @#$TESTN        ;UPDATE TEST NUMBER
 2727  014004  022737  000110  000304          CMP     #110,@#$TESTN   ;SEQUENCE ERROR?
 2728  014012  001014                        BNE     RESET3          ;BR TO ERROR HALT ON SEQ ERROR
 2729  014014  012706  000500                MOV     #BUFF,%6        ;SET STACK
 2730  014020  012767  014056  163766        MOV     #RESET2,14      ;SET UP TRACE VECTOR
 2731  014026  012746  000020                MOV     #20,-(R6)       ;SET THE T-BIT ON STACK
 2732  014032  012746  014040                MOV     #1$,-(R6)       ;MOVE NEW PC ON STACK
 2733  014036  000006                        RTT
 2734  014040  000005                  1$:   RESET                   ;SHOULD HAVE NO EFFECT
 2735  014042  000005                        RESET                   ;NO EFFECT
 2736  014044                          RESET3:
 2737  014044  012737  000306  000302        MOV     #306,@#$FATAL   ;MOVE TO MAILBOX #  *******  306  *******
 2738  014052  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2739  014054  000000                        HALT                    ;TRACE TRAP FAILED,OR WRONG $TSTNM
 2740                                                                ;  TO SCOPE REPLACE HALT W/ 240
 2741                                                                ;  AND REPLACE NEXT INST W/ 756
 2742  014056  005067  163714          RESET2: CLR     STATUS          ;CLEAR TRACK
 2743  014062  005067  163730                  CLR     16              ;TRACE STATUS
 2744  014066  012767  000016  163720        MOV     #16,14
 2745
 2746                                  ;*************************************************************************************
```

```
                                        T110    TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP                                 SEQ 0055

                                        ;TEST 111       TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
                                        ;*************************************************************************************
014074 005237 000304                    TST111: INC     @#STESTN        ;UPDATE TEST NUMBER
014100 022737 000111 000304                     CMP     #111,@#STESTN   ;SEQUENCE ERROR?
014106 001051                                   BNE     TTY11           ;BR TO ERROR HALT ON SEQ ERROR
014110 005767 177122                            TST     PROFTE
014114 001055                                   BNE     NODL3
014116 000005                                   RESET
014120 012706 000500                            MOV     #BUFF,%6        ;SET UP STACK
014124 012767 014150 163732                     MOV     #TTY3,64        ;INTERRUPT VECTOR
014132 005067 163640                            CLR     STATUS          ;DROP PROCESSOR PRIORITY
014136 012767 000357 163722                     MOV     #357,66         ;HIGH PRIORITY ON INTERRUPT
014144 005167 163414                            COM     TTCSR           ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
014150 026727 163622 000357             TTY3:   CMP     STATUS,#357
014156 001405                                   BEQ     1$
014160 012737 000307 000302                     MOV     #307,@#$FATAL   ;MOVE TO MAILBOX #  *******  307  *******
014166 005212                                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
014170 000000                                   HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 746
014172 000005                           1$:     RESET                   ;CLR NTERRUPT ENABLE
014174 012706 000500                            MOV     #BUFF,%6        ;STACK SET UP
014200 012767 014224 163656                     MOV     #TTY4,64        ;INTERRUPT VECTOR
014206 005067 163654                            CLR     66              ;CLR NEW STATUS
014212 012767 000157 163556                     MOV     #157,STATUS     ;PROCESSOR STATUS
014220 005167 163340                            COM     TTCSR           ;SET INTERRUPT ENABLE
014224 005767 163546                    TTY4:   TST     STATUS
014230 001405                                   BEQ     TTT37
014232                                  TTY11:
014232 012737 000310 000302                     MOV     #310,@#$FATAL   ;MOVE TO MAILBOX #  *******  310  *******
014240 005212                                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
014242 000000                                   HALT                    ;INCORRECT STATUS,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 721
014244 005067 163314                    TTT37:  CLR     TTCSR
014250                                  NODL3:

                                        ;*************************************************************************************
                                        ;TEST 112       TEST THE 'WAIT' INSTRUCTION
                                        ;*************************************************************************************
014250 005237 000304                    TST112: INC     @#STESTN        ;UPDATE TEST NUMBER
014254 022737 000112 000304                     CMP     #112,@#STESTN   ;SEQUENCE ERROR?
014262 001055                                   BNE     STP4            ;BR TO ERROR HALT ON SEQ ERROR
014264 042767 000100 163272                     BIC     #100,TPS        ;CLEAR INTERRUPT ENABLE
014272 012706 000500                            MOV     #BUFF,SP        ;SET UP THE STACK
014276 012767 014366 163560                     MOV     #WATE,64        ;SET UP THE INTERRUPT VECTOR
014304 005067 163556                            CLR     66
014310 105767 163250                    WATE1:  TSTB    TPS             ;WAIT FOR READY
014314 100375                                   BPL     WATE1           ;TO BE UP
014316 012767 000015 163242                     MOV     #15,TPB         ;DO A CARRIAGE RETURN
014324 105767 163234                    WATE2:  TSTB    TPS             ;WAIT FOR READY TO COME UP
014330 100375                                   BPL     WATE2
014332 012767 000015 163226                     MOV     #15,TPB         ;DO ANOTHER CARRIAGE RETURN
014340 052767 000100 163216                     BIS     #100,TPS        ;SET THE INTERRUPT ENABLE
014346 005067 163424                            CLR     STATUS          ;CLEAR THE PSW
014352 000001                           WATE3:  WAIT                    ;WAIT FOR THE INTERRUPT
```

```
2803  014354  012737  000311  000302        MOV     #311,@#$FATAL   ;MOVE TO MAILBOX #  *******  311  *******
2804  014362  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2805  014364  000000                        HALT                    ;WAIT INSTRUCTION DID NOT LOOP
2806                                                                  ; TO SCOPE REPLACE HALT W/ 240
2807                                                                  ; AND REPLACE NEXT INST W/ 736
2808  014366  005767  163404        WATE:   TST     STATUS  ;IS THE PSW CORRECT?
2809  014372  001405                        BEQ     1$
2810  014374  012737  000312  000302        MOV     #312,@#$FATAL   ;MOVE TO MAILBOX #  *******  312  *******
2811  014402  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2812  014404  000000                        HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2813                                                                  ; TO SCOPE REPLACE HALT W/ 240
2814                                                                  ; AND REPLACE NEXT INST W/ 726
2815  014406  026727  164062  014354  1$:     CMP     BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
2816  014414  001405                        BEQ     STP4E
2817  014416                          STP4:
2818  014416  012737  000313  000302        MOV     #313,@#$FATAL   ;MOVE TO MAILBOX #  *******  313  *******
2819  014424  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2820  014426  000000                        HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2821                                                                  ; TO SCOPE REPLACE HALT W/ 240
2822                                                                  ; AND REPLACE NEXT INST W/ 715
2823  014430  012767  000066  163426  STP4E:  MOV     #66,64
2824
2825  014436  004767  001272                  JSR     %7,CLRALL               ;CLEAR ALL KT11-D REGISTERS
2826  014442  012777  077406  164106          MOV     #77406,@KPDR0           ;MAP KERNEL 0 TO BANK 0, RW, 4K
2827  014450  004767  001346                  JSR     PC,KERN7                ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2828  014454  012777  014510  164030          MOV     #INT25,@KTVEC           ;SETUP RETURN VECTOR
2829  014462  005077  164026                  CLR     @KTSTA
2830  014466  012704  020000                  MOV     #20000,R4               ;USE R4 TO REFERENCE NR KERNEL 1
2831  014472  005277  164004                  INC     @SR0                    ;TURN ON KT11-D
2832  014476  005724                  ADR25:  TST     (R4)+                   ;REFERENCE NR KERNEL 1
2833  014500  000000                  ADR25A: HALT                            ;SHOULD HAVE ABORTED ALREADY
2834  014502  005077  163774                  CLR     @SR0                    ;TURN OFF KT11-D
2835  014506  000442                          BR      DON25
2836  014510  017701  163766          INT25:  MOV     @SR0,R1                 ;SAVE CONTENTS OF SR0
2837  014514  005377  163762                  DEC     @SR0                    ;TURN OFF KT11-D
2838  014520  022701  100003                  CMP     #100003,R1              ;CHECK SAVED CONTENTS OF SR0
2839  014524  001401                          BEQ     .+4
2840  014526  000000                          HLT                             ;SR0 INCORRECT AFTER NR ABORT
2841                                                                          ;(SEE SAVED CONTENTS IN R1)
2842  014530  022777  014476  163752          CMP     #ADR25,@SR2             ;CK SR2
2843  014536  001401                          BEQ     .+4
2844  014540  000000                          HLT                             ;SR2 INCORRECT-SHOULD CONTAIN ADDRESS
2845                                                                          ;OF LAST FETCH BEFORE THE ABORT
2846  014542  005077  163742                  CLR     @SR2                    ;TRY TO WRITE INTO SR2
2847  014546  022777  014476  163734          CMP     #ADR25,@SR2             ;SR2 SHOULD BE READ ONLY
2848  014554  001401                          BEQ     .+4
2849  014556  000000                          HLT                             ;SR2 NOT READ ONLY
2850  014560  022777  077506  163770          CMP     #77506,@KPDR0
2851  014566  001401                          BEQ     .+4
2852  014570  000000                          HLT                             ;KERNEL PDR 0 INCORRECT
2853                                                                          ;W BIT SHOULD HAVE BEEN SET BY THE STACK WRITE
2854  014572  005777  163762                  TST     @KPDR1
2855  014576  001401                          BEQ     .+4
2856  014600  000000                          HLT                             ;KERNEL PDR 1 INCORRECT
2857  014602  021627  014500                  CMP     (R6),#ADR25A            ;CHECK VALUE PUSHED ON STACK
2858  014606  001401                          BEQ     .+4
```

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 2859  014610  000000                          HLT                             ;INCORRECT VALUE ON STACK
 2860  014612  022626                          CMP     (R6)+,(R6)+             ;RESTORE STACK
 2861  014614  005077  163674          DON25:  CLR     @KTSTA                  ;CHANGE TRAP VECTOR TO CAUSE A
 2862  014620  016777  163670  163664        MOV     KTSTA,@KTVEC            ;HALT ON A FALSE TRAP
 2863
 2864
 2865
 2866  014626  004767  001126                  JSR     %7,RWALL                ;MAP ALL PAGES RW,4K,BANK 0
 2867  014632  012777  000004  163720          MOV     #4,@KPDR1               ;MAP KERNEL 1 NR, 1 PAGE
 2868  014640  004767  001156                  JSR     PC,KERN7                ;MAP KERNEL PAR/PDR 7 TO EXT BANK
 2869  014644  012777  014670  163640          MOV     #RET33,@KTVEC           ;SETUP ABORT RETURN
 2870  014652  005077  163636                  CLR     @KTSTA
 2871  014656  005277  163620                  INC     @SR0                    ;TURN ON KT11-D
 2872  014662  005737  030000                  TST     @#30000                 ;REFERENCE NR KERNEL 1 - SHOULD ABORT
 2873  014666  000000                          HALT                            ;NO NR ABORT
 2874  014670  022777  140003  163604  RET33:  CMP     #140003,@SR0            ;CHECK SR0
 2875  014676  001401                          BEQ     .+4
 2876  014700  000000                          HLT                             ;SR0 INCORRECT - SHOULD SHOW KERNEL
 2877                                                                          ;PAGE 1, AND BOTH NR + PL ERRORS SET
 2878  014702  005077  163574                  CLR     @SR0
 2879  014706  016777  163602  163576          MOV     KTSTA,@KTVEC            ;RESTORE TRAP CATCHER
 2880
 2881
 2882  014714  004767  001014                  JSR     %7,CLRALL               ;CLEAR ALL KT11-D REGISTERS
 2883  014720  004767  001076                  JSR     PC,KERN7                ;MAP KERNEL PAR/PDR 7 TO EXT BANK
 2884  014724  012777  077406  163624          MOV     #77406,@KPDR0           ;MAP KERNEL 0 RW,RK,BANK0
 2885  014732  012777  077402  163620          MOV     #77402,@KPDR1           ;MAP KERNEL 1 NAM,KSZ K,BANK0
 2886  014740  012777  014774  163544          MOV     #INT40,@KTVEC           ;SETUP RETURN VECTOR
 2887  014746  005077  163542                  CLR     @KTSTA
 2888  014752  005277  163524                  INC     @SR0                    ;TURN ON KT11-D
 2889  014756  013737  037776  037776  ADR40:  MOV     @#37776,@#37776         ;REFERENCE KERNEL 1 - 1ST ABORT
 2890  014764  005077  163512                  CLR     @SR0                    ;TURN OFF KT11-D
 2891  014770  000000                          HLT                             ;REFERENCE TO KERNEL 1
 2892  014772  000510                          BR      DONE40                  ;DIDN'T ABORT
 2893  014774  042777  000001  163500  INT40:  BIC     #1,@SR0                 ;TURN OFF KT11-D
 2894  015002  022777  020002  163472          CMP     #20002,@SR0             ;CHECK SR0
 2895  015010  001401                          BEQ     .+4
 2896  015012  000000                          HLT                             ;SR0 INCORRECT AFTER NAM ABORT
 2897  015014  012777  015050  163470          MOV     #INT40A,@KTVEC          ;SETUP NEW RETURN VECTOR
 2898  015022  022626                          CMP     (R6)+,(R6)+             ;RESTORE STACK POINTER
 2899  015024  012702  037776                  MOV     #37776,R2               ;SETUP R2 TO REFERENCE KERNEL 1
 2900  015030  052777  000001  163444          BIS     #1,@SR0                 ;TURN ON KT11-D
 2901  015036  012242                          MOV     (R2)+,-(R2)             ;REFERENCE KERNEL 1 -2ND ABORT
 2902  015040  005077  163436  ADR40A:  CLR     @SR0            ;TURN OFF KT11-D
 2903  015044  000000                          HLT                             ;2ND REFERENCE TO KERNEL 1
 2904  015046  000462                          BR      DONE40                  ;DIDN'T ABORT
 2905  015050  042777  000001  163424  INT40A:  BIC     #1,@SR0         ;TURN OFF KT11-D
 2906  015056  022777  020002  163416          CMP     #20002,@SR0             ;CHECK SR0
 2907  015064  001401                          BEQ     .+4
 2908  015066  000000                          HLT                             ;SR0 INCORRECT AFTER 2ND NAM ABORT
 2909  015070  022777  014756  163412          CMP     #ADR40,@SR2             ;CHECK SR2
 2910  015076  001401                          BEQ     .+4
 2911  015100  000000                          HLT                             ;SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
 2912  015102  021627  015040                  CMP     (R6),#ADR40A            ;CHECK ADDRESS PUSHED ON STACK
 2913  015106  001401                          BEQ     .+4
 2914  015110  000000                          HLT                             ;INCORRECT ADDRESS ON STACK
```

```
 2915  015112  022626                          CMP     (R6)+,(R6)+             ;RESTORE STACK POINTER
 2916  015114  012777  015150  163370          MOV     #INT40B,@KTVEC          ;CHANGE RETURN ADDRESS
 2917  015122  005077  163354                  CLR     @SR0                    ;CLEAR NAM ERROR BIT-SHOULD
 2918                                                                          ;"UNLOCK" ERROR TRACKING
 2919  015126  012702  037776                  MOV     #37776,R2               ;SETUP R2 TO REFERENCE KERNEL 1
 2920  015132  005277  163344                  INC     @SR0                    ;TURN ON KT11-D
 2921  015136  012242                  ADR40B: MOV     (R2)+,-(R2)     ;3RD NAM REFERENCE, ERROR BIT WAS CLEARED
 2922  015140  005077  163336          ADR40C: CLR     @SR0            ;TURN OFF KT11-D
 2923  015144  000000                          HLT                             ;3RD REFERENCE TO KERNEL 1
 2924  015146  000422                          BR      DONE40                  ;DIDN'T ABORT
 2925  015150  042777  000001  163324  INT40B: BIC     #1,@SR0         ;TURN OFF KT11-D
 2926  015156  022777  020002  163316          CMP     #20002,@SR0             ;CHECK SR0
 2927  015164  001401                          BEQ     .+4
 2928  015166  000000                          HLT                             ;SR0 INCORRECT
 2929  015170  022777  015136  163312          CMP     #ADR40B,@SR2            ;CHECK SR2
 2930  015176  001401                          BEQ     .+4
 2931  015200  000000                          HLT                             ;SR2 INCORRECT - SHOULD CONTAIN
 2932                                                                          ;LAST FETCH ADDRESS BEFORE ABORT
 2933  015202  022716  015140                  CMP     #ADR40C,(SP)            ;CHECK STACK
 2934  015206  001401                          BEQ     .+4
 2935  015210  000000                          HLT                             ;PC ON STACK INCORRECT
 2936  015212  022626                          CMP     (R6)+,(R6)+             ;RESTORE STACK POINTER
 2937  015214  005077  163262          DONE40: CLR     @SR0                    ;CLEAR ERROR BIT
 2938  015220  005077  163270                  CLR     @KTSTA                  ;CHANGE TRAP RETURN TO CAUSE A HALT
 2939  015224  016777  163264  163260          MOV     KTSTA,@KTVEC            ;ON A FALSE INTERRUPT
 2940
 2941                          ;*****************************************************************************
 2942                          ;TEST 113       TEST THAT ALL RESERVED INSTRUCTIONS TRAP
 2943                          ;*****************************************************************************
 2944  015232  005237  000304  TST113: INC     @#$TESTN                ;UPDATE TEST NUMBER
 2945  015236  022737  000113  000304          CMP     #113,@#$TESTN           ;SEQUENCE ERROR?
 2946  015244  001137                          BNE     RET4                    ;BR TO ERROR HALT ON SEQ ERROR
 2947  015246  042767  000100  162310          BIC     #100,TPS
 2948  015254  012703  015570                  MOV     #TABLE,TAB              ;TABLE POINTER
 2949  015260  012305                  GIN1:   MOV     (TAB)+,FIRST            ;FIRST OR CURRENT INSTRUCTION
 2950  015262  012301                          MOV     (TAB)+,LAST             ;LAST INSTRUCTION OR GROUP
 2951  015264  020567  000324                  CMP     FIRST,FINISH            ;TESTED ALL
 2952  015270  001415                          BEQ     GIN3                    ;YES BRANCH
 2953  015272  010567  000320                  MOV     FIRST,INST              ;SET UP INST
 2954  015276  005267  000314          GIN2:   INC     INST
 2955  015302  012767  015474  162500          MOV     #RET,10                 ;SET UP RETURN FROM TRAP
 2956  015310  012706  000500                  MOV     #BUFF,SP                ;SET UP STACK POINTER
 2957  015314  005067  162456                  CLR     CC                      ;CLEAR PRIORITY
 2958  015320  000167  000272                  JMP     INST                    ;EXECUTE RESERVED INSTRUCTION
 2959  015324  005237  000306          GIN3:   INC     @#$PASS
 2960  015330  105267  000116                  INCB    PASSPT                  ;SHOULD PRINT THIS PASS?
 2961  015334  001027                          BNE     ACT                     ;NO
 2962  015336  132767  000040  162755          BITB    #40,$ENVM               ;WILL APT ALLOW PRINTING?
 2963  015344  001023                          BNE     ACT                     ;NO
 2964  015346  023727  000042  015424          CMP     @#42,#$ENDAD
 2965  015354  001417                          BEQ     ACT
 2966  015356  012700  015454                  MOV     #MSG,R0                 ;GET MSG ADDR.
 2967  015362  105737  177564          WAIT:   TSTB    @#TPS                   ;TTY READY
 2968  015366  100375                          BPL     WAIT                    ;NO WAIT
 2969  015370  112037  177566                  MOVB    (R0)+,@#TPB             ;PRINT CHARACTER
 2970  015374  001372                          BNE     WAIT                    ;NEXT IF NOT DONE.
```

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 2971  015376  105737  177564          WAIT1:  TSTB    @#TPS
 2972  015402  100375                          BPL     WAIT1
 2973  015404  000005                          RESET
 2974  015406  012767  177761  000036          MOV     #177761,PASSPT  ;DO IT ABOUT 15 DECIMAL TIMES
 2975  015414  013700  000042          ACT:    MOV     @#42,R0         ;CHECK ACT
 2976  015420  001405                          BEQ     GOAGIN          ;KEEP GOING
 2977  015422  000005                          RESET
 2978  015424  004710                  $ENDAD: JSR     PC,(R0)         ;ACT HOOKS
 2979  015426  000240                          NOP
 2980  015430  000240                          NOP
 2981  015432  000240                          NOP
 2982  015434  012767  000012  162346  GOAGIN: MOV     #12.10
 2983  015442  005067  162344                  CLR     12
 2984  015446  000167  163154                  JMP     RESTRT          ;DO NEXT PASS
 2985  015452  177777                  PASSPT: -1
 2986  015454  005015  047105  020104  MSG:    .ASCIZ  <15><12>.END OF DFKAB .
 2987  015462  043117  042040  045506
 2988  015470  041101  000040
 2989
 2990                                  ;TRAPPING SHOULD SEND YOU HERE
 2991  015474  020627  000474          RET:    CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
 2992  015500  001405                          BEQ     RET1
 2993  015502  012737  000314  000302          MOV     #314,@#$FATAL   ;MOVE TO MAILBOX #  *******  314  *******
 2994  015510  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 2995  015512  000000                          HALT                    ;WRONG DECREMENT
 2996                                                                  ; TO SCOPE REPLACE HALT W/ 240
 2997                                                                  ; AND REPLACE NEXT INST W/ 654
 2998  015514  026727  162754  015620  RET1:   CMP     BUFF-4,#INST+2  ;LOC OF INST UNINCREMENTED
 2999  015522  001405                          BEQ     RET2
 3000  015524  012737  000315  000302          MOV     #315,@#$FATAL   ;MOVE TO MAILBOX #  *******  315  *******
 3001  015532  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 3002  015534  000000                          HALT                    ;INST INC ON TRAP
 3003                                                                  ; TO SCOPE REPLACE HALT W/ 240
 3004                                                                  ; AND REPLACE NEXT INST W/ 643
 3005  015536  005767  162734          RET2:   TST     BUFF-2
 3006  015542  001405                          BEQ     RET3
 3007  015544                          RET4:
 3008  015544  012737  000316  000302          MOV     #316,@#$FATAL   ;MOVE TO MAILBOX #  *******  316  *******
 3009  015552  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 3010  015554  000000                          HALT                    ;CONDITION CODES SET ON TRAP OR WRONG $TSTNM
 3011                                                                  ; TO SCOPE REPLACE HALT W/ 240
 3012                                                                  ; AND REPLACE NEXT INST W/ 633
 3013  015556  026701  000034          RET3:   CMP     INST,LAST
 3014  015562  001636                          BEQ     GIN1            ;SET UP NEW GROUP
 3015  015564  000167  177506                  JMP     GIN2            ;FINISH OLD GROUP
 3016                                                                  ;END OF INSTRUCTION GROUP
 3017  015570  000006          TABLE:  6                               ;END OF OPERATE
 3018  015572  000077                  77
 3019  015574  000207                  207                             ;RTS,RTI,JMP
 3020  015576  000227                  227
 3021  015600  006777                  6777
 3022  015602  007777                  7777
 3023  015604  075037                  075037
 3024  015606  076777                  76777
 3025  015610  167777                  167777
 3026  015612  177777                  177777
```

```
 3027  015614  015614                  FINISH: .                       ;END FLAG
 3028  015616  000000                  INST:   HALT                    ;WILL CONTINUE RESERVED INST
 3029  015620  000000                          HALT                    ;SHOULD TRAP TO LOC 10
 3030  015622  000000                          HALT                    ;LOC 10 SHOULD SEND YOU TO
 3031  015624  000000                          HALT                    ;RET
 3032  015626  000000                          HALT
 3033  015630  012767  015640  162166  PWRDWN: MOV     #PWRUP,24
 3034  015636  000000                          HALT
 3035
 3036  015640  012767  015630  162156  PWRUP:  MOV     #PWRDWN,24
 3037  015646  012706  000500                  MOV     #BUFF,SP
 3038  015652  132767  000040  162441          BITB    #40,@#ENVM      ;WILL APT ALLOW PRINTING?
 3039  015660  001013                          BNE     PFRES           ;NO
 3040  015662  012700  015714                  MOV     #MSGPWF,R0      ;GET MSG ADDR.
 3041  015666  105737  177564          PWAIT:  TSTB    @#TPS           ;TTY READY
 3042  015672  100375                          BPL     PWAIT           ;NO WAIT
 3043  015674  112037  177566                  MOVB    (R0)+,@#TPB     ;PRINT CHARACTER
 3044  015700  001372                          BNE     PWAIT           ;NEXT IF NOT DONE.
 3045  015702  105737  177564          PWAIT1: TSTB    @#TPS
 3046  015706  100375                          BPL     PWAIT1
 3047  015710  000167  162712          PFRES:  JMP     RESTRT
 3048  015714  005015  047520  042527  MSGPWF: .ASCIZ   <15><12>.POWER FAILED!.
 3049  015722  020122  040506  046111
 3050  015730  042105  000041
 3051  015734  005077  162542          CLRALL: CLR     @SR0
 3052  015740  005000                          CLR     R0
 3053  015742  012701  000040                  MOV     #32.,R1                 ;COUNT OF REGISTERS TO BE CLEARED
 3054  015746  005070  000516          CLRLP:  CLR     @ADRTAB(R0)             ;CLEAR REGISTERS THRU ADDRESS TABLE
 3055  015752  005720                          TST     (R0)+                   ;MOVE POINTER
 3056  015754  077104                          SOB     R1,CLRLP                ;LOOP TILL DONE
 3057  015756  000207                          RTS     %7
 3058
 3059                                  ;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, UP
 3060  015760  005077  162516          RWALL:  CLR     @SR0
 3061  015764  012701  000516                  MOV     #ADRTAB,R1      ;R1 POINTS TO ADDRESS TABLE
 3062  015770  012700  000010          RWL1:   MOV     #10,R0          ;R0 IS COUNTER
 3063  015774  005071  000020          RWL2:   CLR     @20(R1)         ;CLEAR PAR
 3064  016000  012731  077406                  MOV     #77406,@(R1)+   ;SET PDR RW, 4K
 3065  016004  077005                          SOB     R0,RWL2
 3066  016006  062701  000020                  ADD     #20,R1
 3067  016012  020127  000616                  CMP     R1,#ADREND      ;POINTER TO NEXT GROUP
 3068  016016  002764                          BLT     RWL1
 3069  016020  000207                          RTS     %7
 3070                                  ;MAP KERNEL PAR/PDR 7 TO EXTERNAL BANK
 3071  016022  012777  007600  162564  KERN7:  MOV     #7600,@KPAR7
 3072  016030  012777  077406  162536          MOV     #77406,@KPDR7
 3073  016036  000207                          RTS     PC
 3074          000001                          .END
```

```
ABASE = 000000            254
ACDW1 = 000000            254
ACDW2 = 000000            254
ACPUOP= 000000            254     269
ACT     015414           2961    2963    2965    2975*
ADALL   013026           2544    2547*
ADDW0 = 000000            254
ADDW1 = 000000            254
ADDW10= 000000            254
ADDW11= 000000            254
ADDW12= 000000            254
ADDW13= 000000            254
ADDW14= 000000            254
ADDW15= 000000            254
ADDW2 = 000000            254
ADDW3 = 000000            254
ADDW4 = 000000            254
ADDW5 = 000000            254
ADDW6 = 000000            254
ADDW7 = 000000            254
ADDW8 = 000000            254
ADDW9 = 000000            254
ADEVCT= 000000            254     260
ADEVM = 000000            254
ADREND  000616            347*    3067
ADRTAB  000516            311*    3054*   3061
ADR25   014476           2832*    2842    2847
ADR25A  014500           2833*    2857
ADR40   014756           2889*    2909
ADR40A  015040           2902*    2912
ADR40B  015136           2921*    2929
ADR40C  015140           2922*    2933
AENV  = 000000             254     265
AENVM = 000000             254     266
AFATAL= 000000             254     257
AMADR1= 000000             254
AMADR2= 000000             254
AMADR3= 000000             254
AMADR4= 000000             254
AMAMS1= 000000             254
AMAMS2= 000000             254
AMAMS3= 000000             254
AMAMS4= 000000             254
AMSGAD= 000000             254     262
AMSGLG= 000000             254     263
AMSGTY= 000000             254     256
AMTYP1= 000000             254
AMTYP2= 000000             254
AMTYP3= 000000             254
AMTYP4= 000000             254
APASS = 000000             254     259
APRIOR= 000000             254
ASWREG= 000000             254     267
ATESTN= 000000             254     258
ATRAP   013070           2549    2561*
AUNIT = 000000             254     261
```

```
AUSWR = 000000             254     268
AUTO    013056            2554#
AUTO1   013166            2541    2587#
AVECT1= 000000             254
AVECT2= 000000             254
BEGIN   000620             236     239     352#
BELL  = 000240             227#
BR1     000754             383     390#
BR10    001206             457     454#
BR11    001322             485     492#
BR12    001372             498     505#
BR13    001442             511     518#
BR14    001512             524     531#
BR15    001620             550     557#
BR16    001642             558     565#
BR17    001664             566     573#
BR2     001004             393     400#
BR20    001706             574     580#
BR21    001730             581     588#
BR22    001752             589     596#
BR23    001774             597     604#
BR3     001030             403     410#
BR33    002054             621     627#
BR34    002070             628     634#
BR35    002104             635     641#
BR36    002120             642     648#
BR37    002144             651     657#
BR4     001056             414     421#
BR40    002160             658     664#
BR41    002174             665     671#
BR45    003674            1014    1019#
BR46    004524            1112    1188#
BR46A   004536            1187    1194#
BR47    005404            1363    1368#
BR5     001104             425     432#
BR51    006234            1463    1539#
BR51A   006246            1538    1545#
BR6     001132             436     442#
BR60    012452            2449#   2455
BR7     001160             446     453#
BR70    012662            2486    2503#
BR71    013512            2641    2648    2659#
BTRAP   013136            2564    2578#
BUFF    000500             304#    684     700     703     716     719     732     737     744     749     762     801     853
                           868     871     884     887     900     905     912     916     929     968    1017    1036    1051
                          1054    1067    1070    1083    1088    1095    1100    1113    1152    1202    1217    1220    1233
                          1236    1249    1254    1261    1266    1279    1318    1366    1386    1401    1404    1417    1420
                          1433    1438    1446    1451    1464    1503    1560    1575    1578    1591    1594    1607    1612
                          1619    1624    1637    1676    1722    1737    1740    1753    1756    1770    1775    1782    1787
                          1800    1839    1886    1901    1904    1917    1920    1933    1938    1945    1950    1963    2002
                          2272    2290    2301    2314    2320    2336    2358    2388    2415    2423    2431    2440    2447
                          2455    2463    2474    2488    2517    2523    2550    2565    2585    2598    2644    2676    2729
                          2755    2768    2791    2815    2956    2991    2998    3005    3037
CC      = 177776           234#    734#    746#    794     833     902#    914#    961    1000    1085#   1097#   1145    1184
                          1251#   1263#   1311    1351    1435#   1448#   1496    1535    1609#   1621#   1669    1708    1772#
                          1784#   1832    1871    1935#   1947#   1995    2034    2957#
```

CROSS REFERENCE TABLE -- USER SYMBOLS SEQ 0063

```
CLRALL  015734          2825    2882    3051#
CLRLP   015746          3054#   3056
CORH    013024          2546#   2561*   2568
CTRAP   013100          2564#   2586
DL11W   013240          2599    2603#
DL11W1  013244          2601    2604#
DONE40  015214          2892    2904    2924    2937#
DON25   014614          2835    2861#
DTRAP   013114          2567#   2585
FINISH  015614          2951    3027#
FOVER   011540          2244    2246    2258#
GIN1    015260          2949#   3014
GIN2    015276          2954#   3015
GIN3    015324          2952    2959#
GOAGIN  015434          2976    2982#
HERE  = 000000           361#    381*    391*    465
HLT   = 000000           215#   2840    2844    2849    2852    2856    2859    2876    2891    2896    2903    2908    2911
                        2914    2923    2928    2931    2935
ILLA  = 004700           232#   2206
ILLB  = 000100           233#   2230
INST    015616          2953*   2954*   2958    2998    3013    3028#
INSTC   002350           718#
INSTK   007216          1755#   1756
INT25   014510          2828    2836#
INT40   014774          2886    2893#
INT40A  015050          2897    2905#
INT40B  015150          2916    2925#
ITRAPS= 000004           217#
KERN7   016022          2827    2868    2883    3071#
KPAR0   000576           339#
KPAR1   000600           340#
KPAR2   000602           341#
KPAR3   000604           342#
KPAR4   000606           343#
KPAR5   000610           344#
KPAR6   000612           345#
KPAR7   000614           346#   3071#
KPDR0   000556           330#   2826*   2850    2884*
KPDR1   000560           331#   2854    2867*   2885*
KPDR2   000562           332#
KPDR3   000564           333#
KPDR4   000566           334#
KPDR5   000570           335#
KPDR6   000572           336#
KPDR7   000574           337#   3072*
KTSTA   000514           310#   2829*   2861*   2862    2870*   2879    2887*   2938*   2939
KTVEC   000512           309#   2828*   2862*   2869*   2879*   2886*   2897*   2916*   2939*
K1      000666           364#    480*    481     484     493*    494     497     505*    507     518*    520     531*    533
                        536
K10     000704           371#    565     573     580     588     596     604
K11     000706           372#
K12     000710           373#
K2      000670           365#
K3      000672           366#
K4      000674           367#
K5      000676           368#    479*    482     492*    506*    508     510     519*    521     523     532*    534
```

CROSS REFERENCE TABLE -- USER SYMBOLS


```
K6       000700             369*    495     573
K7       000702             370*    549     557     565     580     604
MSG      015454            2966    2986*
MSGPWF   015714            3040    3048*
NODL     013536            2643    2667*
NODL1    013674            2675    2695*
NODL2    014000            2704    2722*
NODL3    014250            2753    2782*
NOP    = 000240             228*
NOR      013042            2550*   2553
PASSPT   015452             352*   2960*   2974*   2985*
PFRES    015710            3039    3047*
PROFTE   013236            2597*   2602*   2603*   2612    2642    2674    2703    2752
PWAIT    015666            3041*   3042    3044
PWAIT1   015702            3045*   3046
PWRDWN   015630             354    3033*   3036
PWRUP    015640            3033    3036*
RA       005416            1365    1374*
RA1      003706            1016    1025*
RB       005402            1364*   1367*   1374*   1375
RB1      003672            1015*   1018*   1025*   1026
RC       005376            1366*   1376
RC1      003666            1017*   1027
RESET2   014056            2730    2742*
RESET3   014044            2728    2736*
RESTRT   000626             353*   2984    3047
RET      015474            2955    2991*
RETA     002240             683     687*
RETAH    002252             685     693*
RETAT    011640            2273    2283*
RETA1    003100             854     861*
RETA2    003776            1037    1044*
RETA3    004612            1203    1210*
RETA4    005506            1387    1394*
RETA5    006322            1561    1568*
RETB     002302             701     703*
RETBT    011714            2291    2301*
RETB1    003130             869     871*
RETB2    004026            1052    1054*
RETB3    004642            1218    1220*
RETB4    005536            1402    1404*
RETB5    006352            1576    1578*
RETC     002352             717     719*
RETCT    011774            2315    2320*
RETC1    003200             885     887*
RETC2    004076            1068    1070*
RETC3    004712            1234    1236*
RETC4    005606            1418    1420*
RETC5    006422            1592    1594*
RETD     002432             733     737*
RETD1    003260             901     905*
RETD2    004156            1084    1088*
RETD3    004772            1250    1254*
RETD4    005666            1434    1438*
RETD5    006502            1608    1612*
RETE     002500             745     749*
```

```
RETE1   003324            913    916#
RETE2   004224           1096   1100#
RETE3   005040           1262   1266#
RETE4   005734           1447   1451#
RETE5   006550           1620   1624#
RETF    002556            763    766#
RETF1   003402            930    933#
RETF2   004302           1114   1117#
RETF3   005116           1280   1283#
RETF4   006012           1465   1468#
RETF5   006626           1638   1641#
RETG    002702            802    805#
RETG1   003526            969    972#
RETG2   004426           1153   1156#
RETG3   005242           1319   1322#
RETG4   006136           1504   1507#
RETG5   006752           1677   1680#
RETH5   007120           1723   1730#
RETJ    007150           1738   1740#
RETK    007220           1754   1756#
RETL    007300           1771   1775#
RETM    007346           1783   1787#
RETN    007424           1801   1804#
RETO    007546           1840   1843#
RETP    007716           1887   1894#
RETQ    007750           1902   1904#
RETR    010022           1918   1920#
RETS    010104           1934   1938#
RETT    010154           1946   1950#
RETU    010234           1964   1967#
RETV    010362           2003   2006#
RET1    015514           2992   2998#
RET2    015536           2999   3005#
RET3    015556           3006   3013#
RET33   014670           2869   2874#
RET4    015544           2946   3007#
RTI1    012250           2390   2394#
RTI2    012264           2391   2400#
RTRAP =  000010            231#    685#    701#    717#    733#    745#    763#    764#    802#    803#
RTRAP1=  000034            222#    854#    869#    885#    901#    913#    930#    931#    969#    970#
RTRAP2=  000020            221#   1037#   1052#   1068#   1084#   1096#   1114#   1115#   1153#   1154#
RTRAP3=  000030            220#   1203#   1218#   1234#   1250#   1262#   1280#   1281#   1319#   1320#
RTRAP4=  000014            219#   1387#   1402#   1418#   1434#   1447#   1465#   1466#   1504#   1505#   2273#   2291#   2315#
RTRAP5=  000004            218#   1561#   1576#   1592#   1608#   1620#   1638#   1639#   1677#   1678#   1723#   1738#   1754#
                          1771#   1783#   1801#   1802#   1840#   1841#   1887#   1902#   1918#   1934#   1946#   1964#   1965#
                          2003#   2004#
RTT1    012060           2339    2342#
RTT2    012076           2340    2350#
RTT3    012144           2360    2364#
RTT4    012164           2361    2372#
RTT5    012116           2358#   2366    2375
RTT6    012206           2373    2381#
RWALL   015760           2866    3060#
RWL1    015770           3062#   3068
RWL2    015774           3063#   3065
R7TRX   013400           2613    2635#
```

CROSS REFERENCE TABLE -- USER SYMBOLS


```
R7TR1    012346            2416    2423#
R7TR2    012416            2432    2440#
R7TR2A   012404            2434#   2440
R7TR3    012466            2448    2455#
R7TR4    012540            2464    2473#
SR0      000502             305#   2831*   2834*   2836    2837*   2871*   2874    2878*   2888*   2890*   2893*   2894    2900*
                           2902*   2905*   2906    2917*   2920*   2922*   2925*   2926    2937*   3051*   3060*
SR0H     000504             306#
SR1      000506             307#
SR2      000510             308#   2842    2846*   2847    2909    2929
STATUS=  177776             229#    620*    649*   2578    2615*   2620*   2645*   2651*   2677*   2742*   2757*   2760    2771*
                           2773    2801*   2808
STP      011552            2257    2264#
STPP     003000             761     837#
STPPA    003012             836     843#
STP3     012764            2516    2525#
STP30    012776            2524    2531#
STP4     014416            2789    2817#
STP4E    014430            2816    2823#
TABLE    015570            2948    3017#
TDEC1    010530            2049    2056#
TDEC2    010560            2065    2067#
TDEC3    010634            2083    2085#
TDEC4    010706            2094    2101#
TDEC6    010722            2104#
TDEC7    010734            2102    2110#
TDEC77   013362            2617    2632#
TDEC8    013350            2611    2618    2626#
TONT1    012674            2492    2509#
TPB    = 177566             226#   2796*   2799*   2969*   3043*
TPS    = 177564             225#   2600    2790*   2794    2797    2800*   2947*   2967    2971    3041    3045
TRACE    012650            2489    2497#
TRAPA  = 000007             230#    686     702     718     736     748     765     804
TRAPB    013200            2569    2593#
TRCSR  = 177560             224#   2706*   2715
TRC1     012754            2518    2521    2523#
TRT    = 000003             216#   1388    1403    1419    1437    1450    1467    1506    2189
TR0      013500            2646    2653#
TR2      013524            2649    2665#
TR3      013632            2679    2684#
TR4      013646            2680    2691#
TR4A     012526            2467#   2474
TR5      013634            2673    2681    2685#
TSL      013022            2545#
TST1     000712             363     377#
TST10    002374             715     720     729#
TST100   012302            2387    2402    2412#
TST101   012570            2414    2475    2484#
TST102   012710            2514#
TST103   013004            2539#
TST104   013252            2609#
TST105   013400            2639#
TST106   013536            2671#
TST107   013674            2700#
TST11    002522             731     750     759#
TST110   014000            2702    2716    2726#
```

```
TST111  014074           2749#
TST112  014250           2787#
TST113  015232           2944#
TST12   003024            848#
TST13   003100            850     865#
TST14   003150            867     872     881#
TST15   003222            883     888     897#
TST16   003346            899     917     926#
TST17   003638            928    1003    1012#
TST2    001238            379     467     476#
TST20   003734           1033#
TST21   003776           1035    1048#
TST22   004046           1050    1055    1064#
TST23   004120           1066    1071    1080#
TST24   004246           1082    1101    1110#
TST25   004550           1199#
TST26   004612           1201    1214#
TST27   004662           1216    1221    1230#
TST3    001562            478     537     546#
TST30   004734           1232    1237    1246#
TST31   005062           1248    1267    1276#
TST32   005346           1278    1352    1361#
TST33   005444           1383#
TST34   005506           1385    1398#
TST35   005556           1400    1405    1414#
TST36   005630           1416    1421    1430#
TST37   005756           1432    1452    1461#
TST4    002016            548     605     616#
TST40   006260           1557#
TST41   006322           1559    1572#
TST42   006372           1574    1579    1588#
TST43   006444           1590    1595    1604#
TST44   006572           1606    1625    1634#
TST45   007056           1636    1710    1719#
TST46   007120           1721    1734#
TST47   007170           1736    1741    1750#
TST5    002210            618     672     681#
TST50   007242           1752    1757    1767#
TST51   007370           1769    1788    1797#
TST52   007652           1799    1873    1883#
TST53   007716           1885    1898#
TST54   007770           1900    1905    1914#
TST55   010044           1916    1921    1930#
TST56   010176           1932    1951    1960#
TST57   010466           1962    2036    2045#
TST6    002252            697#
TST60   010530           2047    2061#
TST61   010600           2063    2068    2078#
TST62   010734           2080    2115#
TST63   011012           2132#
TST64   011070           2149#
TST65   011146           2166#
TST66   011224           2183#
TST67   011302           2200#
TST7    002322            699     704     713#
TST70   011400           2215    2224#
```

B06


```
TST1    011456          2242#
TST2    011564          2269#
TST3    011640          2271    2287#
TST4    011734          2289    2302    2311#
TST5    012016          2313    2321    2332#
TST6    012076          2334    2343    2354#
TST7    012206          2356    2385#
TTCSR = 177564           223#   2619*   2632*   2647*   2666*   2678*   2705*   2708    2759*   2772*   2781*
TTT37   014244          2774    2781#
TTY11   014232          2751    2775#
TTY3    014150          2756    2760#
TTY4    014224          2769    2773#
UPAR0   000536           321#
UPAR1   000540           322#
UPAR2   000542           323#
UPAR3   000544           324#
UPAR4   000546           325#
UPAR5   000550           326#
UPAR6   000552           327#
UPAR7   000554           328#
UPDR0   000516           312#
UPDR1   000520           313#
UPDR2   000522           314#
UPDR3   000524           315#
UPDR4   000526           316#
UPDR5   000530           317#
UPDR6   000532           318#
UPDR7   000534           319#
VDEC1   011004          2120    2128#
VDEC10  011262          2185    2187    2190#
VDEC11  011340          2202    2204    2207#
VDEC12  011352          2205    2213#
VDEC13  011436          2226    2228    2231#
VDEC14  011450          2229    2237#
VDEC2   010772          2117    2119    2122#
VDEC3   011062          2137    2145#
VDEC4   011050          2134    2136    2139#
VDEC5   011140          2154    2162#
VDEC6   011126          2151    2153    2156#
VDEC7   011216          2171    2179#
VDEC8   011204          2168    2170    2173#
VDEC9   011274          2188    2196#
WAIT    015362          2967#   2968    2970
WAIT1   015376          2971#   2972
WATE    014366          2792    2808#
WATE1   014310          2794#   2795
WATE2   014324          2797#   2798
WATE3   014352          2802#   2815
$APTHD  000330           287     293#
$CPUOP  000326           269#
$DEVCT  000310           260#
$ENDAD  015424           247    2964    2978#
$ENV    000320           265#
$ENVM   000321           266#   2962    3038
$EPN  = 000317             1#    384     385#    394     395#    404     405#    415     416#    426     427#    437     438#
                         447     448#    458     459#    468     469#    486     487#    499     500#    512     513#    525
```

```
                    526#    538     539#    551     552#    559     560#    567     568#    575     576#    582     583#
                    590     591#    598     599#    606     607#    622     623#    629     630#    636     637#    643
                    644#    652     653#    659     660#    666     667#    673     674#    688     689#    705     706#
                    721     722#    739     740#    751     752#    768     769#    775     776#    782     783#    789
                    790#    796     797#    807     808#    814     815#    821     822#    828     829#    838     839#
                    856     857#    873     874#    889     890#    907     908#    918     919#    935     936#    942
                    943#    949     950#    956     957#    963     964#    974     975#    981     982#    988     989#
                    995     996#   1004    1005#   1020    1021#   1039    1040#   1056    1057#   1072    1073#   1090
                   1091#   1102    1103#   1119    1120#   1126    1127#   1133    1134#   1140    1141#   1147    1148#
                   1158    1159#   1165    1166#   1172    1173#   1179    1180#   1189    1190#   1205    1206#   1222
                   1223#   1238    1239#   1256    1257#   1268    1269#   1285    1286#   1292    1293#   1299    1300#
                   1306    1307#   1313    1314#   1324    1325#   1331    1332#   1339    1339#   1345    1346#   1353
                   1354#   1369    1370#   1389    1390#   1406    1407#   1422    1423#   1441    1442#   1453    1454#
                   1470    1471#   1477    1478#   1484    1485#   1491    1492#   1498    1499#   1509    1510#   1516
                   1517#   1523    1524#   1530    1531#   1540    1541#   1563    1564#   1580    1581#   1596    1597#
                   1614    1615#   1626    1627#   1643    1644#   1650    1651#   1657    1658#   1664    1665#   1671
                   1672#   1682    1683#   1689    1690#   1696    1697#   1703    1704#   1711    1712#   1725    1726#
                   1742    1743#   1758    1759#   1777    1778#   1789    1790#   1806    1807#   1813    1814#   1820
                   1821#   1827    1828#   1834    1835#   1845    1846#   1852    1853#   1859    1860#   1866    1867#
                   1874    1875#   1889    1890#   1906    1907#   1922    1923#   1940    1941#   1952    1953#   1969
                   1970#   1976    1977#   1983    1984#   1990    1991#   1997    1998#   2008    2009#   2015    2016#
                   2022    2023#   2029    2030#   2037    2038#   2051    2052#   2069    2070#   2087    2088#   2096
                   2097#   2105    2106#   2123    2124#   2140    2141#   2157    2158#   2174    2175#   2191    2192#
                   2208    2209#   2216    2217#   2232    2233#   2259    2260#   2278    2279#   2296    2297#   2303
                   2304#   2322    2323#   2344    2345#   2367    2368#   2376    2377#   2395    2396#   2403    2404#
                   2418    2419#   2425    2426#   2435    2436#   2442    2443#   2450    2451#   2457    2458#   2468
                   2469#   2476    2477#   2498    2499#   2504    2505#   2526    2527#   2555    2556#   2570    2571#
                   2580    2581#   2588    2589#   2621    2622#   2627    2628#   2654    2655#   2660    2661#   2686
                   2687#   2710    2711#   2717    2718#   2737    2738#   2762    2763#   2776    2777#   2803    2804#
                   2810    2811#   2818    2819#   2993    2994#   3000    3001#   3008    3009#
$ERROR= 000302      301#    357#
$ETABL  000320      264#
$ETEND  000330      276#    299
$FATAL  000302      257#    301     384#    394#    404#    415#    426#    437#    447#    458#    468#    486#    499#
                    512#    525#    538#    551#    559#    567#    575#    582#    590#    598#    606#    622#    629#
                    636#    643#    652#    659#    666#    673#    688#    705#    721#    739#    751#    768#    775#
                    782#    789#    796#    807#    814#    821#    828#    838#    856#    873#    889#    907#    918#
                    935#    942#    949#    956#    963#    974#    981#    988#    995#   1004#   1020#   1039#   1056#
                   1072#   1090#   1102#   1119#   1126#   1133#   1140#   1147#   1158#   1165#   1172#   1179#   1189#
                   1205#   1222#   1238#   1256#   1268#   1285#   1292#   1299#   1306#   1313#   1324#   1331#   1338#
                   1345#   1353#   1369#   1389#   1406#   1422#   1441#   1453#   1470#   1477#   1484#   1491#   1498#
                   1509#   1516#   1523#   1530#   1540#   1563#   1580#   1596#   1614#   1626#   1643#   1650#   1657#
                   1664#   1671#   1682#   1689#   1696#   1703#   1711#   1725#   1742#   1758#   1777#   1789#   1806#
                   1813#   1820#   1827#   1834#   1845#   1852#   1859#   1866#   1874#   1889#   1906#   1922#   1940#
                   1952#   1969#   1976#   1983#   1990#   1997#   2008#   2015#   2022#   2029#   2037#   2051#   2069#
                   2087#   2096#   2105#   2123#   2140#   2157#   2174#   2191#   2208#   2216#   2232#   2259#   2278#
                   2296#   2303#   2322#   2344#   2367#   2376#   2395#   2403#   2418#   2425#   2435#   2442#   2450#
                   2457#   2468#   2476#   2498#   2504#   2526#   2555#   2570#   2580#   2598#   2621#   2627#   2654#
                   2660#   2686#   2710#   2717#   2737#   2762#   2776#   2803#   2810#   2818#   2993#   3000#   3008#
$HIBTS  000330      294#
$MAIL   000300      255#    295     299
$MBADR  000332      295#
$MSGAD  000314      262#
$MSGLG  000316      263#
$MSGTY  000300      256#    353#    358
$PASS   000306      238#    259#   2959#
```

```
$PRSTM  000336  297#
$SVPC = 000300  245#  250
$SWR  = 000000    1#
$SWREG  000322  267#
$TEST%  000304  258#  300   377*  378   476*  477   546*  547   616*  617   681*  682   697*
                698   713*  714   729*  730   759*  760   848*  849   865*  866   881*  882
                897*  898   926*  927  1012*  1013  1033*  1034  1048*  1049  1064*  1065  1080*
               1081  1110*  1111  1199*  1200  1214*  1215  1230*  1231  1246*  1247  1276*  1277
               1361*  1362  1383*  1384  1398*  1399  1414*  1415  1430*  1431  1461*  1462  1557*
               1558  1572*  1573  1588*  1589  1604*  1605  1634*  1635  1719*  1720  1734*  1735
               1750*  1751  1767*  1768  1797*  1798  1883*  1884  1898*  1899  1914*  1915  1930*
               1931  1960*  1961  2045*  2046  2061*  2062  2078*  2079  2115*  2116  2132*  2133
               2149*  2150  2166*  2167  2183*  2184  2200*  2201  2224*  2225  2242*  2243  2269*
               2270  2297*  2288  2311*  2312  2332*  2333  2354*  2355  2385*  2386  2412*  2413
               2484*  2485  2514*  2515  2539*  2540  2609*  2610  2639*  2640  2671*  2672  2700*
               2701  2726*  2727  2749*  2750  2787*  2788  2944*  2945
$TK   = 000114    1#  374   380#  467   473   479#  537   543   549#  605   613   619#  672
                678   684#  694   700#  704   710   716#  720   726   732#  750   756   762#
                845   851#  862   868#  872   878   884#  888   894   900#  917   923   929#
               1003  1009  1015#  1030  1036#  1045  1051#  1055  1061  1067#  1071  1077  1083#
               1101  1107  1113#  1196  1202#  1211  1217#  1221  1227  1233#  1237  1243  1249#
               1267  1273  1279#  1352  1358  1364#  1380  1386#  1395  1401#  1405  1411  1417#
               1421  1427  1433#  1452  1458  1464#  1554  1560#  1569  1575#  1579  1585  1591#
               1595  1601  1607#  1625  1631  1637#  1710  1716  1722#  1731  1737#  1741  1747
               1753#  1757  1764  1770#  1788  1794  1800#  1873  1880  1886#  1895  1901#  1905
               1911  1917#  1921  1927  1933#  1951  1957  1963#  2036  2042  2048#  2058  2064#
               2068  2075  2081#  2112  2118#  2129  2135#  2146  2152#  2163  2169#  2180  2186#
               2197  2203#  2215  2221  2227#  2239  2245#  2266  2272#  2284  2290#  2302  2308
               2314#  2321  2329  2335#  2343  2351  2357#  2382  2388#  2402  2409  2415#  2475
               2481  2487#  2511  2517#  2536  2542#  2606  2612#  2636  2642#  2669  2674#  2697
               2703#  2716  2723  2729#  2746  2752#  2784  2790#  2941  2947#
$TSTM   000334  296#
$TSTNM= 000304  300#  356*
$UNIT   000312  261#
$UNITM  000340  298#
$USWR   000324  268#
$X    = 015246  380#  387   397   407   418   429   440   450   461   471   479#  489   502
                515   528   541   549#  554   562   570   578   595   593   601   609   619#
                625   632   639   646   655   662   669   676   684#  691   700#  708   716#
                724   732#  742   754   762#  771   778   785   792   799   810   817   824
                831   841   851#  859   868#  876   884#  892   900#  910   921   929#  938
                945   952   959   966   977   984   991   998  1007  1015#  1023  1036#  1042
               1051#  1059  1067#  1075  1083#  1093  1105  1113#  1122  1129  1136  1143  1150
               1161  1168  1175  1182  1192  1202#  1208  1217#  1225  1233#  1241  1249#  1259
               1271  1279#  1288  1295  1302  1309  1316  1327  1334  1341  1348  1356  1364#
               1372  1386#  1392  1401#  1409  1417#  1425  1433#  1444  1456  1464#  1473  1480
               1487  1494  1501  1512  1519  1526  1533  1543  1560#  1566  1575#  1583  1591#
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               1816  1823  1830  1837  1848  1855  1862  1869  1877  1886#  1892  1901#  1909
               1917#  1925  1933#  1943  1955  1963#  1972  1979  1986  1993  2000  2011  2018
               2025  2032  2040  2048#  2054  2064#  2072  2081#  2090  2099  2108  2118#  2126
               2135#  2143  2152#  2160  2169#  2177  2186#  2194  2203#  2211  2219  2227#  2235
               2245#  2262  2272#  2281  2290#  2299  2306  2314#  2325  2335#  2347  2357#  2370
               2379  2388#  2398  2406  2415#  2421  2428  2438  2445  2453  2460  2471  2479
               2487#  2501  2507  2517#  2529  2542#  2558  2573  2583  2591  2612#  2624  2630
```

```
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                    2790#  2806    2813    2821   2947#   2996   3003    3011
$XX    = 177634      387#   397#   407#   418#   429#   440#   450#   461#   471#   489#   502#   515#   528#
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                     655#   662#   669#   676#   691#   708#   724#   742#   754#   771#   778#   785#   792#
                     799#   810#   817#   824#   831#   841#   859#   876#   892#   910#   921#   938#   945#
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                    1105#  1122#  1129#  1136#  1143#  1150#  1161#  1168#  1175#  1182#  1192#  1208#  1225#
                    1241#  1259#  1271#  1288#  1295#  1302#  1309#  1316#  1327#  1334#  1341#  1348#  1356#
                    1372#  1392#  1409#  1425#  1444#  1456#  1473#  1480#  1487#  1494#  1501#  1512#  1519#
                    1526#  1533#  1543#  1566#  1583#  1599#  1617#  1629#  1646#  1653#  1660#  1667#  1674#
                    1685#  1692#  1699#  1706#  1714#  1728#  1745#  1761#  1780#  1792#  1809#  1816#  1823#
                    1830#  1837#  1848#  1855#  1862#  1869#  1877#  1892#  1909#  1925#  1943#  1955#  1972#
                    1979#  1986#  1993#  2000#  2011#  2018#  2025#  2032#  2040#  2054#  2072#  2090#  2099#
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                    2325#  2347#  2370#  2379#  2398#  2406#  2421#  2428#  2438#  2445#  2453#  2460#  2471#
                    2479#  2501#  2507#  2529#  2558#  2573#  2583#  2591#  2624#  2630#  2657#  2663#  2689#
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$XXX   = 000633      387#   397#   407#   418#   429#   440#   450#   461#   471#   489#   502#   515#   529#
                     541#   554#   562#   570#   578#   585#   593#   601#   609#   625#   632#   639#   646#
                     655#   662#   669#   676#   691#   708#   724#   742#   754#   771#   778#   785#   792#
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                    1526#  1533#  1543#  1566#  1583#  1599#  1617#  1629#  1646#  1653#  1660#  1667#  1674#
                    1685#  1692#  1699#  1706#  1714#  1728#  1745#  1761#  1780#  1792#  1809#  1816#  1823#
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                    1979#  1986#  1993#  2000#  2011#  2018#  2025#  2032#  2040#  2054#  2072#  2090#  2099#
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                    2713#  2720#  2740#  2765#  2779#  2806#  2813#  2821#  2996#  3003#  3011#
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                     515    528    541    549    554    562    570    578    585    593    601    609    619
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                     719    724    732    742    754    762    771    778    785    792    799    810    817
                     824    831    841    851    859    868    876    884    887    892    900    910    921
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                    1236   1241   1249   1259   1271   1279   1288   1295   1302   1309   1316   1327   1334
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                    1444   1456   1464   1473   1480   1487   1494   1501   1512   1519   1526   1533   1543
                    1560   1566   1575   1583   1591   1594   1599   1607   1617   1629   1637   1646   1653
                    1660   1667   1674   1685   1692   1699   1706   1714   1722   1728   1737   1745   1753
                    1761   1770   1780   1792   1800   1809   1816   1823   1830   1837   1848   1855   1862
                    1869   1877   1886   1892   1901   1909   1917   1920   1925   1933   1943   1955   1963
                    1972   1979   1986   1993   2000   2011   2018   2025   2032   2040   2048   2054   2064
                    2072   2081   2090   2099   2108   2118   2126   2135   2143   2152   2160   2169   2177
                    2186   2194   2203   2211   2219   2227   2235   2245   2262   2272   2275   2281   2290
                    2293   2299   2306   2314   2317   2320   2325   2335   2347   2357   2370   2379   2388
                    2398   2406   2415   2421   2428   2438   2445   2453   2460   2471   2479   2497   2494
                    2501   2507   2517   2529   2542   2558   2573   2583   2591   2612   2624   2630   2642
```

F06


```
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            671    687    704    720    738    750    767    773    780    787    795    806    812    819    826
            836    856    872    888    906    917    934    940    947    954    962    973    979    986    993
           1003   1019   1039   1055   1071   1089   1101   1118   1124   1131   1138   1146   1157   1163   1170
           1177   1187   1205   1221   1237   1255   1267   1284   1290   1297   1304   1312   1323   1329   1336
           1343   1352   1368   1389   1405   1421   1440   1452   1469   1475   1482   1489   1497   1508   1514
           1521   1528   1538   1563   1579   1595   1613   1625   1642   1648   1655   1662   1670   1681   1687
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           1857   1864   1873   1889   1905   1921   1939   1951   1968   1974   1981   1988   1996   2007   2013
           2020   2027   2036   2051   2068   2086   2096   2104   2122   2139   2156   2173   2190   2207   2215
           2231   2257   2278   2296   2302   2321   2343   2367   2375   2395   2402   2418   2424   2434   2441
           2450   2456   2467   2475   2497   2503   2524   2554   2569   2579   2586   2621   2626   2653   2659
           2685   2709   2716   2736   2761   2774   2803   2809   2816   2993   3000   3006
LOOP       1#     387    397    407    418    429    440    450    461    471    489    502    515    528    541
            554    562    570    578    585    593    601    609    625    632    639    646    655    662    669
            676    691    708    724    742    754    771    778    795    792    799    810    817    824    831
            841    859    876    892    910    921    938    945    952    959    966    977    984    991    998
           1007   1023   1042   1059   1075   1093   1105   1122   1129   1136   1143   1150   1161   1168   1175
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           1526   1533   1543   1566   1583   1599   1617   1629   1646   1653   1660   1667   1674   1685   1692
           1699   1706   1714   1728   1745   1761   1780   1792   1809   1816   1823   1830   1837   1848   1855
           1862   1869   1877   1892   1909   1925   1943   1955   1972   1979   1986   1993   2000   2011   2018
           2025   2032   2040   2054   2072   2090   2099   2108   2126   2143   2160   2177   2194   2211   2219
           2235   2262   2281   2299   2306   2325   2347   2370   2379   2398   2406   2421   2428   2438   2445
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           2689   2713   2720   2740   2765   2779   2806   2813   2821   2996   3003   3011
NEWTST     1#     374    473    543    613    678    694    710    726    756    845    862    878    894    923
           1009   1030   1045   1061   1077   1107   1196   1211   1227   1243   1273   1358   1380   1395   1411
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           1927   1957   2042   2058   2075   2112   2129   2146   2163   2180   2197   2221   2239   2266   2284
           2308   2329   2351   2382   2409   2481   2511   2536   2606   2636   2668   2697   2723   2746   2784
           2941
STARS      1#     243    253    280    282    294    374    376    473    475    543    545    613    615    678
            680    694    696    710    712    726    728    756    758    845    847    862    864    878    880
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           1395   1397   1411   1413   1427   1429   1458   1460   1554   1556   1569   1571   1585   1587   1601
           1603   1631   1633   1716   1718   1731   1733   1747   1749   1764   1766   1794   1796   1880   1882
           1895   1897   1911   1913   1927   1929   1957   1959   2042   2044   2058   2060   2075   2077   2112
           2114   2129   2131   2146   2148   2163   2165   2180   2182   2197   2199   2221   2223   2239   2241
           2266   2268   2284   2286   2308   2310   2329   2331   2351   2353   2382   2384   2409   2411   2481
           2483   2511   2513   2536   2538   2606   2608   2636   2638   2668   2670   2697   2699   2723   2725
           2746   2748   2784   2786   2941   2943
VTRP       2111#  2112   2129   2146   2163   2180   2197   2221
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            673    688    705    721    739    751    768    775    782    789    796    807    814    821    828
            838    856    873    889    907    918    935    942    949    956    963    974    981    988    995
           1004   1020   1039   1056   1072   1090   1102   1119   1126   1133   1140   1147   1158   1165   1172
           1179   1189   1205   1222   1238   1256   1268   1285   1292   1299   1306   1313   1324   1331   1338
           1345   1353   1369   1389   1406   1422   1441   1453   1470   1477   1484   1491   1498   1509   1516
           1523   1530   1540   1563   1580   1596   1614   1626   1643   1650   1657   1664   1671   1682   1689
           1696   1703   1711   1725   1742   1758   1777   1789   1806   1813   1820   1827   1834   1845   1852
           1859   1866   1874   1889   1906   1922   1940   1952   1969   1976   1983   1990   1997   2008   2015
```

H06


```
                2022    2029    2037    2051    2069    2087    2096    2105    2123    2140    2157    2174    2191    2208    2216
                2232    2259    2278    2296    2303    2322    2344    2367    2376    2395    2403    2418    2425    2435    2442
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                2686    2710    2717    2737    2762    2776    2803    2810    2818    2993    3000    3008
$$ERRO            1#     467     537     605     672     704     720     750     872     888     917    1003    1055    1071    1101
                1221    1237    1267    1352    1405    1421    1452    1579    1595    1625    1710    1741    1757    1788    1873
                1905    1921    1951    2036    2068    2215    2302    2321    2343    2402    2475    2716
$$_OOP            1#     387     397     407     418     429     440     450     461     471     489     502     515     528     541
                 554     562     570     578     585     593     601     609     625     632     639     646     655     662     669
                 676     691     708     724     742     754     771     778     785     792     799     810     817     824     831
                 841     859     876     892     910     921     938     945     952     959     966     977     984     991     998
                1007    1023    1042    1059    1075    1093    1105    1122    1129    1136    1143    1150    1161    1168    1175
                1182    1192    1208    1225    1241    1259    1271    1288    1295    1302    1309    1316    1327    1334    1341
                1348    1356    1372    1392    1409    1425    1444    1456    1473    1480    1487    1494    1501    1512    1519
                1526    1533    1543    1566    1583    1599    1617    1629    1646    1653    1660    1667    1674    1685    1692
                1699    1706    1714    1728    1745    1761    1780    1792    1809    1816    1823    1830    1837    1848    1855
                1862    1869    1877    1892    1909    1925    1943    1955    1972    1979    1986    1993    2000    2011    2018
                2025    2032    2040    2054    2072    2090    2099    2108    2126    2143    2160    2177    2194    2211    2219
                2235    2262    2281    2299    2306    2325    2347    2370    2379    2398    2406    2421    2428    2438    2445
                2453    2460    2471    2479    2501    2507    2529    2558    2573    2583    2591    2624    2630    2657    2663
                2689    2713    2720    2740    2765    2779    2806    2813    2821    2996    3003    3011
$$NEWT            1#     374     473     543     613     678     694     710     726     756     845     862     878     894     923
                1009    1030    1045    1061    1077    1107    1196    1211    1227    1243    1273    1358    1380    1395    1411
                1427    1458    1554    1569    1585    1601    1631    1716    1731    1747    1764    1794    1880    1895    1911
                1927    1957    2042    2058    2075    2112    2129    2146    2163    2180    2197    2221    2239    2266    2284
                2308    2329    2351    2382    2409    2481    2511    2536    2606    2636    2668    2697    2723    2746    2784
                2941
.$ACTI          235#    241
.$APTB          235#    251
.$APTH          235#    278


. ABS.  016040     000

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

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 RUN-TIME: 54 41 6 SECONDS
 RUN-TIME RATIO: 130/103=1.2
 CORE USED:  11K  (22 PAGES)
```

JO6

Spooler runtime 13 Seconds, 59 KCS, 359 disk reads, 3 disk writes, 73 pages

[illegible] Date 01-Dec-76 17:[illegible]:12 [illegible]

```
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