PDP11/34

11/34 TRAPS TST
CFKABD0

AH-8047D-MC

FICHE 1 OF 1

SEP 1979
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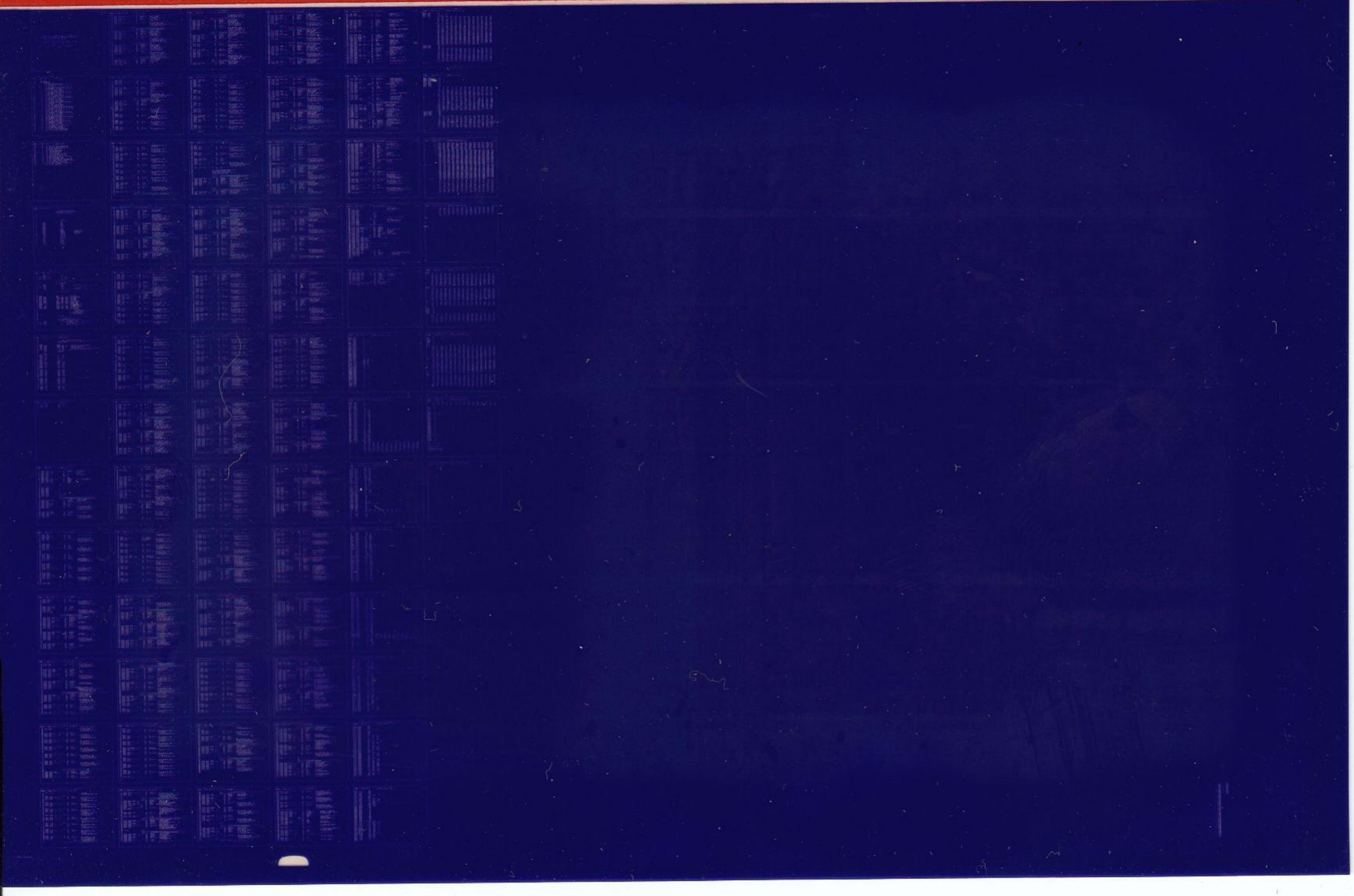
MADE IN USA



IDENTIFICATION

PRODUCT CODE: AC-8045D-MC

PRODUCT NAME: CFKABD0 11/34 TRAPS TST

PRODUCT DATE: 03-APR-77

MAINTAINER: DIAGNOSTIC ENGINEERING

ACT11 HOOKS
APT MAILBOX-ETABLE
APT PARAMETER BLOCK
T1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES
T2 TEST TRANSFER OF .BYTE USING R6
T3 TEST BYTE OPERATION WITH SEQUENTIAL ODD-EVEN ADDRESS
T4 TEST THE CC BITS
T5 TEST THAT A TRAP OCCURS ON A RESERVED INSTRUCTION
T6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T7 TEST THAT PROPER P.C. IS SAVED
T10 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T11 TEST THAT "NEW" STATUS IS CORRECT
T12 TEST THAT A TRAP OCCURS FOR A "TRAP" INSTRUCTION
T13 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T14 TEST THAT PROPER P.C. IS SAVED
T15 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T16 TEST THAT "NEW" STATUS IS CORRECT
T17 TEST THAT ALL COMBINATION OF "TRAP" WILL CAUSE A TRAP
T20 TEST THAT A TRAP OCCURES ON AN "IOT" INSTRUCTION
T21 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T22 TEST THAT PROPER P.C. IS SAVED
T23 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T24 TEST THAT "NEW" STATUS IS CORRECT
T25 TEST THAT A TRAP OCCURS ON AN EMT INSTRUCTION
T26 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T27 TEST THAT PROPER P.C. IS SAVED
T30 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T31 TEST THAT "NEW" STATUS IS CORRECT
T32 TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
T33 TEST THAT A TRAP OCCURES ON AN "TRACE-TRT" INSTRUCTION
T34 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T35 TEST THAT PROPER P.C. IS SAVED
T36 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T37 TEST THAT "NEW" STATUS IS CORRECT
T40 TEST THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
T41 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T42 TEST THAT PROPER P.C. IS SAVED
T43 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T44 TEST THAT "NEW" STATUS IS CORRECT
T45 TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCION
T46 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T47 TEST THAT PROPER P.C. IS SAVED
T50 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T51 TEST THAT "NEW" STATUS IS CORRECT
T52 TEST THAT A TRAP OCCURES ON AN ILLEGAL ADDRESS
T53 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
T54 TEST THAT PROPER P.C. IS SAVED
T55 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
T56 TEST THAT "NEW" STATUS IS CORRECT
T57 TEST THAT DECREMENT R6 TO A VALUE LESS THAN 400 TRAPS
T60 TEST FOR DECREMENT OF R6 ON OVERFLOW TRAP
T61 TEST DIFFERENT TYPES OF OVERFLOW
T62 TEST THAT AN 7 CAUSES AN OVERFLOW TRAP
T63 TEST THAT AN IOT CAUSES AN OVERFLOW TRAP
T64 TEST THAT AN EMT CAUSES AN OVERFLOW TRAP
T65 TEST THAT AN TRAP CAUSES AN OVERFLOW TRAP

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2113	T71	TEST FOR FALSE OVERFLOW TRAP
2141	T72	TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
2160	T73	TEST STACK POINTER DECREMENTS
2185	T74	TEST FOR PROPER PC ON STACK
2207	T75	TEST THAT RTT POPS T- BIT
2230	T76	TEST THAT RTT ALLOWS ONE INST. BEFORE TRAP
2262	T77	TEST THAT RTI DOES NOT ALLOW 1 INST.
2290	T100	DOES THE PROCESSOR TRAP WHEN %7 IS ODD?
2363	T101	TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
2394	T102	TEST THAT THE TRACE BIT IS SAVED IN THE STACK
2420	T103	TEST NON-EXISTENT ADDRESS TRAPS
2491	T104	TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
2522	T105	TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2555	T106	TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
2585	T107	TEST THAT 'RESET'' GOES TO OUTSIDE WORLD
2612	T110	TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
2636	T111	TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
2675	T112	TEST THE 'WAIT' INSTRUCTION
2833	T113	TEST THAT ALL RESERVED INSTRUCTIONS TRAP

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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
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```
                    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  015530              $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              $APTHDR     ;;POINT TO APT HEADER BLOCK
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        000330                   .=.$X      ;;RESET LOCATION COUNTER
                      ;*********************************************************************************
                      ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
                      ;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
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  152  000610  172352                    KPAR5:  172352
  153  000612  172354                    KPAR6:  172354
  154  000614  172356                    KPAR7:  172356
  155  000616  000614                    ADREND: .-2
  156
  157
  158
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000620 012737 177777 015556 BEGIN:  MOV     #-1,@#PASSPT            ;CLEAR THE ITERATION COUNTER
000626 012700 016061                MOV     #MSG1,R0                ;GET TITLE ADRS
000632 105767 176726         1$:    TSTB    TPS                     ;TTY READY
000636 100375                       BPL     1$                      ;NO WAIT
000640 112067 176722                MOVB    (R0)+,TPB               ;PRINT CHARACTER
000644 001372                       BNE     1$                      ;NEXT IF NOT DONE
000646 105767 176712         2$:    TSTB    TPS                     ;
000652 100375                       BPL     2$                      ;
000654 005067 177420         RESTRT: CLR    $MSGTY
000660 012767 015714 177136         MOV     #PWRDWN,24              ;SET UP THE POWER DOWN VECTOR
000666 012767 000340 177132         MOV     #340,26                 ;SET UP POWER DOWN PRIORITY
000674 005067 177404                CLR     $TSTNM
000700 005067 177376                CLR     $ERROR
000704 012702 000300                MOV     #$MSGTY,R2

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

000710 000167 000024                JMP      TST1
000714 000000                K1:    0
000716 000000                K2:    0
000720 000000                K3:    0
000722 000000                K4:    0
000724 000000                K5:    0
000726 000000                K6:    0
000730 052525                K7:    052525
000732 052400                K10:   052400
000734 000000                K11:   0
000736 000000                K12:   0
                             ;*************************************************************************
                             ;TEST 1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES
                             ;*************************************************************************
000740 005237 000304         TST1:  INC     @#$TESTN                ;UPDATE TEST NUMBER
000744 022737 000001 000304         CMP     #1,@#$TESTN             ;SEQUENCE ERROR?
000752 001137                       BNE     TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
000754 005006                       CLR     %6
000756 112667 177016                MOVB    (6)+,HERE               ;SIX SHOULD INCREMENT BY TWO
000762 020627 000002                CMP     %6,#2
000766 001405                       BEQ     BR1
000770 012737 000001 000302         MOV     #1,@#$FATAL             ;MOVE TO MAILBOX # *******  1  *******
000776 005212                       INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
001000 000000                       HALT                            ;R6 DID NOT AUTO INCREMENT BY TWO
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 764

001002 012706 001000         BR1:   MOV     #1000,%6
001006 114627 000000                MOVB    -(6),#HERE              ;SHOULD DECREMENT BY TWO
001012 020627 000776                CMP     %6,#776
001016 001405                       BEQ     BR2
001020 012737 000002 000302         MOV     #2,@#$FATAL             ;MOVE TO MAILBOX # *******  2  *******
001026 005212                       INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
001030 000000                       HALT                            ;R6 DID NOT AUTO DECREMENT BY 2
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 750
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                                BR2:    CLR     %6
                                        MOVB    (6)+,(6)+       ;DOUBLES AUTO INCREMENT OF R6
                                        CMP     %6,#4
                                        BEQ     BR3
                                        MOV     #3,@#$FATAL     ;MOVE TO MAILBOX #  *******  3  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;WRONG AUTO INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 736

                                BR3:    CLR     %6
                                        CLR     %4
                                        CMPB    (6)+,(4)+       ;TEST INCREMENT OF R6
                                        CMP     %6,#2
                                        BEQ     BR4
                                        MOV     #4,@#$FATAL     ;MOVE TO MAILBOX #  *******  4  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 723

                                BR4:    CLR     %6
                                        CLR     %4
                                        CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
                                        CMP     %6,#2
                                        BEQ     BR5
                                        MOV     #5,@#$FATAL     ;MOVE TO MAILBOX #  *******  5  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 710


                                BR5:    CLR     %6
                                        CLR     %4
                                        CMPB    (6)+,(4)+       ;TEST INCREMENT OF R4
                                        CMP     %4,#1
                                        BEQ     BR6
                                        MOV     #6,@#$FATAL     ;MOVE TO MAILBOX #  *******  6  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;WRONG INCREMENT OF R4
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 675

                                BR6:    CLR     %6
                                        CLR     %4
                                        CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
                                        CMP     %6,#2
                                        BEQ     BR7
                                        MOV     #7,@#$FATAL     ;MOVE TO MAILBOX #  *******  7  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;WRONG INCREMENT OF R6
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 662


                                BR7:    CLR     %6
                                        CLR     %4
                                        CMPB    (4)+,(6)+       ;TEST INCREMENT OF R4
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                                        CMP     %4,#1
                                        BEQ     BR10
001214  020427  000001                 MOV     #10,@#$FATAL    ;MOVE TO MAILBOX #  *******  10  *******
001220  001405                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001222  012737  000010  000302         HALT                    ;WRONG INCREMENT OF R4
001230  005212                         ; TO SCOPE REPLACE HALT W/ 240
001232  000000                         ; AND REPLACE NEXT INST W/ 647

001234  012706  001000          BR10:  MOV     #1000,%6
001240  124627  000000                 CMPB    -(6),#HERE      ;TEST DECREMENT OF R6
001244  022706  000776                 CMP     #776,%6
001250  001405                         BEQ     TST2
001252  012737  000011  000302         MOV     #11,@#$FATAL    ;MOVE TO MAILBOX #  *******  11  *******
001260  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001262  000000                         HALT                    ;WRONG DECREMENT OF R6,OR WRONG $TSTNM
                                        ; TO SCOPE REPLACE HALT W/ 240
                                        ; AND REPLACE NEXT INST W/ 633
                                ;*******************************************************************************
                                ;TEST 2 TEST TRANSFER OF .BYTE USING R6
                                ;*******************************************************************************
001264  005237  000304          TST2:  INC     @#$TESTN        ;UPDATE TEST NUMBER
001270  022737  000002  000304         CMP     #2,@#$TESTN     ;SEQUENCE ERROR?
001276  001137                         BNE     TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
001300  012767  123456  177416         MOV     #123456,K5
001306  012767  050505  177400         MOV     #050505,K1
001314  012705  000714                 MOV     #K1,%5          ;%5=(050505)K1
001320  012706  000724                 MOV     #K5,%6          ;%6=(123456)K5
001324  112625                         MOVB    (6)+,(5)+       ;LOW .BYTE OF R6 TO R5
001326  022767  050456  177360         CMP     #050456,K1
001334  001405                         BEQ     BR11
001336  012737  000012  000302         MOV     #12,@#$FATAL    ;MOVE TO MAILBOX #  *******  12  *******
001344  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001346  000000                         HALT                    ;FALSE TRANSFER OF .BYTE
                                        ; TO SCOPE REPLACE HALT W/ 240
                                        ; AND REPLACE NEXT INST W/ 753

001350  012767  123456  177346 BR11:  MOV     #123456,K5
001356  012767  050505  177330         MOV     #050505,K1
001364  012705  000714                 MOV     #K1,%5          ;%5(050505)K1
001370  012706  000726                 MOV     #K6,%6          ;%6(123456)K5
001374  114625                         MOVB    -(6),(5)+       ;LOW .BYTE OF R6 TO R5 (DECREMENT)
001376  026727  177312  050456         CMP     K1,#050456
001404  001405                         BEQ     BR12
001406  012737  000013  000302         MOV     #13,@#$FATAL    ;MOVE TO MAILBOX #  *******  13  *******
001414  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001416  000000                         HALT                    ;FALSE R6 .BYTE TRANSFER
                                        ; TO SCOPE REPLACE HALT W/ 240
                                        ; AND REPLACE NEXT INST W/ 727

001420  012767  123456  177266 BR12:  MOV     #123456,K1
001426  012767  050505  177270         MOV     #050505,K5
001434  012705  000714                 MOV     #K1,%5          ;(123456)
001440  012706  000724                 MOV     #K5,%6          ;(050505)
001444  112526                         MOVB    (5)+,(6)+       ;LOW OF R5 TO LOW OF R6
001446  022767  050456  177250         CMP     #050456,K5
001454  001405                         BEQ     BR13
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001456  012737  000014  000302          MOV     #14,@#$FATAL        ;MOVE TO MAILBOX #  *******  14  *******
001464  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
001466  000000                          HALT                        ;FALSE R6 .BYTE TRANSFER
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 703

001470  012767  123456  177216  BR13:   MOV     #123456,K1
001476  012767  050505  177220          MOV     #050505,K5
001504  012705  000715                  MOV     #K1+1,%5            ;123456
001510  012706  000724                  MOV     #K5,%6              ;050505
001514  112526                          MOVB    (5)+,(6)+           ;HIGH OF R5 TO LOW OF R6
001516  026727  177202  050647          CMP     K5,#050647
001524  001405                          BEQ     BR14
001526  012737  000015  000302          MOV     #15,@#$FATAL        ;MOVE TO MAILBOX #  *******  15  *******
001534  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
001536  000000                          HALT                        ;FALSE R6 .BYTE TRANSFER
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 657

001540  012767  123456  177146  BR14:   MOV     #123456,K1
001546  012767  050505  177150          MOV     #050505,K5
001554  012705  000715                  MOV     #K1+1,%5            ;R5-123456-ODD ADDRESS
001560  012706  000724                  MOV     #K5,%6              ;R6-050505--.EVEN ADDRESS
001564  112625                          MOVB    (6)+,(5)+           ;LOW OF R6 TO HIGH OF R5
001566  022767  042456  177120          CMP     #042456,K1
001574  001405                          BEQ     TST3
001576  012737  000016  000302          MOV     #16,@#$FATAL        ;MOVE TO MAILBOX #  *******  16  *******
001604  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
001606  000000                          HALT                        ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 633
                                ;************************************************************************
                                ;TEST 3 TEST BYTE OPERATION WITH SEQUENTIAL ODD-EVEN ADDRESS
                                ;************************************************************************
001610  005237  000304          TST3:   INC     @#$TESTN            ;UPDATE TEST NUMBER
001614  022737  000003  000304          CMP     #3,@#$TESTN         ;SEQUENCE ERROR?
001622  001103                          BNE     TST4-12 ;BR TO ERROR HALT ON SEQ ERROR
001624  126767  177100  177077          CMPB    K7,K7+1             ;SAME .WORD LOW TO HIGH
001632  001405                          BEQ     BR15
001634  012737  000017  000302          MOV     #17,@#$FATAL        ;MOVE TO MAILBOX #  *******  17  *******
001642  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
001644  000000                          HALT                        ;SHOULD COMPARE LOW TO HIGH
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 766

001646  126767  177057  177054  BR15:   CMPB    K7+1,K7             ;COMPARE ODD TO .EVEN SAME .WORD
001654  001405                          BEQ     BR16
001656  012737  000020  000302          MOV     #20,@#$FATAL        ;MOVE TO MAILBOX #  *******  20  *******
001664  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
001666  000000                          HALT                        ;ODD TO .EVEN .BYTE FAILURE
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 755

001670  126767  177037  177032  BR16:   CMPB    K10+1,K7            ;SEQUENTIAL .BYTES
001676  001405                          BEQ     BR17
001700  012737  000021  000302          MOV     #21,@#$FATAL        ;MOVE TO MAILBOX #  *******  21  *******
```

```
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001706  005212                         HALT                    ;ODD TO .EVEN FAILED
001710  000000                                                 ; TO SCOPE REPLACE HALT W/ 240
                                                               ; AND REPLACE NEXT INST W/ 744


001712  126767  177014  177006  BR17: CMPB    K10,K6
001720  001405                        BEQ     BR20
001722  012737  000022  000302        MOV     #22,@#$FATAL    ;MOVE TO MAILBOX #  *******  22  *******
001730  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001732  000000                        HALT                    ;.EVEN TO EVEN FAILED
                                                               ; TO SCOPE REPLACE HALT W/ 240
                                                               ; AND REPLACE NEXT INST W/ 733


001734  126767  176771  176771  BR20: CMPB    K7+1,K10+1
001742  001405                        BEQ     BR21
001744  012737  000023  000302        MOV     #23,@#$FATAL    ;MOVE TO MAILBOX #  *******  23  *******
001752  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001754  000000                        HALT                    ;ODD TO ODD FAILED
                                                               ; TO SCOPE REPLACE HALT W/ 240
                                                               ; AND REPLACE NEXT INST W/ 722


001756  126767  176750  176747  BR21: CMPB    K10,K10+1
001764  001005                        BNE     BR22
001766  012737  000024  000302        MOV     #24,@#$FATAL    ;MOVE TO MAILBOX #  *******  24  *******
001774  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
001776  000000                        HALT                    ;LOW TO HIGH IN SAME .WORD FAILED
                                                               ; TO SCOPE REPLACE HALT W/ 240
                                                               ; AND REPLACE NEXT INST W/ 711


002000  126767  176727  176725  BR22: CMPB    K10+1,K10+1
002006  001405                        BEQ     BR23
002010  012737  000025  000302        MOV     #25,@#$FATAL    ;MOVE TO MAILBOX #  *******  25  *******
002016  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002020  000000                        HALT                    ;HIGH TO LOW IN SAME .WORD FAILED
                                                               ; TO SCOPE REPLACE HALT W/ 240
                                                               ; AND REPLACE NEXT INST W/ 700


002022  126767  176704  176701  BR23: CMPB    K10,K7+1
002030  001005                        BNE     TST4
002032  012737  000026  000302        MOV     #26,@#$FATAL    ;MOVE TO MAILBOX #  *******  26  *******
002040  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002042  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
                                ;*****************************************************************************************
                        TST4:   INC     @#$TESTN        ;UPDATE TEST NUMBER
002044  005237  000304                  CMP     #4,@#$TESTN     ;SEQUENCE ERROR?
002050  022737  000004  000304          BNE     TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
002056  001062                          SCC                     ;SET STATUS
002060  000277                          CLR     STATUS          ;CLEAR STATUS
002062  005067  175710                  BCC     BR33
002066  103005                          MOV     #27,@#$FATAL    ;MOVE TO MAILBOX #  *******  27  *******
002070  012737  000027  000302          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002076  005212
```

```
                                                HALT                    ;C NOT CLEAR
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 766

                                        BR33:
002102  102005                                 BVC     BR34
002104  012737  000030  000302                 MOV     #30,@#$FATAL    ;MOVE TO MAILBOX #  *******  30  *******
002112  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002114  000000                                 HALT                    ;V NOT CLEAR
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 760

                                        BR34:
002116  001005                                 BNE     BR35
002120  012737  000031  000302                 MOV     #31,@#$FATAL    ;MOVE TO MAILBOX #  *******  31  *******
002126  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002130  000000                                 HALT                    ;Z NOT CLEAR
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 752

                                        BR35:
002132  100005                                 BPL     BR36
002134  012737  000032  000302                 MOV     #32,@#$FATAL    ;MOVE TO MAILBOX #  *******  32  *******
002142  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002144  000000                                 HALT                    ;N NOT CLEAR
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 744

002146  000257                         BR36:   CCC                     ;CLEAR CONDITION CODES
002150  052767  000017  175620                 BIS     #17,STATUS      ;SET STATUS TO ONES

002156  103405                                 BCS     BR37
002160  012737  000033  000302                 MOV     #33,@#$FATAL    ;MOVE TO MAILBOX #  *******  33  *******
002166  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002170  000000                                 HALT                    ;C NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 732

                                        BR37:
002172  102405                                 BVS     BR40
002174  012737  000034  000302                 MOV     #34,@#$FATAL    ;MOVE TO MAILBOX #  *******  34  *******
002202  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002204  000000                                 HALT                    ;V NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 724

                                        BR40:
002206  001405                                 BEQ     BR41
002210  012737  000035  000302                 MOV     #35,@#$FATAL    ;MOVE TO MAILBOX #  *******  35  *******
002216  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002220  000000                                 HALT                    ;Z NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 716

                                        BR41:
002222  100405                                 BMI     TST5
002224  012737  000036  000302                 MOV     #36,@#$FATAL    ;MOVE TO MAILBOX #  *******  36  *******
002232  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002234  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
```

```
                                   ;*****************************************************************************
002236 005237 000304               TST5:   INC     @#$TESTN            ;UPDATE TEST NUMBER
002242 022737 000005 000304                CMP     #5,@#$TESTN         ;SEQUENCE ERROR?
002250 001006                              BNE     RETA                ;BR TO ERROR HALT ON SEQ ERROR
002252 012706 000500                       MOV     #BUFF,SP            ;STACK POINTER SETUP
002256 012767 002300 175524                MOV     #RETAH,RTRAP        ;RETURN LOCATION
002264 000007                              TRAPA                       ;RESERVED INSTRUCTION, SHOULD TRAP
002266                             RETA:
002266 012737 000037 000302                MOV     #37,@#$FATAL        ;MOVE TO MAILBOX #  *******  37  *******
002274 005212                              INC     (R2)                ;SET MSGTYP TO FATAL ERROR
002276 000000                              HALT                        ;RESERVE INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
                                                                       ; TO SCOPE REPLACE HALT W/ 240
                                                                       ; AND REPLACE NEXT INST W/ 764
002300                             RETAH:
                                   ;*****************************************************************************
                                   ;TEST 6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                   ;*****************************************************************************
002300 005237 000304               TST6:   INC     @#$TESTN            ;UPDATE TEST NUMBER
002304 022737 000006 000304                CMP     #6,@#$TESTN         ;SEQUENCE ERROR?
002312 001011                              BNE     TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
002314 012706 000500                       MOV     #BUFF,SP            ;STACK POINTER SETUP
002320 012767 002330 175462                MOV     #RETB,RTRAP         ;RETURN POINTER
002326 000007                              TRAPA                       ;RESERVED INSTRUCTION
002330 020627 000474               RETB:   CMP     SP,#BUFF-4          ;TEST DECREMENT OF SP
002334 001405                              BEQ     TST7
002336 012737 000040 000302                MOV     #40,@#$FATAL        ;MOVE TO MAILBOX #  *******  40  *******
002344 005212                              INC     (R2)                ;SET MSGTYP TO FATAL ERROR
002346 000000                              HALT                        ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                       ; TO SCOPE REPLACE HALT W/ 240
                                                                       ; AND REPLACE NEXT INST W/ 761
                                   ;*****************************************************************************
                                   ;TEST 7 TEST THAT PROPER P.C. IS SAVED
                                   ;*****************************************************************************
002350 005237 000304               TST7:   INC     @#$TESTN            ;UPDATE TEST NUMBER
002354 022737 000007 000304                CMP     #7,@#$TESTN         ;SEQUENCE ERROR?
002362 001012                              BNE     TST10-12            ;BR TO ERROR HALT ON SEQ ERROR
002364 012706 000500                       MOV     #BUFF,SP            ;STACK POINTER SETUP
002370 012767 002400 175412                MOV     #RETC,RTRAP         ;RETURN FROM TRAP POINTER
002376 000007                      INSTC:  TRAPA                       ;TRAP ON THIS INSTRUCTION
002400 022767 002400 176066        RETC:   CMP     #.,BUFF-4           ;CHECK FOR INCREMENTED P.C.
002406 001405                              BEQ     TST10
002410 012737 000041 000302                MOV     #41,@#$FATAL        ;MOVE TO MAILBOX #  *******  41  *******
002416 005212                              INC     (R2)                ;SET MSGTYP TO FATAL ERROR
002420 000000                              HALT                        ;INCORRECT P.C.,OR WRONG $TSTNM
                                                                       ; TO SCOPE REPLACE HALT W/ 240
                                                                       ; AND REPLACE NEXT INST W/ 760
                                   ;*****************************************************************************
                                   ;TEST 10        TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
                                   ;*****************************************************************************
002422 005237 000304               TST10:  INC     @#$TESTN            ;UPDATE TEST NUMBER
002426 022737 000010 000304                CMP     #10,@#$TESTN        ;SEQUENCE ERROR?
002434 001040                              BNE     TST11-12            ;BR TO ERROR HALT ON SEQ ERROR
002436 012706 000500                       MOV     #BUFF,SP            ;SET UP
002442 012767 002460 175340                MOV     #RETD,RTRAP         ;SET UP
002450 005067 175322                       CLR     CC                  ;CLEAR CC AND PRIORITY
002454 000257                              CCC
```

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                                        TRAPA                   ;TRAP
002456  000007
002460  026727  176012  000000  RETD:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
002466  001405                          BEQ     1$
002470  012737  000042  000302          MOV     #42,@#$FATAL    ;MOVE TO MAILBOX #  *******  42  *******
002476  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002500  000000                          HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 755
002502  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
002506  012767  002526  175274          MOV     #RETE,RTRAP     ;SET UP
002514  012767  000357  175254          MOV     #357,CC         ;SET PRIORITY
002522  000277                          SCC                     ;SET CC
002524  000007                          TRAPA                   ;TRAP
002526  026727  175744  000357  RETE:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
002534  001405                          BEQ     TST11
002536  012737  000043  000302          MOV     #43,@#$FATAL    ;MOVE TO MAILBOX #  *******  43  *******
002544  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002546  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 732
                                ;*******************************************************************************
                                ;TEST 11         TEST THAT 'NEW' STATUS IS CORRECT
                                ;*******************************************************************************
002550  005237  000304  TST11:  INC     @#$TESTN        ;UPDATE TEST NUMBER
002554  022737  000011  000304          CMP     #11,@#$TESTN    ;SEQUENCE ERROR?
002562  001121                          BNE     STPP            ;BR TO ERROR HALT ON SEQ ERROR
002564  012706  000500                  MOV     #BUFF,SP
002570  012767  002604  175212          MOV     #RETF,RTRAP
002576  005067  175210                  CLR     RTRAP+2         ;CLEAR FUTURE PRIORITY AND CC
002602  000007                          TRAPA
002604                          RETF:                           ;TEST FOR "C" CLEARED
002604  100005                          BPL     1$
002606  012737  000044  000302          MOV     #44,@#$FATAL    ;MOVE TO MAILBOX #  *******  44  *******
002614  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002616  000000                          HALT                    ;N NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
002620                          1$:
002620  001005                          BNE     2$
002622  012737  000045  000302          MOV     #45,@#$FATAL    ;MOVE TO MAILBOX #  *******  45  *******
002630  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002632  000000                          HALT                    ;Z NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753
002634                          2$:
002634  102005                          BVC     3$
002636  012737  000046  000302          MOV     #46,@#$FATAL    ;MOVE TO MAILBOX #  *******  46  *******
002644  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002646  000000                          HALT                    ;V NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 745
002650                          3$:
002650  103005                          BCC     4$
002652  012737  000047  000302          MOV     #47,@#$FATAL    ;MOVE TO MAILBOX #  *******  47  *******
002660  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
002662  000000                          HALT                    ;C NOT CLEARED
```

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                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 737
002664  032767  000340  175104  4$:     BIT     #340,CC               ;TEST PRIORITY
002672  001405                         BEQ     5$
002674  012737  000050  000302          MOV     #50,@#$FATAL          ;MOVE TO MAILBOX #  *******  50  *******
002702  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
002704  000000                         HALT                          ;PRIORITY NOT ZERO
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 726
002706  012706  000500          5$:     MOV     #BUFF,SP
002712  012767  002730  175070          MOV     #RETG,RTRAP
002720  012767  000357  175064          MOV     #357,RTRAP+2          ;SET NEW ''CC'' AND PRIORITY
002726  000007                         TRAPA                         ;TRAP HERE
002730                          RETG:
002730  100405                         BMI     1$
002732  012737  000051  000302          MOV     #51,@#$FATAL          ;MOVE TO MAILBOX #  *******  51  *******
002740  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
002742  000000                         HALT                          ;N NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 707
002744                          1$:
002744  001405                         BEQ     2$
002746  012737  000052  000302          MOV     #52,@#$FATAL          ;MOVE TO MAILBOX #  *******  52  *******
002754  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
002756  000000                         HALT                          ;Z NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 701
002760                          2$:
002760  102405                         BVS     3$
002762  012737  000053  000302          MOV     #53,@#$FATAL          ;MOVE TO MAILBOX #  *******  53  *******
002770  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
002772  000000                         HALT                          ;V NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 673
002774                          3$:
002774  103405                         BCS     4$
002776  012737  000054  000302          MOV     #54,@#$FATAL          ;MOVE TO MAILBOX #  *******  54  *******
003004  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
003006  000000                         HALT                          ;C NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 665
003010  016706  174762          4$:     MOV     CC,SP
003014  042706  000017                  BIC     #17,SP
003020  022706  000340                  CMP     #340,SP
003024  001405                         BEQ     STPPA
003026                          STPP:
003026  012737  000055  000302          MOV     #55,@#$FATAL          ;MOVE TO MAILBOX #  *******  55  *******
003034  005212                         INC     (R2)                  ;SET MSGTYP TO FATAL ERROR
003036  000000                         HALT                          ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 651
003040  012767  000012  174742  STPPA:  MOV     #12,10
003046  005067  174740                  CLR     12
                                ;*****************************************************************************
                                ;TEST 12         TEST THAT A TRAP OCCURS FOR A ''TRAP'' INSTRUCTION
                                ;*****************************************************************************
```

```
                                TST12:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #12,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST13-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #12,10
                                        CLR     12
                                        MOV     #BUFF,SP        ;STACK POINTER SETUP
                                        MOV     #RETA1,RTRAP1   ;RETURN LOCATION
                                        TRAP                    ;RESERVED INSTRUCTION, SHOULD TRAP
                                        MOV     #56,@#$FATAL    ;MOVE TO MAILBOX #  *******  56  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;TRAP DIDN'T TRAP,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 757

                                RETA1:
                                ;*****************************************************************************
                                ;TEST 13        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                ;*****************************************************************************
                                TST13:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #13,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST14-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #BUFF,SP        ;STACK POINTER SETUP
                                        MOV     #RETB1,RTRAP1   ;RETURN POINTER
                                        TRAP                    ;RESERVED INSTRUCTION
                                RETB1:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
                                        BEQ     TST14
                                        MOV     #57,@#$FATAL    ;MOVE TO MAILBOX #  *******  57  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
                                ;*****************************************************************************
                                ;TEST 14        TEST THAT PROPER P.C. IS SAVED
                                ;*****************************************************************************
                                TST14:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #14,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST15-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #BUFF,SP        ;STACK POINTER SETUP
                                        MOV     #RETC1,RTRAP1   ;RETURN FROM TRAP POINTER
                                        TRAP                    ;TRAP ON THIS INSTRUCTION
                                RETC1:  CMP     #.,BUFF-4       ;CHECK INCREMENTED P.C.
                                        BEQ     TST15
                                        MOV     #60,@#$FATAL    ;MOVE TO MAILBOX #  *******  60  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 760
                                ;*****************************************************************************
                                ;TEST 15        TEST THAT 'OLD'' CC AND PRIORITY ARE PLACED ON STACK
                                ;*****************************************************************************
                                TST15:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #15,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST16-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #BUFF,SP        ;SET UP
                                        MOV     #RETD1,RTRAP1   ;SET UP
                                        CLR     CC              ;CLEAR CC AND PRIORITY
                                        CCC
```

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003304  104400                            TRAP                        ;TRAP
003306  026727  175164  000000  RETD1:    CMP     BUFF-2,#0           ;TEST THAT OLD STATUS WENT TO STACK
003314  001405                            BEQ     1$
003316  012737  000061  000302            MOV     #61,@#$FATAL        ;MOVE TO MAILBOX #  *******  61  *******
003324  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003326  000000                            HALT                        ;INCORRECT STATUS
                                                                      ; TO SCOPE REPLACE HALT W/ 240
                                                                      ; AND REPLACE NEXT INST W/ 755

003330  012706  000500          1$:       MOV     #BUFF,SP            ;SET UP
003334  012767  003352  174472            MOV     #RETE1,RTRAP1       ;SET UP
003342  012767  000357  174426            MOV     #357,CC             ;SET PRIORITY
003350  104400                            TRAP                        ;SET CC
003352  026727  175120  000357  RETE1:    CMP     BUFF-2,#357         ;COMPARES STATUS ON STACK
003360  001405                            BEQ     TST16
003362  012737  000062  000302            MOV     #62,@#$FATAL        ;MOVE TO MAILBOX #  *******  62  *******
003370  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003372  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
                                ;*************************************************************************
003374  005237  000304          TST16:    INC     @#$TESTN            ;UPDATE TEST NUMBER
003400  022737  000016  000304            CMP     #16,@#$TESTN        ;SEQUENCE ERROR?
003406  001121                            BNE     TST17-12            ;BR TO ERROR HALT ON SEQ ERROR
003410  012706  000500                    MOV     #BUFF,SP
003414  012767  003430  174412            MOV     #RETF1,RTRAP1
003422  005067  174410                    CLR     RTRAP1+2            ;CLEAR FUTURE PRIORITY AND CC
003426  104400                            TRAP
003430                          RETF1:                                ;TEST FOR "C" CLEARED
003430  100005                            BPL     1$
003432  012737  000063  000302            MOV     #63,@#$FATAL        ;MOVE TO MAILBOX #  *******  63  *******
003440  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003442  000000                            HALT                        ;C NOT CLEARED
                                                                      ; TO SCOPE REPLACE HALT W/ 240
                                                                      ; AND REPLACE NEXT INST W/ 761

003444                          1$:
003444  001005                            BNE     2$
003446  012737  000064  000302            MOV     #64,@#$FATAL        ;MOVE TO MAILBOX #  *******  64  *******
003454  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003456  000000                            HALT                        ;Z NOT CLEARED
                                                                      ; TO SCOPE REPLACE HALT W/ 240
                                                                      ; AND REPLACE NEXT INST W/ 753

003460                          2$:
003460  102005                            BVC     3$
003462  012737  000065  000302            MOV     #65,@#$FATAL        ;MOVE TO MAILBOX #  *******  65  *******
003470  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003472  000000                            HALT                        ;V NOT CLEARED
                                                                      ; TO SCOPE REPLACE HALT W/ 240
                                                                      ; AND REPLACE NEXT INST W/ 745

003474                          3$:
003474  103005                            BCC     4$
003476  012737  000066  000302            MOV     #66,@#$FATAL        ;MOVE TO MAILBOX #  *******  66  *******
003504  005212                            INC     (R2)                ;SET MSGTYP TO FATAL ERROR
003506  000000                            HALT                        ;C NOT CLEARED
                                                                      ; TO SCOPE REPLACE HALT W/ 240
```

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                                                                ; AND REPLACE NEXT INST W/ 737
                                                                ;TEST PRIORITY
003510  032767  000340  174260  4$:   BIT     #340,CC
003516  001405                        BEQ     5$
003520  012737  000067  000302        MOV     #67,@#$FATAL      ;MOVE TO MAILBOX #  *******  67  *******
003526  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003530  000000                        HALT                      ;PRIORITY NOT ZERO
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 726

003532  012706  000500        5$:     MOV     #BUFF,SP
003536  012767  003554  174270        MOV     #RETG1,RTRAP1
003544  012767  000357  174264        MOV     #357,RTRAP1+2     ;SET NEW ''CC'' AND PRIORITY
003552  104400                        TRAP                      ;TRAP HERE
003554                        RETG1:
003554  100405                        BMI     1$
003556  012737  000070  000302        MOV     #70,@#$FATAL      ;MOVE TO MAILBOX #  *******  70  *******
003564  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003566  000000                        HALT                      ;N NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 707

003570                        1$:
003570  001405                        BEQ     2$
003572  012737  000071  000302        MOV     #71,@#$FATAL      ;MOVE TO MAILBOX #  *******  71  *******
003600  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003602  000000                        HALT                      ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 701

003604                        2$:
003604  102405                        BVS     3$
003606  012737  000072  000302        MOV     #72,@#$FATAL      ;MOVE TO MAILBOX #  *******  72  *******
003614  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003616  000000                        HALT                      ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 673

003620                        3$:
003620  103405                        BCS     4$
003622  012737  000073  000302        MOV     #73,@#$FATAL      ;MOVE TO MAILBOX #  *******  73  *******
003630  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003632  000000                        HALT                      ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 665

003634  016706  174136        4$:     MOV     CC,SP
003640  042706  000017                BIC     #17,SP
003644  022706  000340                CMP     #340,SP
003650  001405                        BEQ     TST17
003652  012737  000074  000302        MOV     #74,@#$FATAL      ;MOVE TO MAILBOX #  *******  74  *******
003660  005212                        INC     (R2)              ;SET MSGTYP TO FATAL ERROR
003662  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
                        ;*******************************************************************************
003664  005237  000304  TST17:  INC     @#$TESTN          ;UPDATE TEST NUMBER
003670  022737  000017  000304        CMP     #17,@#$TESTN      ;SEQUENCE ERROR?
003676  001011                        BNE     BR45              ;BR TO ERROR HALT ON SEQ ERROR
003700  012767  104400  000012        MOV     #TRAP,RB1         ;INITIALIZE BASE TRAP INSTRUCTION
```

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                        MOV     #RA1,34         ;RETURN FROM TRAP TO RA1
                        MOV     #BUFF,SP        ;SET UP STACK POINTER
RC1:                    TRAP                    ;TRAP INST WILL BE MODIFIED TO TRAP+377
RB1:
BR45:
                        MOV     #75,@#$FATAL    ;MOVE TO MAILBOX #  *******  75  *******
                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                        HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
                                                ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 761
RA1:                    INC     RB1             ;INCREMENT TRAP INSTRUCTION
                        CMP     #104777,RB1     ;TRAP+377 TO UPPER LIMIT
                        BHIS    RC1             ;HAVE WE TESTED ALL
                        MOV     #36,34
                        CLR     36
;*************************************************************************************
;TEST 20                TEST THAT A TRAP OCCURES ON AN ''IOT'' INSTRUCTION
;*************************************************************************************
TST20:  INC     @#$TESTN                        ;UPDATE TEST NUMBER
        CMP     #20,@#$TESTN                    ;SEQUENCE ERROR?
        BNE     TST21-12                        ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP                        ;STACK POINTER SETUP
        MOV     #RETA2,RTRAP2                   ;RETURN LOCATION
        IOT                                     ;RESERVE INSTRUCTION, SHOULD TRAP
        MOV     #76,@#$FATAL                    ;MOVE TO MAILBOX #  *******  76  *******
        INC     (R2)                            ;SET MSGTYP TO FATAL ERROR
        HALT                                    ;IOT DIDN'T TRAP,OR WRONG $TSTNM
                                                ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 764
RETA2:
;*************************************************************************************
;TEST 21                TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
;*************************************************************************************
TST21:  INC     @#$TESTN                        ;UPDATE TEST NUMBER
        CMP     #21,@#$TESTN                    ;SEQUENCE ERROR?
        BNE     TST22-12                        ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP                        ;STACK POINTER SETUP
        MOV     #RETB2,RTRAP2                   ;RETURN POINTER
        IOT                                     ;RESERVED INSTRUCTION
RETB2:  CMP     SP,#BUFF-4                      ;TEST DECREMENT OF SP
        BEQ     TST22
        MOV     #77,@#$FATAL                    ;MOVE TO MAILBOX #  *******  77  *******
        INC     (R2)                            ;SET MSGTYP TO FATAL ERROR
        HALT                                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 761
;*************************************************************************************
;TEST 22                TEST THAT PROPER P.C. IS SAVED
;*************************************************************************************
TST22:  INC     @#$TESTN                        ;UPDATE TEST NUMBER
        CMP     #22,@#$TESTN                    ;SEQUENCE ERROR?
        BNE     TST23-12                        ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP                        ;STACK POINTER SETUP
        MOV     #RETC2,RTRAP2                   ;RETURN FROM TRAP POINTER
        IOT                                     ;TRAP ON THIS INSTRUCTION
RETC2:  CMP     #.,BUFF-4                       ;CHECK FOR INCREMENTED P.C.
        BEQ     TST23
```

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004134  012737  000100  000302            MOV     #100,@#$FATAL     ;MOVE TO MAILBOX #  *******  100  *******
004142  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004144  000000                            HALT                      ;INCORRECT P.C.,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 760
                                  ;*************************************************************************
                                  ;TEST 23            TEST THAT ''OLD'' CC AND PRIORITY ARE PLACED ON STACK
                                  ;*************************************************************************
004146  005237  000304            TST23:  INC     @#$TESTN          ;UPDATE TEST NUMBER
004152  022737  000023  000304            CMP     #23,@#$TESTN      ;SEQUENCE ERROR?
004160  001040                            BNE     TST24-12          ;BR TO ERROR HALT ON SEQ ERROR
004162  012706  000500                    MOV     #BUFF,SP          ;SET UP
004166  012767  004204  173624            MOV     #RETD2,RTRAP2     ;SET UP
004174  005067  173576                    CLR     CC                ;CLEAR CC AND PRIORITY
004200  000257                            CCC
004202  000004                            IOT                       ;TRAP
004204  026727  174266  000000    RETD2:  CMP     BUFF-2,#0         ;TEST THAT OLD STATUS WENT TO STACK
004212  001405                            BEQ     1$
004214  012737  000101  000302            MOV     #101,@#$FATAL     ;MOVE TO MAILBOX #  *******  101  *******
004222  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004224  000000                            HALT                      ;INCORRECT STATUS
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 755
004226  012706  000500            1$:     MOV     #BUFF,SP          ;SET UP
004232  012767  004252  173560            MOV     #RETE2,RTRAP2     ;SET UP
004240  012767  000357  173530            MOV     #357,CC           ;SET PRIORITY
004246  000277                            SCC                       ;SET CC
004250  000004                            IOT                       ;TRAP
004252  026727  174230  000357    RETE2:  CMP     BUFF-2,#357       ;COMPARES STATUS ON STACK
004260  001405                            BEQ     TST24
004262  012737  000102  000302            MOV     #102,@#$FATAL     ;MOVE TO MAILBOX #  *******  102  *******
004270  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004272  000000                            HALT                      ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 732
                                  ;*************************************************************************
                                  ;TEST 24            TEST THAT ''NEW'' STATUS IS CORRECT
                                  ;*************************************************************************
004274  005237  000304            TST24:  INC     @#$TESTN          ;UPDATE TEST NUMBER
004300  022737  000024  000304            CMP     #24,@#$TESTN      ;SEQUENCE ERROR?
004306  001121                            BNE     BR46              ;BR TO ERROR HALT ON SEQ ERROR
004310  012706  000500                    MOV     #BUFF,SP
004314  012767  004330  173476            MOV     #RETF2,RTRAP2
004322  005067  173474                    CLR     RTRAP2+2          ;CLEAR FUTURE PRIORITY AND CC
004326  000004                            IOT
004330                            RETF2:                            ;TEST FOR ''C'' CLEARED
004330  100005                            BPL     1$
004332  012737  000103  000302            MOV     #103,@#$FATAL     ;MOVE TO MAILBOX #  *******  103  *******
004340  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
004342  000000                            HALT                      ;N NOT CLEARED
                                                                    ; TO SCOPE REPLACE HALT W/ 240
                                                                    ; AND REPLACE NEXT INST W/ 761
004344                            1$:
004344  001005                            BNE     2$
004346  012737  000104  000302            MOV     #104,@#$FATAL     ;MOVE TO MAILBOX #  *******  104  *******
004354  005212                            INC     (R2)              ;SET MSGTYP TO FATAL ERROR
```

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                                        HALT                    ;Z NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 753

                                2$:
                                        BVC     3$
000105  000302                          MOV     #105,@#$FATAL   ;MOVE TO MAILBOX #  *******  105  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;V NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 745

                                3$:
                                        BCC     4$
000106  000302                          MOV     #106,@#$FATAL   ;MOVE TO MAILBOX #  *******  106  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;C NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 737
000340  173360                  4$:     BIT     #340,CC         ;TEST PRIORITY
                                        BEQ     5$
000107  000302                          MOV     #107,@#$FATAL   ;MOVE TO MAILBOX #  *******  107  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;PRIORITY NOT ZERO
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 726

000500                          5$:     MOV     #BUFF,SP
004454  173354                          MOV     #RETG2,RTRAP2
000357  173350                          MOV     #357,RTRAP2+2   ;SET NEW ''CC'' AND PRIORITY
000004                                  IOT                     ;TRAP HERE
                                RETG2:
                                        BMI     1$
000110  000302                          MOV     #110,@#$FATAL   ;MOVE TO MAILBOX #  *******  110  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;N NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 707

                                1$:
                                        BEQ     2$
000111  000302                          MOV     #111,@#$FATAL   ;MOVE TO MAILBOX #  *******  111  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;Z NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 701

                                2$:
                                        BVS     3$
000112  000302                          MOV     #112,@#$FATAL   ;MOVE TO MAILBOX #  *******  112  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 673

                                3$:
                                        BCS     4$
000113  000302                          MOV     #113,@#$FATAL   ;MOVE TO MAILBOX #  *******  113  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 665
```

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                                4$:     MOV     CC,SP
                                        BIC     #17,SP
                                        CMP     #340,SP
                                        BEQ     BR46A
                                BR46:
004552  012737  000114  000302            MOV     #114,@#$FATAL   ;MOVE TO MAILBOX #  *******  114  *******
004560  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004562  000000                            HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 651
004564  012767  000022  173226  BR46A:    MOV     #22,20          ;.+2
004572  005067  173224                    CLR     22              ;HALT
                                ;***************************************************************************
                                ;TEST 25        TEST THAT A TRAP OCCURS ON AN EMT  INSTRUCTION
                                ;***************************************************************************
004576  005237  000304          TST25:  INC     @#$TESTN        ;UPDATE TEST NUMBER
004602  022737  000025  000304          CMP     #25,@#$TESTN    ;SEQUENCE ERROR?
004610  001006                        BNE     TST26-12        ;BR TO ERROR HALT ON SEQ ERROR
004612  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
004616  012767  004640  173204        MOV     #RETA3,RTRAP3   ;RETURN LOCATION
004624  104000                        EMT                     ;RESERVE INSTRUCTIOM, SHOULD TRAP
004626  012737  000115  000302        MOV     #115,@#$FATAL   ;MOVE TO MAILBOX #  *******  115  *******
004634  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004636  000000                        HALT                    ;EMT DIDN'T TRAP,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 764
004640                          RETA3:
                                ;***************************************************************************
                                ;TEST 26        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                ;***************************************************************************
004640  005237  000304          TST26:  INC     @#$TESTN        ;UPDATE TEST NUMBER
004644  022737  000026  000304          CMP     #26,@#$TESTN    ;SEQUENCE ERROR?
004652  001011                        BNE     TST27-12        ;BR TO ERROR HALT ON SEQ ERROR
004654  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
004660  012767  004670  173142        MOV     #RETB3,RTRAP3   ;RETURN POINTER
004666  104000                        EMT                     ;RESERVED INSTRUCTION
004670  020627  000474          RETB3:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
004674  001405                        BEQ     TST27
004676  012737  000116  000302        MOV     #116,@#$FATAL   ;MOVE TO MAILBOX #  *******  116  *******
004704  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
004706  000000                        HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
                                ;***************************************************************************
                                ;TEST 27        TEST THAT PROPER P.C. IS SAVED
                                ;***************************************************************************
004710  005237  000304          TST27:  INC     @#$TESTN        ;UPDATE TEST NUMBER
004714  022737  000027  000304          CMP     #27,@#$TESTN    ;SEQUENCE ERROR?
004722  001012                        BNE     TST30-12        ;BR TO ERROR HALT ON SEQ ERROR
004724  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
004730  012767  004740  173072        MOV     #RETC3,RTRAP3   ;RTURN FROM TRAP POINTER
004736  104000                        EMT                     ;TRAP ON THIS INSTRICTION
004740  022767  004740  173526  RETC3:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
004746  001405                        BEQ     TST30
004750  012737  000117  000302        MOV     #117,@#$FATAL   ;MOVE TO MAILBOX #  *******  117  *******
004756  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
                                        HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 760
                                ;*******************************************************************************
                                ;TEST 30         TEST THAT ''OLD'' CC AND PRIORITY ARE PLACED ON STACK
                                ;*******************************************************************************
                                TST30:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #30,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST31-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #BUFF,SP        ;SET UP
                                        MOV     #RETD3,RTRAP3   ;SET UP
                                        CLR     CC              ;CLEAR CC AND PRIORITY
                                        CCC
                                        EMT                     ;TRAP
                                RETD3:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
                                        BEQ     1$
                                        MOV     #120,@#$FATAL   ;MOVE TO MAILBOX #  *******  120  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 755
                                1$:     MOV     #BUFF,SP        ;SET UP
                                        MOV     #RETE3,RTRAP3   ;SET UP
                                        MOV     #357,CC         ;SET PRIORITY
                                        SCC                     ;SET CC
                                        EMT                     ;TRAP
                                RETE3:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
                                        BEQ     TST31
                                        MOV     #121,@#$FATAL   ;MOVE TO MAILBOX #  *******  121  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 732
                                ;*******************************************************************************
                                ;TEST 31         TEST THAT 'NEW' STATUS IS CORRECT
                                ;*******************************************************************************
                                TST31:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #31,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     TST32-12        ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #BUFF,SP
                                        MOV     #RETF3,RTRAP3
                                        CLR     RTRAP3+2        ;CLEAR FUTURE PRIORITY AND CC
                                        EMT
                                RETF3:                          ;TEST FOR ''C'' CLEARED
                                        BPL     1$
                                        MOV     #122,@#$FATAL   ;MOVE TO MAILBOX #  *******  122  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;C NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
                                1$:
                                        BNE     2$
                                        MOV     #123,@#$FATAL   ;MOVE TO MAILBOX #  *******  123  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;Z NOT CLEARED
                                                                ; TO SCOPE REPLACE HALT W/ 240
```

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                                                                ; AND REPLACE NEXT INST W/ 753
1111
1112  005174                                    2$:
1113  005174  102005                                 BVC     3$
1114  005176  012737  000124  000302                 MOV     #124,@#$FATAL   ;MOVE TO MAILBOX #  *******  124  *******
1115  005204  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1116  005206  000000                                 HALT                    ;V NOT CLEARED
1117                                                                          ; TO SCOPE REPLACE HALT W/ 240
1118                                                                          ; AND REPLACE NEXT INST W/ 745
1119  005210                                    3$:
1120  005210  103005                                 BCC     4$
1121  005212  012737  000125  000302                 MOV     #125,@#$FATAL   ;MOVE TO MAILBOX #  *******  125  *******
1122  005220  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1123  005222  000000                                 HALT                    ;C NOT CLEARED
1124                                                                          ; TO SCOPE REPLACE HALT W/ 240
1125                                                                          ; AND REPLACE NEXT INST W/ 737
1126  005224  032767  000340  172544  4$:            BIT     #340,CC         ;TEST PRIORITY
1127  005232  001405                                 BEQ     5$
1128  005234  012737  000126  000302                 MOV     #126,@#$FATAL   ;MOVE TO MAILBOX #  *******  126  *******
1129  005242  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1130  005244  000000                                 HALT                    ;PRIORITY NOT ZERO
1131                                                                          ; TO SCOPE REPLACE HALT W/ 240
1132                                                                          ; AND REPLACE NEXT INST W/ 726
1133  005246  012706  000500                   5$:   MOV     #BUFF,SP
1134  005252  012767  005270  172550                 MOV     #RETG3,RTRAP3
1135  005260  012767  000357  172544                 MOV     #357,RTRAP3+2   ;SET NEW "CC" AND PRIORITY
1136  005266  104000                                 EMT                     ;TRAP HERE
1137  005270                                  RETG3:
1138  005270  100405                                 BMI     1$
1139  005272  012737  000127  000302                 MOV     #127,@#$FATAL   ;MOVE TO MAILBOX #  *******  127  *******
1140  005300  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1141  005302  000000                                 HALT                    ;N NOT SET
1142                                                                          ; TO SCOPE REPLACE HALT W/ 240
1143                                                                          ; AND REPLACE NEXT INST W/ 707
1144  005304                                    1$:
1145  005304  001405                                 BEQ     2$
1146  005306  012737  000130  000302                 MOV     #130,@#$FATAL   ;MOVE TO MAILBOX #  *******  130  *******
1147  005314  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1148  005316  000000                                 HALT                    ;Z NOT SET
1149                                                                          ; TO SCOPE REPLACE HALT W/ 240
1150                                                                          ; AND REPLACE NEXT INST W/ 701
1151  005320                                    2$:
1152  005320  102405                                 BVS     3$
1153  005322  012737  000131  000302                 MOV     #131,@#$FATAL   ;MOVE TO MAILBOX #  *******  131  *******
1154  005330  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1155  005332  000000                                 HALT                    ;V NOT SET
1156                                                                          ; TO SCOPE REPLACE HALT W/ 240
1157                                                                          ; AND REPLACE NEXT INST W/ 673
1158  005334                                    3$:
1159  005334  103405                                 BCS     4$
1160  005336  012737  000132  000302                 MOV     #132,@#$FATAL   ;MOVE TO MAILBOX #  *******  132  *******
1161  005344  005212                                 INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1162  005346  000000                                 HALT                    ;C NOT SET
1163                                                                          ; TO SCOPE REPLACE HALT W/ 240
1164                                                                          ; AND REPLACE NEXT INST W/ 665
1165  005350  000257                           4$:   CCC
1166  005352  022767  000340  172416                 CMP     #340,CC
```

```
1167  005360  001405                        BEQ     TST32
1168  005362  012737  000133  000302        MOV     #133,@#$FATAL   ;MOVE TO MAILBOX #  *******  133  *******
1169  005370  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1170  005372  000000                        HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1171                                                                  ; TO SCOPE REPLACE HALT W/ 240
1172                                                                  ; AND REPLACE NEXT INST W/ 653
1173                                  ;*****************************************************************************
1174                                  ;TEST 32        TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
1175                                  ;*****************************************************************************
1176  005374  005237  000304        TST32:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1177  005400  022737  000032  000304        CMP     #32,@#$TESTN    ;SEQUENCE ERROR?
1178  005406  001011                        BNE     BR47            ;BR TO ERROR HALT ON SEQ ERROR
1179  005410  012767  104000  000012        MOV     #EMT,RB         ;INITIALIZE BASE EMT INSTRUCTION
1180  005416  012767  005444  172404        MOV     #RA,30          ;RETURN FROM TRAP TO RA
1181  005424  012706  000500              RC:       MOV     #BUFF,SP        ;SET UP STACK POINTER
1182  005430  104000                       RB:       EMT             ;TRAP INST. WILL BE MODIFIED TO EMT+377
1183  005432                              BR47:
1184  005432  012737  000134  000302        MOV     #134,@#$FATAL   ;MOVE TO MAILBOX #  *******  134  *******
1185  005440  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1186  005442  000000                        HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
1187                                                                  ; TO SCOPE REPLACE HALT W/ 240
1188                                                                  ; AND REPLACE NEXT INST W/ 761
1189  005444  005267  177760        RA:     INC     RB              ;INCREMENT TRAP INSTRUCTION
1190  005450  022767  104377  177752        CMP     #104377,RB      ;EMT+377 TO EMT?
1191  005456  103362                        BHIS    RC              ;HAVE WE TESTED ALL
1192                                                                  ;YES
1193  005460  012767  000032  172342        MOV     #32,30          ;/.+
1194  005466  005067  172340                CLR     32              ;HALT
1195                                  ;*****************************************************************************
1196                                  ;TEST 33        TEST THAT A TRAP OCCURES ON AN "TRACE-TRT" INSTRUCTION
1197                                  ;*****************************************************************************
1198  005472  005237  000304        TST33:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1199  005476  022737  000033  000304        CMP     #33,@#$TESTN    ;SEQUENCE ERROR?
1200  005504  001006                        BNE     TST34-12        ;BR TO ERROR HALT ON SEQ ERROR
;201  005506  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
1202  005512  012767  005534  172274        MOV     #RETA4,RTRAP4   ;RETURN LOCATION
1203  005520  000003                        TRT                     ;RESERVED INSTRUCTION, SHOULD TRAP
1204  005522  012737  000135  000302        MOV     #135,@#$FATAL   ;MOVE TO MAILBOX #  *******  135  *******
1205  005530  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1206  005532  000000                        HALT                    ;TRT DIDN'T TRAP,OR WRONG $TSTNM
1207                                                                  ; TO SCOPE REPLACE HALT W/ 240
1208                                                                  ; AND REPLACE NEXT INST W/ 764
1209  005534                          RETA4:
1210                                  ;*****************************************************************************
1211                                  ;TEST 34        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1212                                  ;*****************************************************************************
1213  005534  005237  000304        TST34:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1214  005540  022737  000034  000304        CMP     #34,@#$TESTN    ;SEQUENCE ERROR?
1215  005546  001011                        BNE     TST35-12        ;BR TO ERROR HALT ON SEQ ERROR
1216  005550  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
1217  005554  012767  005564  172232        MOV     #RETB4,RTRAP4   ;RETURN POINTER
1218  005562  000003                        TRT                     ;RESERVED INSTRUCTION
1219  005564  020627  000474        RETB4:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1220  005570  001405                        BEQ     TST35
1221  005572  012737  000136  000302        MOV     #136,@#$FATAL   ;MOVE TO MAILBOX #  *******  136  *******
1222  005600  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
                                        HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761
                                ;*****************************************************************************
                                ;TEST 35        TEST THAT PROPER P.C. IS SAVED
                                ;*****************************************************************************
005604  005237  000304    TST35:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005610  022737  000035  000304    CMP     #35,@#$TESTN    ;SEQUENCE ERROR?
005616  001012                    BNE     TST36-12        ;BR TO ERROR HALT ON SEQ ERROR
005620  012706  000500            MOV     #BUFF,SP        ;STACK POINTER SETUP
005624  012767  005634  172162    MOV     #RETC4,RTRAP4   ;RETURN FROM TRAP POINTER
005632  000003                    TRT                     ;TRAP ON THIS INSTRUCTION
005634  022767  005634  172632 RETC4:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
005642  001405                    BEQ     TST36
005644  012737  000137  000302    MOV     #137,@#$FATAL   ;MOVE TO MAILBOX #  *******  137  *******
005652  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005654  000000                    HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
                                                                ; TO SCOFE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 760
                                ;*****************************************************************************
                                ;TEST 36        TEST THAT ''OLD'' CC AND PRIORITY ARE PLACED ON STACK
                                ;*****************************************************************************
005656  005237  000304    TST36:  INC     @#$TESTN        ;UPDATE TEST NUMBER
005662  022737  000036  000304    CMP     #36,@#$TESTN    ;SEQUENCE ERROR?
005670  001040                    BNE     TST37-12        ;BR TO ERROR HALT ON SEQ ERROR
005672  012706  000500            MOV     #BUFF,SP        ;SET UP
005676  012767  005714  172110    MOV     #RETD4,RTRAP4   ;SET UP
005704  005067  172066            CLR     CC              ;CLEAR CC AND PRIORITY
005710  000257                    CCC
005712  000003                    TRT                     ;TRAP
005714  026727  172556  000000 RETD4:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
                                                                ;TEST FOR ALL ZEROS
005722  001405                    BEQ     1$
005724  012737  000140  000302    MOV     #140,@#$FATAL   ;MOVE TO MAILBOX #  *******  140  *******
005732  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
005734  000000                    HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 755
005736  012706  000500        1$:     MOV     #BUFF,SP        ;SET UP
005742  012767  005762  172044    MOV     #RETE4,RTRAP4   ;SET UP
005750  012767  000357  172020    MOV     #357,CC         ;SET PRIORITY
005756  000277                    SCC                     ;SET-SET CC
005760  000003                    TRT                     ;TRAP
005762  026727  172510  000357 RETE4:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
005770  001405                    BEQ     TST37
005772  012737  000141  000302    MOV     #141,@#$FATAL   ;MOVE TO MAILBOX #  *******  141  *******
006000  005212                    INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006002  000000                    HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 732
                                ;*****************************************************************************
                                ;TEST 37        TEST THAT ''NEW'' STATUS IS CORRECT
                                ;*****************************************************************************
006004  005237  000304    TST37:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006010  022737  000037  000304    CMP     #37,@#$TESTN    ;SEQUENCE ERROR?
006016  001121                    BNE     BR51            ;BR TO ERROR HALT ON SEQ ERROR
```

```
1279  006020  012706  000500          MOV     #BUFF,SP
1280  006024  012767  006040  171762  MOV     #RETF4,RTRAP4
1281  006032  005067  171760          CLR     RTRAP4+2        ;CLEAR FUTURE PRIORITY AND CC
1282  006036  000003                  TRT
1283  006040                  RETF4:                          ;TEST FOR "C" CLEARED
1284  006040  100005          BPL     1$
1285  006042  012737  000142  000302  MOV     #142,@#$FATAL   ;MOVE TO MAILBOX #  *******  142  *******
1286  006050  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1287  006052  000000          HALT                            ;C NOT CLEARED
1288                                                          ; TO SCOPE REPLACE HALT W/ 240
1289                                                          ; AND REPLACE NEXT INST W/ 761
1290  006054                  1$:
1291  006054  001005          BNE     2$
1292  006056  012737  000143  000302  MOV     #143,@#$FATAL   ;MOVE TO MAILBOX #  *******  143  *******
1293  006064  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1294  006066  000000          HALT                            ;Z NOT CLEARED
1295                                                          ; TO SCOPE REPLACE HALT W/ 240
1296                                                          ; AND REPLACE NEXT INST W/ 753
1297  006070                  2$:
1298  006070  102005          BVC     3$
1299  006072  012737  000144  000302  MOV     #144,@#$FATAL   ;MOVE TO MAILBOX #  *******  144  *******
1300  006100  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1301  006102  000000          HALT                            ;V NOT CLEARED
1302                                                          ; TO SCOPE REPLACE HALT W/ 240
1303                                                          ; AND REPLACE NEXT INST W/ 745
1304  006104                  3$:
1305  006104  103005          BCC     4$
1306  006106  012737  000145  000302  MOV     #145,@#$FATAL   ;MOVE TO MAILBOX #  *******  145  *******
1307  006114  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1308  006116  000000          HALT                            ;C NOT CLEARED
1309                                                          ; TO SCOPE REPLACE HALT W/ 240
1310                                                          ; AND REPLACE NEXT INST W/ 737
1311  006120  032767  000340  171650  4$:     BIT     #340,CC ;TEST PRIORITY
1312  006126  001405          BEQ     5$
1313  006130  012737  000146  000302  MOV     #146,@#$FATAL   ;MOVE TO MAILBOX #  *******  146  *******
1314  006136  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1315  006140  000000          HALT                            ;PRIORITY NOT ZERO
1316                                                          ; TO SCOPE REPLACE HALT W/ 240
1317                                                          ; AND REPLACE NEXT INST W/ 726
1318  006142  012706  000500  5$:     MOV     #BUFF,SP
1319  006146  012767  006164  171640  MOV     #RETG4,RTRAP4
1320  006154  012767  000357  171634  MOV     #357,RTRAP4+2   ;SET NEW "CC" AND PRIORITY
1321  006162  000003                  TRT                     ;TRAP HERE
1322  006164                  RETG4:
1323  006164  100405          BMI     1$
1324  006166  012737  000147  000302  MOV     #147,@#$FATAL   ;MOVE TO MAILBOX #  *******  147  *******
1325  006174  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1326  006176  000000          HALT                            ;N NOT SET
1327                                                          ; TO SCOPE REPLACE HALT W/ 240
1328                                                          ; AND REPLACE NEXT INST W/ 707
1329  006200                  1$:
1330  006200  001405          BEQ     2$
1331  006202  012737  000150  000302  MOV     #150,@#$FATAL   ;MOVE TO MAILBOX #  *******  150  *******
1332  006210  005212          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
1333  006212  000000          HALT                            ;Z NOT SET
1334                                                          ; TO SCOPE REPLACE HALT W/ 240
```

```
                                                                ; AND REPLACE NEXT INST W/ 701
                                2$:
006214                                  BVS     3$
006214  102405
006216  012737  000151  000302            MOV     #151,@#$FATAL   ;MOVE TO MAILBOX #  *******  151  *******
006224  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006226  000000                            HALT                    ;V NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 673
                                3$:
006230                                  BCS     4$
006230  103405
006232  012737  000152  000302            MOV     #152,@#$FATAL   ;MOVE TO MAILBOX #  *******  152  *******
006240  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006242  000000                            HALT                    ;C NOT SET
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 665
006244  016706  171526          4$:     MOV     CC,SP
006250  042706  000017                    BIC     #17,SP
006254  022706  000340                    CMP     #340,SP
006260  001405                            BEQ     BR51A
006262                          BR51:
006262  012737  000153  000302            MOV     #153,@#$FATAL   ;MOVE TO MAILBOX #  *******  153  *******
006270  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006272  000000                            HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 651
006274  012767  000016  171512  BR51A:   MOV     #16,14
006302  005067  171510                    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
                                ;*************************************************************************
006306  005237  000304  TST40:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006312  022737  000040  000304          CMP     #40,@#$TESTN    ;SEQUENCE ERROR?
006320  001006                        BNE     TST41-12        ;BR TO ERROR HALT ON SEQ ERROR
006322  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
006326  012767  006350  171450        MOV     #RETA5,RTRAP5   ;RETURN LOCATION
006334  000100                        JMP     %0              ;ILLEGAL INSTRUCTION, SHOULD TRAP
006336  012737  000154  000302        MOV     #154,@#$FATAL   ;MOVE TO MAILBOX #  *******  154  *******
006344  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006346  000000                        HALT                    ;ILLEGAL INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 764
006350                          RETA5:
                                ;*************************************************************************
                                ;TEST 41         TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                ;*************************************************************************
006350  005237  000304  TST41:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006354  022737  000041  000304          CMP     #41,@#$TESTN    ;SEQUENCE ERROR?
006362  001011                        BNE     TST42-12        ;BR TO ERROR HALT ON SEQ ERROR
006364  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
```

```
1391  006370  012767  006400  171406          MOV     #RETB5,RTRAP5   ;RETURN POINTER
1392  006376  000100                          JMP     %0              ;RESERVED INSTRUCTION
1393  006400  020627  000474          RETB5:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1394  006404  001405                          BEQ     TST42
1395  006406  012737  000155  000302          MOV     #155,@#$FATAL   ;MOVE TO MAILBOX #  *******  155  *******
1396  006414  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1397  006416  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1398                                                                  ; TO SCOPE REPLACE HALT W/ 240
1399                                                                  ; AND REPLACE NEXT INST W/ 761
1400                                  ;*****************************************************************************
1401                                  ;TEST 42        TEST THAT PROPER P.C. IS SAVED
1402                                  ;*****************************************************************************
1403  006420  005237  000304          TST42:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1404  006424  022737  000042  000304          CMP     #42,@#$TESTN    ;SEQUENCE ERROR?
1405  006432  001012                          BNE     TST43-12        ;BR TO ERROR HALT ON SEQ ERROR
1406  006434  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
1407  006440  012767  006450  171336          MOV     #RETC5,RTRAP5   ;RETURN FROM TRAP POINTER
1408  006446  000100                          JMP     %0              ;TRAP ON THIS INSTRUCTION
1409  006450  022767  006450  172016  RETC5:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
1410  006456  001405                          BEQ     TST43
1411  006460  012737  000156  000302          MOV     #156,@#$FATAL   ;MOVE TO MAILBOX #  *******  156  *******
1412  006466  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1413  006470  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
1414                                                                  ; TO SCOPE REPLACE HALT W/ 240
1415                                                                  ; AND REPLACE NEXT INST W/ 760
1416                                  ;*****************************************************************************
1417                                  ;TEST 43        TEST THAT 'OLD'' CC AND PRIORITY ARE PLACED ON STACK
1418                                  ;*****************************************************************************
1419  006472  005237  000304          TST43:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1420  006476  022737  000043  000304          CMP     #43,@#$TESTN    ;SEQUENCE ERROR?
1421  006504  001040                          BNE     TST44-12        ;BR TO ERROR HALT ON SEQ ERROR
1422  006506  012706  000500                  MOV     #BUFF,SP        ;SET UP
1423  006512  012767  006530  171264          MOV     #RETD5,RTRAP5   ;SET UP
1424  006520  005067  171252                  CLR     CC              ;CLEAR CC AND PRIORITY
1425  006524  000257                          CCC
1426  006526  000100                          JMP     %0              ;TRAP
1427  006530  026727  171742  000000  RETD5:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1428  006536  001405                          BEQ     1$
1429  006540  012737  000157  000302          MOV     #157,@#$FATAL   ;MOVE TO MAILBOX #  *******  157  *******
1430  006546  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1431  006550  000000                          HALT                    ;INCORRECT STATUS
1432                                                                  ; TO SCOPE REPLACE HALT W/ 240
1433                                                                  ; AND REPLACE NEXT INST W/ 755
1434  006552  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
1435  006556  012767  006576  171220          MOV     #RETE5,RTRAP5   ;SET UP
1436  006564  012767  000357  171204          MOV     #357,CC         ;SET PRIORITY
1437  006572  000277                          SCC                     ;SET CC
1438  006574  000100                          JMP     %0              ;TRAP
1439  006576  026727  171674  000357  RETE5:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1440  006604  001405                          BEQ     TST44
1441  006606  012737  000160  000302          MOV     #160,@#$FATAL   ;MOVE TO MAILBOX #  *******  160  *******
1442  006614  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1443  006616  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1444                                                                  ; TO SCOPE REPLACE HALT W/ 240
1445                                                                  ; AND REPLACE NEXT INST W/ 732
1446                                  ;*****************************************************************************
```

```
                                        ;TEST 44        TEST THAT 'NEW' STATUS IS CORRECT
                                        ;*************************************************************************
006620  005237  000304                  TST44:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006624  022737  000044  000304                  CMP     #44,@#$TESTN    ;SEQUENCE ERROR?
006632  001117                                  BNE     TST45-12        ;BR TO ERROR HALT ON SEQ ERROR
006634  012706  000500                          MOV     #BUFF,SP
006640  012767  006654  171136                  MOV     #RETF5,RTRAP5
006646  005067  171134                          CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
006652  000100                                  JMP     %0
006654                                  RETF5:                          ;TEST FOR "C" CLEARED
006654  100005                                  BPL     1$
006656  012737  000161  000302                  MOV     #161,@#$FATAL   ;MOVE TO MAILBOX #  *******  161  *******
006664  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006666  000000                                  HALT                    ;C NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 761
006670                                  1$:
006670  001005                                  BNE     2$
006672  012737  000162  000302                  MOV     #162,@#$FATAL   ;MOVE TO MAILBOX #  *******  162  *******
006700  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006702  000000                                  HALT                    ;Z NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 753
006704                                  2$:
006704  102005                                  BVC     3$
006706  012737  000163  000302                  MOV     #163,@#$FATAL   ;MOVE TO MAILBOX #  *******  163  *******
006714  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006716  000000                                  HALT                    ;V NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 745
006720                                  3$:
006720  103005                                  BCC     4$
006722  012737  000164  000302                  MOV     #164,@#$FATAL   ;MOVE TO MAILBOX #  *******  164  *******
006730  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006732  000000                                  HALT                    ;C NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 737
006734  032767  000357  171034          4$:     BIT     #357,CC         ;TEST PRIORITY
006742  001405                                  BEQ     5$
006744  012737  000165  000302                  MOV     #165,@#$FATAL   ;MOVE TO MAILBOX #  *******  165  *******
006752  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006754  000000                                  HALT                    ;PRIORITY NOT ZERO
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 726
006756  012706  000500                  5$:     MOV     #BUFF,SP
006762  012767  007000  171014                  MOV     #RETG5,RTRAP5
006770  012767  000357  171010                  MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
006776  000100                                  JMP     %0              ;TRAP HERE
007000                                  RETG5:
007000  100405                                  BMI     1$
007002  012737  000166  000302                  MOV     #166,@#$FATAL   ;MOVE TO MAILBOX #  *******  166  *******
007010  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007012  000000                                  HALT                    ;N NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 707
007014                                  1$:
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1503  007014  001405                          BEQ     2$
1504  007016  012737  000167  000302          MOV     #167,@#$FATAL   ;MOVE TO MAILBOX #  *******  167  *******
1505  007024  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1506  007026  000000                          HALT                    ;Z NOT SET
1507                                                                  ; TO SCOPE REPLACE HALT W/ 240
1508                                                                  ; AND REPLACE NEXT INST W/ 701
1509  007030                            2$:
1510  007030  102405                          BVS     3$
1511  007032  012737  000170  000302          MOV     #170,@#$FATAL   ;MOVE TO MAILBOX #  *******  170  *******
1512  007040  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1513  007042  000000                          HALT                    ;V NOT SET
1514                                                                  ; TO SCOPE REPLACE HALT W/ 240
1515                                                                  ; AND REPLACE NEXT INST W/ 673
1516  007044                            3$:
1517  007044  103405                          BCS     4$
1518  007046  012737  000171  000302          MOV     #171,@#$FATAL   ;MOVE TO MAILBOX #  *******  171  *******
1519  007054  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1520  007056  000000                          HALT                    ;C NOT SET
1521                                                                  ; TO SCOPE REPLACE HALT W/ 240
1522                                                                  ; AND REPLACE NEXT INST W/ 665
1523  007060  016706  170712           4$:    MOV     CC,SP
1524  007064  022706  000357                  CMP     #357,SP
1525  007070  001405                          BEQ     TST45
1526  007072  012737  000172  000302          MOV     #172,@#$FATAL   ;MOVE TO MAILBOX #  *******  172  *******
1527  007100  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1528  007102  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1529                                                                  ; TO SCOPE REPLACE HALT W/ 240
1530                                                                  ; AND REPLACE NEXT INST W/ 653
1531                                ;*****************************************************************************
1532                                ;TEST 45        TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCION
1533                                ;*****************************************************************************
1534  007104  005237  000304   TST45:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1535  007110  022737  000045  000304   CMP     #45,@#$TESTN    ;SEQUENCE ERROR?
1536  007116  001006                   BNE     TST46-12        ;BR TO ERROR HALT ON SEQ ERROR
1537  007120  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
1538  007124  012767  007146  170652  MOV     #RETH5,RTRAP5   ;RETURN LOCATION
1539  007132  004000                   JSR     %0,%0           ;RESERVED INSTRUCTION, SHOULD TRAP
1540  007134  012737  000173  000302  MOV     #173,@#$FATAL   ;MOVE TO MAILBOX #  *******  173  *******
1541  007142  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1542  007144  000000                   HALT                    ;DIDN'T TRAP,OR WRONG $TSTNM
1543                                                           ; TO SCOPE REPLACE HALT W/ 240
1544                                                           ; AND REPLACE NEXT INST W/ 764
1545  007146                     RETH5:
1546                                ;*****************************************************************************
1547                                ;TEST 46        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1548                                ;*****************************************************************************
1549  007146  005237  000304   TST46:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1550  007152  022737  000046  000304   CMP     #46,@#$TESTN    ;SEQUENCE ERROR?
1551  007160  001011                   BNE     TST47-12        ;BR TO ERROR HALT ON SEQ ERROR
1552  007162  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
1553  007166  012767  007176  170610  MOV     #RETJ,RTRAP5    ;RETURN POINTER
1554  007174  004000                   JSR     %0,%0           ;RESERVED INSTRUCTION
1555  007176  020627  000474   RETJ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
1556  007202  001405                   BEQ     TST47
1557  007204  012737  000174  000302  MOV     #174,@#$FATAL   ;MOVE TO MAILBOX #  *******  174  *******
1558  007212  005212                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
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1559  007214  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1560                                                                  ; TO SCOPE REPLACE HALT W/ 240
1561                                                                  ; AND REPLACE NEXT INST W/ 761
1562                                  ;*********************************************************************************
1563                                  ;TEST 47        TEST THAT PROPER P.C. IS SAVED
1564                                  ;*********************************************************************************
1565  007216  005237  000304         TST47:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1566  007222  022737  000047  000304         CMP     #47,@#$TESTN    ;SEQUENCE ERROR?
1567  007230  001012                        BNE     TST50-12        ;BR TO ERROR HALT ON SEQ ERROR
1568  007232  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
1569  007236  012767  007246  170540        MOV     #RETK,RTRAP5    ;RETURN FROM TRAP POINTER
1570  007244  004000                INSTK:  JSR     %0,%0           ;TRAP ON THIS INSTRUCTION
1571  007246  022767  007246  171220  RETK:  CMP     #INSTK+2,BUFF-4 ;CHECK FOR INCREMENED P.C.
1572  007254  001405                        BEQ     TST50
1573  007256  012737  000175  000302        MOV     #175,@#$FATAL   ;MOVE TO MAILBOX #  *******  175  *******
1574  007264  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1575  007266  000000                        HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
1576                                                                  ; TO SCOPE REPLACE HALT W/ 240
1577                                                                  ; AND REPLACE NEXT INST W/ 760
1578                                  ;*********************************************************************************
1579                                  ;TEST 50        TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
1580                                  ;*********************************************************************************
1581  007270  005237  000304         TST50:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1582  007274  022737  000050  000304         CMP     #50,@#$TESTN    ;SEQUENCE ERROR?
1583  007302  001040                        BNE     TST51-12        ;BR TO ERROR HALT ON SEQ ERROR
1584  007304  012706  000500                MOV     #BUFF,SP        ;SET UP
1585  007310  012767  007326  170466        MOV     #RETL,RTRAP5    ;SET UP
1586  007316  005067  170454                CLR     CC              ;CLEAR CC AND PRIORITY
1587  007322  000257                        CCC
1588  007324  004000                        JSR     %0,%0           ;TRAP
1589  007326  026727  171144  000000  RETL:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
1590  007334  001405                        BEQ     1$
1591  007336  012737  000176  000302        MOV     #176,@#$FATAL   ;MOVE TO MAILBOX #  *******  176  *******
1592  007344  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1593  007346  000000                        HALT                    ;INCORRCT STATUS
1594                                                                  ; TO SCOPE REPLACE HALT W/ 240
1595                                                                  ; AND REPLACE NEXT INST W/ 755
1596  007350  012706  000500         1$:     MOV     #BUFF,SP        ;SET UP
1597  007354  012767  007374  170422        MOV     #RETM,RTRAP5    ;SET UP
1598  007362  012767  000357  170406        MOV     #357,CC         ;SET PRIORITY
1599  007370  000277                        SCC                     ;SET CC
1600  007372  004000                        JSR     %0,%0           ;TRAP
1601  007374  026727  171076  000357  RETM:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
1602  007402  001405                        BEQ     TST51
1603  007404  012737  000177  000302        MOV     #177,@#$FATAL   ;MOVE TO MAILBOX #  *******  177  *******
1604  007412  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1605  007414  000000                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1606                                                                  ; TO SCOPE REPLACE HALT W/ 240
1607                                                                  ; AND REPLACE NEXT INST W/ 732
1608                                  ;*********************************************************************************
1609                                  ;TEST 51        TEST THAT 'NEW' STATUS IS CORRECT
1610                                  ;*********************************************************************************
1611  007416  005237  000304         TST51:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1612  007422  022737  000051  000304         CMP     #51,@#$TESTN    ;SEQUENCE ERROR?
1613  007430  001116                        BNE     TST52-12        ;BR TO ERROR HALT ON SEQ ERROR
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1615  007432  012706  000500          MOV     #BUFF,SP
1616  007436  012767  007452  170340  MOV     #RETN,RTRAP5
1617  007444  005067  170336          CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
1618  007450  004000                  JSR     %0,%0
1619  007452                  RETN:                           ;TEST FOR "C" CLEARED
1620  007452  100005                  BPL     1$
1621  007454  012737  000200  000302  MOV     #200,@#$FATAL   ;MOVE TO MAILBOX #  *******  200  *******
1622  007462  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1623  007464  000000                  HALT                    ;C NOT CLEARED
1624                                                          ; TO SCOPE REPLACE HALT W/ 240
1625                                                          ; AND REPLACE NEXT INST W/ 761
1626  007466                  1$:
1627  007466  001005                  BNE     2$
1628  007470  012737  000201  000302  MOV     #201,@#$FATAL   ;MOVE TO MAILBOX #  *******  201  *******
1629  007476  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1630  007500  000000                  HALT                    ;Z NOT CLEARED
1631                                                          ; TO SCOPE REPLACE HALT W/ 240
1632                                                          ; AND REPLACE NEXT INST W/ 753
1633  007502                  2$:
1634  007502  102005                  BVC     3$
1635  007504  012737  000202  000302  MOV     #202,@#$FATAL   ;MOVE TO MAILBOX #  *******  202  *******
1636  007512  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1637  007514  000000                  HALT                    ;V NOT CLEARED
1638                                                          ; TO SCOPE REPLACE HALT W/ 24_
1639                                                          ; AND REPLACE NEXT INST W/ 745
1640  007516                  3$:
1641  007516  103005                  BCC     4$
1642  007520  012737  000203  000302  MOV     #203,@#$FATAL   ;MOVE TO MAILBOX #  *******  203  *******
1643  007526  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1644  007530  000000                  HALT                    ;C NOT CLEARED
1645                                                          ; TO SCOPE REPLACE HALT W/ 240
1646                                                          ; AND REPLACE NEXT INST W/ 737
1647  007532  016700  170240  4$:     MOV     CC,%0           ;TEMP STORAGE
1648  007536  001405                  BEQ     5$
1649  007540  012737  000204  000302  MOV     #204,@#$FATAL   ;MOVE TO MAILBOX #  *******  204  *******
1650  007546  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1651  007550  000000                  HALT                    ;PRIORITY NOT ZERO
1652                                                          ; TO SCOPE REPLACE HALT W/ 240
1653                                                          ; AND REPLACE NEXT INST W/ 727
1654  007552  012706  000500  5$:     MOV     #BUFF,SP
1655  007556  012767  007574  170220  MOV     #RET0,RTRAP5
1656  007564  012767  000357  170214  MOV     #357,RTRAP5+2   ;__T NEW "CC" AND PRIORITY
1657  007572  004000                  JSR     %0,%0           ;TRAP HERE
1658  007574                  RET0:
1659  007574  100405                  BMI     1$
1660  007576  012737  000205  000302  MOV     #205,@#$FATAL   ;MOVE TO MAILBOX #  *******  205  *******
1661  007604  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1662  007606  000000                  HALT                    ;N NOT SET
1663                                                          ; TO SCOPE REPLACE HALT W/ 240
1664                                                          ; AND REPLACE NEXT INST W/ 710
1665  007610                  1$:
1666  007610  001405                  BEQ     2$
1667  007612  012737  000206  000302  MOV     #206,@#$FATAL   ;MOVE TO MAILBOX #  *******  206  *******
1668  007620  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1669  007622  000000                  HALT                    ;Z NOT SET
1670                                                          ; TO SCOPE REPLACE HALT W/ 240
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                                                        ; AND REPLACE NEXT INST W/ 702
                        2$:
007624                          BVS     3$
007624  102405                  MOV     #207,@#$FATAL   ;MOVE TO MAILBOX #  *******  207  *******
007626  012737  000207  000302  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007634  005212                  HALT                    ;V NOT SET
007636  000000                                          ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 674
                        3$:
007640                          BCS     4$
007640  103405                  MOV     #210,@#$FATAL   ;MOVE TO MAILBOX #  *******  210  *******
007642  012737  000210  000302  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007650  005212                  HALT                    ;C NOT SET
007652  000000                                          ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 666
007654  016700  170116  4$:     MOV     CC,%0
007660  022700  000357          CMP     #357,%0
007664  001405                  BEQ     TST52
007666  012737  000211  000302  MOV     #211,@#$FATAL   ;MOVE TO MAILBOX #  *******  2  *******
007674  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007676  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
                        ;*****************************************************************************
007700  005237  000304  TST52:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007704  022737  000052  000304  CMP     #52,@#$TESTN    ;SEQUENCE ERROR?
007712  001007                  BNE     TST53-12        ;BR TO ERROR HALT ON SEQ ERROR
007714  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
007720  012767  007744  170056  MOV     #RETP,RTRAP5    ;RETURN LOCATION
007726  005767  170047          TST 1                   ;ILLEGAL ADDRESS INSTRUCTION, SHOULD TRAP
007732  012737  000212  000302  MOV     #212,@#$FATAL   ;MOVE TO MAILBOX #  *******  212  *******
007740  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
007742  000000                  HALT                    ;ILLEGAL ADDRESS DID NOT TRAP,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 763
007744                  RETP:
                        ;*****************************************************************************
                        ;TEST 53        TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
                        ;*****************************************************************************
007744  005237  000304  TST53:  INC     @#$TESTN        ;UPDATE TEST NUMBER
007750  022737  000053  000304  CMP     #53,@#$TESTN    ;SEQUENCE ERROR?
007756  001012                  BNE     TST54-12        ;BR TO ERROR HALT ON SEQ ERROR
007760  012706  000500          MOV     #BUFF,SP        ;STACK POINTER SETUP
007764  012767  007776  170012  MOV     #RETQ,RTRAP5    ;RETURN POINTER
007772  005767  170003          TST 1                   ;RESERVED INSTRUCTION
007776  020627  000474  RETQ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
010002  001405                  BEQ     TST54
010004  012737  000213  000302  MOV     #213,@#$FATAL   ;MOVE TO MAILBOX #  *******  213  *******
010012  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010014  000000                  HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 760
                        ;*****************************************************************************
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                                        ;TEST 54        TEST THAT PROPER P.C. IS SAVED
                                        ;*****************************************************************************
                                        TST54:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010016 005237 000304                    CMP     #54,@#$TESTN    ;SEQUENCE ERROR?
010022 022737 000054 000304             BNE     TST55-12        ;BR TO ERROR HALT ON SEQ ERROR
010030 001013                           MOV     #BUFF,SP        ;STACK POINTER SETUP
010032 012706 000500                    MOV     #RETR,RTRAP5    ;RETURN FROM TRAP POINTER
010036 012767 010050 167740             TST 1                   ;TRAP ON THIS INSTRUCTION
010044 005767 167731                    CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
010050 022767 010050 170416     RETR:   BEQ     TST55
010056 001405                           MOV     #214,@#$FATAL   ;MOVE TO MAILBOX #  *******  214  *******
010060 012737 000214 000302             INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010066 005212                           HALT                    ;INCORRECT P.C.,OR WRONG $TSTNM
010070 000000                                                   ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 757
                                        ;*****************************************************************************
                                        ;TEST 55        TEST THAT 'OLD'' CC AND PRIORITY ARE PLACED ON STACK
                                        ;*****************************************************************************
010072 005237 000304                    TST55:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010076 022737 000055 000304             CMP     #55,@#$TESTN    ;SEQUENCE ERROR?
010104 001042                           BNE     TST56-12        ;BR TO ERROR HALT ON SEQ ERROR
010106 012706 000500                    MOV     #BUFF,SP        ;SET UP
010112 012767 010132 167664             MOV     #RETS,RTRAP5    ;SET UP
010120 005067 167652                    CLR     CC              ;CLEAR CC AND PRIORITY
010124 000257                           CCC
010126 005767 167647                    TST 1                   ;TRAP
010132 026727 170340 000000     RETS:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
010140 001405                           BEQ     1$
010142 012737 000215 000302             MOV     #215,@#$FATAL   ;MOVE TO MAILBOX #  *******  215  *******
010150 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010152 000000                           HALT                    ;INCORRECT STATUS
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 754
010154 012706 000500            1$:     MOV     #BUFF,SP        ;SET UP
010160 012767 010202 167616             MOV     #RETT,RTRAP5    ;SET UP
010166 012767 000357 167602             MOV     #357,CC         ;SET PRIORITY
010174 000277                           SCC                     ;SET CC
010176 005767 167577                    TST 1                   ;TRAP
010202 026727 170270 000357     RETT:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
010210 001405                           BEQ     TST56
010212 012737 000216 000302             MOV     #216,@#$FATAL   ;MOVE TO MAILBOX #  *******  216  *******
010220 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
010222 000000                           HALT                    ;INCORRCT STATUS ON STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 730
                                        ;*****************************************************************************
                                        ;TEST 56        TEST THAT 'NEW'' STATUS IS CORRECT
                                        ;*****************************************************************************
010224 005237 000304                    TST56:  INC     @#$TESTN        ;UPDATE TEST NUMBER
010230 022737 000056 000304             CMP     #56,@#$TESTN    ;SEQUENCE ERROR?
010236 001121                           BNE     TST57-12        ;BR TO ERROR HALT ON SEQ ERROR
010240 012706 000500                    MOV     #BUFF,SP
010244 012767 010262 167532             MOV     #RETU,RTRAP5
010252 005067 167530                    CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
010256 005767 167517                    TST 1                   ;TRAP HERE
010262                          RETU:                           ;TEST FOR ''C'' CLEARED
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1783  010262  100005                        BPL     1$
1784  010264  012737  000217  000302        MOV     #217,@#$FATAL   ;MOVE TO MAILBOX #  *******  217  *******
1785  010272  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1786  010274  000000                        HALT                    ;C NOT CLEARED
1787                                                                  ; TO SCOPE REPLACE HALT W/ 240
1788                                                                  ; AND REPLACE NEXT INST W/ 760
1789  010276                          1$:
1790  010276  001005                        BNE     2$
1791  010300  012737  000220  000302        MOV     #220,@#$FATAL   ;MOVE TO MAILBOX #  *******  220  *******
1792  010306  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1793  010310  000000                        HALT                    ;Z NOT CLEARED
1794                                                                  ; TO SCOPE REPLACE HALT W/ 240
1795                                                                  ; AND REPLACE NEXT INST W/ 752
1796  010312                          2$:
1797  010312  102005                        BVC     3$
1798  010314  012737  000221  000302        MOV     #221,@#$FATAL   ;MOVE TO MAILBOX #  *******  221  *******
1799  010322  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1800  010324  000000                        HALT                    ;V NOT CLEARED
1801                                                                  ; TO SCOPE REPLACE HALT W/ 240
1802                                                                  ; AND REPLACE NEXT INST W/ 744
1803  010326                          3$:
1804  010326  103005                        BCC     4$
1805  010330  012737  000222  000302        MOV     #222,@#$FATAL   ;MOVE TO MAILBOX #  *******  222  *******
1806  010336  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1807  010340  000000                        HALT                    ;C NOT CLEARED
1808                                                                  ; TO SCOPE REPLACE HALT W/ 240
1809                                                                  ; AND REPLACE NEXT INST W/ 736
1810  010342  032767  000357  167426  4$:   BIT     #357,CC         ;TEST PRIORITY FOR ZERO
1811  010350  001405                        BEQ     5$
1812  010352  012737  000223  000302        MOV     #223,@#$FATAL   ;MOVE TO MAILBOX #  *******  223  *******
1813  010360  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1814  010362  000000                        HALT                    ;PRIORITY NOT ZERO
1815                                                                  ; TO SCOPE REPLACE HALT W/ 240
1816                                                                  ; AND REPLACE NEXT INST W/ 725
1817  010364  012706  000500          5$:   MOV     #BUFF,SP
1818  010370  012767  010410  167406        MOV     #RETV,RTRAP5
1819  010376  012767  000357  167402        MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
1820  010404  005767  167371                TST 1                   ;TRACE HERE
1821  010410                          RETV:
1822  010410  100405                        BMI     1$
1823  010412  012737  000224  000302        MOV     #224,@#$FATAL   ;MOVE TO MAILBOX #  *******  224  *******
1824  010420  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1825  010422  000000                        HALT                    ;N NOT SET
1826                                                                  ; TO SCOPE REPLACE HALT W/ 240
1827                                                                  ; AND REPLACE NEXT INST W/ 705
1828  010424                          1$:
1829  010424  001405                        BEQ     2$
1830  010426  012737  000225  000302        MOV     #225,@#$FATAL   ;MOVE TO MAILBOX #  *******  225  *******
1831  010434  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1832  010436  000000                        HALT                    ;Z NOT SET
1833                                                                  ; TO SCOPE REPLACE HALT W/ 240
1834                                                                  ; AND REPLACE NEXT INST W/ 677
1835  010440                          2$:
1836  010440  102405                        BVS     3$
1837  010442  012737  000226  000302        MOV     #226,@#$FATAL   ;MOVE TO MAILBOX #  *******  226  *******
1838  010450  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

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1839  010452  000000                          HALT                    ;V NOT SET
1840                                                                  ; TO SCOPE REPLACE HALT W/ 240
1841                                                                  ; AND REPLACE NEXT INST W/ 671
1842  010454                            3$:
1843  010454  103405                           BCS     4$
1844  010456  012737  000227  000302          MOV     #227,@#$FATAL   ;MOVE TO MAILBOX #  *******  227  *******
1845  010464  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1846  010466  000000                           HALT                    ;C NOT SET
1847                                                                  ; TO SCOPE REPLACE HALT W/ 240
1848                                                                  ; AND REPLACE NEXT INST W/ 663
1849  010470  016700  167302            4$:    MOV     CC,%0
1850  010474  022700  000357                   CMP     #357,%0
1851  010500  001405                           BEQ     TST57
1852  010502  012737  000230  000302          MOV     #230,@#$FATAL   ;MOVE TO MAILBOX #  *******  230  *******
1853  010510  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1854  010512  000000                           HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1855                                                                  ; TO SCOPE REPLACE HALT W/ 240
1856                                                                  ; AND REPLACE NEXT INST W/ 651
1857                                    ;*************************************************************************************
1858                                    ;TEST 57        TEST THAT DECREMENT R6 TO A VALUE LESS THAN 400 TRAPS
1859                                    ;*************************************************************************************
1860  010514  005237  000304            TST57:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1861  010520  022737  000057  000304            CMP     #57,@#$TESTN    ;SEQUENCE ERROR?
1862  010526  001006                           BNE     TST60-12        ;BR TO ERROR HALT ON SEQ ERROR
1863  010530  012706  000150                   MOV     #150,%6         ;R6 = 150
1864  010534  012767  010556  167242          MOV     #TDEC1,4        ;STACK OVERFLOW TRAP POINTER
1865  010542  005746                           TST     -(6)            ;WITH R6 = 150 SHOULD TRAP
1866  010544  012737  000231  000302          MOV     #231,@#$FATAL   ;MOVE TO MAILBOX #  *******  231  *******
1867  010552  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1868  010554  000000                           HALT                    ;SHOULD HAVE TRAPPED,OR WRONG $TSTNM
1869                                                                  ; TO SCOPE REPLACE HALT W/ 240
1870                                                                  ; AND REPLACE NEXT INST W/ 764
1871  010556                            TDEC1:
1872
1873                                    ;*************************************************************************************
1874                                    ;TEST 60        TEST FOR DECREMENT OF R6 ON OVERFLOW TRAP
1875                                    ;*************************************************************************************
1876  010556  005237  000304            TST60:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1877  010562  022737  000060  000304            CMP     #60,@#$TESTN    ;SEQUENCE ERROR?
1878  010570  001011                           BNE     TST61-12        ;BR TO ERROR HALT ON SEQ ERROR
1879  010572  012706  000150                   MOV     #150,%6         ;R6 = 150
1880  010576  012767  010606  167200          MOV     #TDEC2,4        ;TRAP POINTER
1881  010604  005746                           TST     -(6)            ;WITH R6 = 150 SHOULD TRAP
1882  010606  020627  000142            TDEC2:  CMP     %6,#142         ;DID R6 DECREMENT
1883  010612  001405                           BEQ     TST61
1884  010614  012737  000232  000302          MOV     #232,@#$FATAL   ;MOVE TO MAILBOX #  *******  232  *******
1885  010622  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1886  010624  000000                           HALT                    ;R6 NOT = 142,OR WRONG $TSTNM
1887                                                                  ; TO SCOPE REPLACE HALT W/ 240
1888                                                                  ; AND REPLACE NEXT INST W/ 761
1889
```

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1890                                    ;*****************************************************************************
1891                                    ;TEST 61        TEST DIFFERENT TYPES OF OVERFLOW
1892                                    ;*****************************************************************************
1893  010626  005237  000304           TST61:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1894  010632  022737  000061  000304           CMP     #61,@#$TESTN    ;SEQUENCE ERROR?
1895  010640  001043                           BNE     TST62-12        ;BR TO ERROR HALT ON SEQ ERROR
1896  010642  012706  000150                   MOV     #150,%6
1897  010646  005067  167274                   CLR     146             ;STATUS WORD OF LOC 10
1898  010652  012767  010662  167124         MOV     #TDEC3,4        ;RETURN TO LOC 4
1899  010660  005246                           INC     -(6)
1900  010662  005767  167260           TDEC3:  TST     146
1901  010666  001005                           BNE     1$
1902  010670  012737  000233  000302         MOV     #233,@#$FATAL   ;MOVE TO MAILBOX #  *******  233  *******
1903  010676  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1904  010700  000000                           HALT                    ;INCREMENT OPERATION NOT INHIBITED
1905                                                                   ; TO SCOPE REPLACE HALT W/ 240
1906                                                                   ; AND REPLACE NEXT INST W/ 757
1907  010702  012705  001000           1$:     MOV     #1000,%5
1908  010706  012706  000400                   MOV     #400,%6
1909  010712  012767  010734  167064         MOV     #TDEC4,4
1910  010720  124645                           CMPB    -(6),-(5)
1911  010722  012737  000234  000302         MOV     #234,@#$FATAL   ;MOVE TO MAILBOX #  *******  234  *******
1912  010730  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1913  010732  000000                           HALT                    ;STACK = 400 AND DECREMENTED, SHOULD TRAP
1914                                                                   ; TO SCOPE REPLACE HALT W/ 240
1915                                                                   ; AND REPLACE NEXT INST W/ 742
1916  010734  012706  000400           TDEC4:  MOV     #400,%6
1917  010740  012767  010762  167036         MOV     #TDEC7,4
1918  010746  134546                           BITB    -(5),-(6)
1919  010750                          TDEC6:
1920  010750  012737  000235  000302         MOV     #235,@#$FATAL   ;MOVE TO MAILBOX #  *******  235  *******
1921  010756  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1922  010760  000000                           HALT                    ;NO STACK OVERFLOW,OR WRONG $TSTNM
1923                                                                   ; TO SCOPE REPLACE HALT W/ 240
1924                                                                   ; AND REPLACE NEXT INST W/ 727
1925  010762                          TDEC7:
1926
1927                                    ;*****************************************************************************
1928                                    ;TEST 62        TEST THAT AN 7 CAUSES AN OVERFLOW TRAP
1929                                    ;*****************************************************************************
1930  010762  005237  000304           TST62:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1931  010766  022737  000062  000304           CMP     #62,@#$TESTN    ;SEQUENCE ERROR?
1932  010774  001011                           BNE     VDEC2           ;BR TO ERROR HALT ON SEQ ERROR
1933  010776  012706  000400                   MOV     #400,%6         ;SET UP STACK TO OVERFLOW
1934  011002  012767  011020  167000         MOV     #VDEC2,10       ;SET UP 7 VECTOR
1935  011010  012767  011032  166766         MOV     #VDEC1,4        ;SET UP OVERFLOW VECTOR
1936  011016  000007                           7                       ;THIS TRAP SHOULD CAUSE OVERFLOW
1937  011020                          VDEC2:
1938  011020  012737  000236  000302         MOV     #236,@#$FATAL   ;MOVE TO MAILBOX #  *******  236  *******
1939  011026  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1940  011030  000000                           HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
1941                                                                   ; TO SCOPE REPLACE HALT W/ 240
1942                                                                   ; AND REPLACE NEXT INST W/ 761
1943  011032  012767  000012  166750  VDEC1:  MOV     #10+2,10
1944                                    ;*****************************************************************************
1945                                    ;TEST 63        TEST THAT AN IOT CAUSES AN OVERFLOW TRAP
```

```
1946                                    ;*****************************************************************************
1947  011040  005237  000304            TST63:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1948  011044  022737  000063  000304            CMP     #63,@#$TESTN    ;SEQUENCE ERROR?
1949  011052  001011                            BNE     VDEC4           ;BR TO ERROR HALT ON SEQ ERROR
1950  011054  012706  000400                    MOV     #400,%6         ;SET UP STACK TO OVERFLOW
1951  011060  012767  011076  166732            MOV     #VDEC4,20       ;SET UP IOT VECTOR
1952  011066  012767  011110  166710            MOV     #VDEC3,4        ;SET UP OVERFLOW VECTOR
1953  011074  000004                            IOT                     ;THIS TRAP SHOULD CAUSE OVERFLOW
1954  011076                            VDEC4:
1955  011076  012737  000237  000302            MOV     #237,@#$FATAL   ;MOVE TO MAILBOX #  *******  237  *******
1956  011104  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1957  011106  000000                            HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
1958                                                                    ; TO SCOPE REPLACE HALT W/ 240
1959                                                                    ; AND REPLACE NEXT INST W/ 761
1960  011110  012767  000022  166702    VDEC3:  MOV     #20+2,20
1961                                    ;*****************************************************************************
1962                                    ;TEST 64        TEST THAT AN EMT CAUSES AN OVERFLOW TRAP
1963                                    ;*****************************************************************************
1964  011116  005237  000304            TST64:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1965  011122  022737  000064  000304            CMP     #64,@#$TESTN    ;SEQUENCE ERROR?
1966  011130  001011                            BNE     VDEC6           ;BR TO ERROR HALT ON SEQ ERROR
1967  011132  012706  000400                    MOV     #400,%6         ;SET UP STACK TO OVERFLOW
1968  011136  012767  011154  166664            MOV     #VDEC6,30       ;SET UP EMT VECTOR
1969  011144  012767  011166  166632            MOV     #VDEC5,4        ;SET UP OVERFLOW VECTOR
1970  011152  104000                            EMT                     ;THIS TRAP SHOULD CAUSE OVERFLOW
1971  011154                            VDEC6:
1972  011154  012737  000240  000302            MOV     #240,@#$FATAL   ;MOVE TO MAILBOX #  *******  240  *******
1973  011162  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1974  011164  000000                            HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
1975                                                                    ; TO SCOPE REPLACE HALT W/ 240
1976                                                                    ; AND REPLACE NEXT INST W/ 761
1977  011166  012767  000032  166634    VDEC5:  MOV     #30+2,30
1978                                    ;*****************************************************************************
1979                                    ;TEST 65        TEST THAT AN TRAP CAUSES AN OVERFLOW TRAP
1980                                    ;*****************************************************************************
1981  011174  005237  000304            TST65:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1982  011200  022737  000065  000304            CMP     #65,@#$TESTN    ;SEQUENCE ERROR?
1983  011206  001011                            BNE     VDEC8           ;BR TO ERROR HALT ON SEQ ERROR
1984  011210  012706  000400                    MOV     #400,%6         ;SET UP STACK TO OVERFLOW
1985  011214  012767  011232  166612            MOV     #VDEC8,34       ;SET UP TRAP VECTOR
1986  011222  012767  011244  166554            MOV     #VDEC7,4        ;SET UP OVERFLOW VECTOR
1987  011230  104400                            TRAP                    ;THIS TRAP SHOULD CAUSE OVERFLOW
1988  011232                            VDEC8:
1989  011232  012737  000241  000302            MOV     #241,@#$FATAL   ;MOVE TO MAILBOX #  *******  241  *******
1990  011240  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
1991  011242  000000                            HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
1992                                                                    ; TO SCOPE REPLACE HALT W/ 240
1993                                                                    ; AND REPLACE NEXT INST W/ 761
1994  011244  012767  000036  166562    VDEC7:  MOV     #34+2,34
1995                                    ;*****************************************************************************
1996                                    ;TEST 66        TEST THAT AN TRT CAUSES AN OVERFLOW TRAP
1997                                    ;*****************************************************************************
1998  011252  005237  000304            TST66:  INC     @#$TESTN        ;UPDATE TEST NUMBER
1999  011256  022737  000066  000304            CMP     #66,@#$TESTN    ;SEQUENCE ERROR?
2000  011264  001011                            BNE     VDEC10          ;BR TO ERROR HALT ON SEQ ERROR
2001  011266  012706  000400                    MOV     #400,%6         ;SET UP STACK TO OVERFLOW
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                                        MOV     #VDEC10,14      ;SET UP TRT VECTOR
                                        MOV     #VDEC9,4        ;SET UP OVERFLOW VECTOR
                                        TRT                     ;THIS TRAP SHOULD CAUSE OVERFLOW
                                VDEC10:
                                        MOV     #242,@#$FATAL   ;MOVE TO MAILBOX #  *******  242  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761

                                VDEC9:  MOV     #14+2,14
                                ;*****************************************************************************
                                ;TEST 67         TEST THAT AN ILLA CAUSES AN OVERFLOW TRAP
                                ;*****************************************************************************
                                TST67:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #67,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     VDEC11          ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #400,%6         ;SET UP STACK TO OVERFLOW
                                        MOV     #VDEC11,4       ;SET UP ILLA VECTOR
                                        MOV     #VDEC12,4       ;SET UP OVERFLOW VECTOR
                                        ILLA                    ;THIS TRAP SHOULD CAUSE OVERFLOW
                                VDEC11:
                                        MOV     #243,@#$FATAL   ;MOVE TO MAILBOX #  *******  243  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761

                                VDEC12: MOV     #4+2,4
                                        CMP     %6,#370         ;STACK PUSHED FOUR WORDS?
                                        BEQ     TST70
                                        MOV     #244,@#$FATAL   ;MOVE TO MAILBOX #  *******  244  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;TRAP OVERFLOW DID NOT OCCUR
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 746

                                ;*****************************************************************************
                                ;TEST 70         TEST THAT AN ILLB CAUSES AN OVERFLOW TRAP
                                ;*****************************************************************************
                                TST70:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #70,@#$TESTN    ;SEQUENCE ERROR?
                                        BNE     VDEC13          ;BR TO ERROR HALT ON SEQ ERROR
                                        MOV     #400,%6         ;SET UP STACK TO OVERFLOW
                                        MOV     #VDEC13,4       ;SET UP ILLB VECTOR
                                        MOV     #VDEC14,4       ;SET UP OVERFLOW VECTOR
                                        ILLB                    ;THIS TRAP SHOULD CAUSE OVERFLOW
                                VDEC13:
                                        MOV     #245,@#$FATAL   ;MOVE TO MAILBOX #  *******  245  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 761

                                VDEC14: MOV     #4+2,4

                                ;*****************************************************************************
                                ;TEST 71         TEST FOR FALSE OVERFLOW TRAP
                                ;*****************************************************************************
                                TST71:  INC     @#$TESTN        ;UPDATE TEST NUMBER
```

```
2058  011510  022737  000071  000304          CMP     #71,@#$TESTN    ;SEQUENCE ERROR?
2059  011516  001023                          BNE     FOVER           ;BR TO ERROR HALT ON SEQ ERROR
2060
2061  011520  012767  011566  166256          MOV     #FOVER,4        ;SET UP OVERFLOW POINTER
2062  011526  012706  001002                  MOV     #1002,%6
2063  011532  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
2064  011534  012706  002002                  MOV     #2002,%6
2065  011540  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
2066  011542  012706  004002                  MOV     #4002,%6
2067  011546  005746                          TST     -(6)            ;SHOULD NOT OVERFLOW
2068  011550  012706  010002                  MOV     #10002,%6
2069  011554  005746                          TST     -(6)
2070  011556  012706  020000                  MOV     #20000,%6       ;SHOULD NOT OVERFLOW
2071  011562  005746                          TST     -(6)
2072  011564  000405                          BR      STP
2073  011566                          FOVER:
2074  011566  012737  000246  000302          MOV     #246,@#$FATAL   ;MOVE TO MAILBOX #  *******  246  *******
2075  011574  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2076  011576  000000                          HALT                    ;IT OVERFLOWED,OR WRONG $TSTNM
2077                                                                  ; TO SCOPE REPLACE HALT W/ 240
2078                                                                  ; AND REPLACE NEXT INST W/ 747
2079  011600  012767  000006  166176  STP:    MOV     #6,4
2080  011606  005067  166174                  CLR     6
2081                          ;*****************************************************************************************
2082                          ;TEST 72        TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
2083                          ;*****************************************************************************************
2084  011612  005237  000304  TST72:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2085  011616  022737  000072  000304          CMP     #72,@#$TESTN    ;SEQUENCE ERROR?
2086  011624  001013                          BNE     TST73-12        ;BR TO ERROR HALT ON SEQ ERROR
2087  011626  012706  000500                  MOV     #BUFF,SP
2088  011632  012767  011666  166154          MOV     #RETAT,RTRAP4   ;SET UP TO TRAP TO 14
2089  011640  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
2090  011644  012746  011652                  MOV     #.+6,-(SP)      ;PUSH PC
2091  011650  000002                          RTI                     ;SET T BIT
2092  011652  000240                          NOP                     ;TRAP HERE
2093  011654  012737  000247  000302          MOV     #247,@#$FATAL   ;MOVE TO MAILBOX #  *******  247  *******
2094  011662  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2095  011664  000000                          HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
2096                                                                  ; TO SCOPE REPLACE HALT W/ 240
2097                                                                  ; AND REPLACE NEXT INST W/ 757
2098  011666                          RETAT:
2099                          ;*****************************************************************************************
2100                          ;TEST 73        TEST  STACK POINTER DECREMENTS
2101                          ;*****************************************************************************************
2102  011666  005237  000304  TST73:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2103  011672  022737  000073  000304          CMP     #73,@#$TESTN    ;SEQUENCE ERROR?
2104  011700  001023                          BNE     TST74-12        ;BR TO ERROR HALT ON SEQ ERROR
2105  011702  012706  000500                  MOV     #BUFF,SP
2106  011706  012767  011742  166100          MOV     #RETBT,RTRAP4
2107  011714  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
2108  011720  012746  011726                  MOV     #.+6,-(SP)      ;PUSH PC
2109  011724  000002                          RTI                     ;SET T BIT
2110  011726  000240                          NOP                     ;TRAP HERE
2111  011730  012737  000250  000302          MOV     #250,@#$FATAL   ;MOVE TO MAILBOX #  *******  250  *******
2112  011736  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2113  011740  000000                          HALT                    ;TRACE BIT DID NOT TRAP!
```

```
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 757
011742  020627  000474          RETBT:  CMP     SP,#BUFF-4
011746  001405                  BEQ     TST74
011750  012737  000251  000302          MOV     #251,@#$FATAL   ;MOVE TO MAILBOX #  *******  251  *******
011756  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
011760  000000                  HALT                            ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 747
                        ;*******************************************************************************
                        ;TEST 74        TEST  FOR PROPER PC ON STACK
                        ;*******************************************************************************
011762  005237  000304  TST74:  INC     @#$TESTN                ;UPDATE TEST NUMBER
011766  022737  000074  000304          CMP     #74,@#$TESTN    ;SEQUENCE ERROR?
011774  001016                  BNE     TST75-12                ;BR TO ERROR HALT ON SEQ ERROR
011776  012706  000500          MOV     #BUFF,SP
012002  012767  012022  166004  MOV     #RETCT,RTRAP4
012010  012746  000020          MOV     #20,-(SP)               ;PUSH T BIT
012014  012746  012022          MOV     #.+6,-(SP)              ;PUSH PC
012020  000002                  RTI                             ;SET T BIT
                                                        ;TRAP HERE
012022  022767  012022  166444  RETCT:  CMP     #.,BUFF-4
012030  001405                  BEQ     TST75
012032  012737  000252  000302          MOV     #252,@#$FATAL   ;MOVE TO MAILBOX #  *******  252  *******
012040  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
012042  000000                  HALT                            ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 754


                        ;*******************************************************************************
                        ;TEST 75        TEST  THAT RTT POPS T- BIT
                        ;*******************************************************************************
012044  005237  000304  TST75:  INC     @#$TESTN                ;UPDATE TEST NUMBER
012050  022737  000075  000304          CMP     #75,@#$TESTN    ;SEQUENCE ERROR?
012056  001015                  BNE     TST76-12                ;BR TO ERROR HALT ON SEQ ERROR

012060  012706  000500          MOV     #BUFF,SP
012064  005001                  CLR     R1                      ;CLEAR R1
012066  012746  000020          MOV     #20,-(SP)
012072  012746  012106          MOV     #RTT1,-(SP)
012076  012767  012124  165710  MOV     #RTT2,14
012104  000006                  RTT
012106  000240          RTT1:   NOP
012110  001405                  BEQ     TST76
012112  012737  000253  000302          MOV     #253,@#$FATAL   ;MOVE TO MAILBOX #  *******  253  *******
012120  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
012122  000000                  HALT                            ;T-BIT DID NOT TRAP,OR WRONG $TESTN
                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                        ; AND REPLACE NEXT INST W/ 755


012124                          RTT2:
                        ;*******************************************************************************
                        ;TEST 76        TEST  THAT RTT ALLOWS ONE INST. BEFORE TRAP
                        ;*******************************************************************************
012124  005237  000304  TST76:  INC     @#$TESTN                ;UPDATE TEST NUMBER
```

```
2170  012130  022737  000076  000304          CMP     #76,@#$TESTN    ;SEQUENCE ERROR?
2171  012136  001031                          BNE     TST77-12        ;BR TO ERROR HALT ON SEQ ERROR
2172  012140  012705  177777                  MOV     #177777,%5
2173  012144  012706  000500          RTT5:   MOV     #BUFF,SP
2174  012150  012746  000020                  MOV     #20,-(SP)
2175  012154  012746  012172                  MOV     #RTT3,-(SP)
2176  012160  012767  012212  165626          MOV     #RTT4,14
2177  012166  005001                          CLR     R1              ;CLEAR R0
2178  012170  000006                          RTT                     ;SET T-BIT
2179  012172  005201          RTT3:   INC     R1
2180  012174  005205                  INC     %5
2181  012176  001762                  BEQ     RTT5            ;DO THIS TEST NO MORE THAN 2 TIMES
2182  012200  012737  000254  000302          MOV     #254,@#$FATAL   ;MOVE TO MAILBOX #  *******  254  *******
2183  012206  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2184  012210  000000                          HALT                    ;DID NOT TRAP
2185                                                                  ; TO SCOPE REPLACE HALT W/ 240
2186                                                                  ; AND REPLACE NEXT INST W/ 752
2187  012212  005301          RTT4:   DEC     R1              ;SEE IF RTT ALLOWS 1 INST.
2188  012214  001407                  BEQ     RTT6
2189  012216  005205                  INC     %5              ;DO THIS TEST NO MORE THAN TWO TIMES
2190  012220  001751                  BEQ     RTT5
2191  012222  012737  000255  000302          MOV     #255,@#$FATAL   ;MOVE TO MAILBOX #  *******  255  *******
2192  012230  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2193  012232  000000                          HALT                    ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
2194                                                                  ; TO SCOPE REPLACE HALT W/ 240
2195                                                                  ; AND REPLACE NEXT INST W/ 741
2196  012234          RTT6:
2197          ;*****************************************************************************************
2198          ;TEST 77         TEST  THAT RTI DOES NOT ALLOW 1 INST.
2199          ;*****************************************************************************************
2200  012234  005237  000304  TST77:  INC     @#$TESTN        ;UPDATE TEST NUMBER
2201  012240  022737  000077  000304          CMP     #77,@#$TESTN    ;SEQUENCE ERROR?
2202  012246  001023                          BNE     TST100-12       ;BR TO ERROR HALT ON SEQ ERROR
2203  012250  012706  000500                  MOV     #BUFF,SP
2204  012254  012746  000020                  MOV     #20,-(SP)
2205  012260  012746  012276                  MOV     #RTI1,-(SP)
2206  012264  012767  012312  165522          MOV     #RTI2,14
2207  012272  005001                          CLR     R1
2208  012274  000002                          RTI                     ;SET T-BIT
2209  012276  005201          RTI1:   INC     R1              ;RTI SHOULD NOT ALLOW THIS
2210  012300  012737  000256  000302          MOV     #256,@#$FATAL   ;MOVE TO MAILBOX #  *******  256  *******
2211  012306  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2212  012310  000000                          HALT                    ;T- BIT DID NOT CAUSE TRAP
2213                                                                  ; TO SCOPE REPLACE HALT W/ 240
2214                                                                  ; AND REPLACE NEXT INST W/ 756
2215  012312  005701          RTI2:   TST     R1
2216                                                                  ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
2217  012314  001405                  BEQ     TST100
2218  012316  012737  000257  000302          MOV     #257,@#$FATAL   ;MOVE TO MAILBOX #  *******  257  *******
2219  012324  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2220  012326  000000                          HALT                    ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
2221                                                                  ; TO SCOPE REPLACE HALT W/ 240
2222                                                                  ; AND REPLACE NEXT INST W/ 747
2223
2224          ;*****************************************************************************************
2225          ;TEST 100        DOES THE PROCESSOR TRAP WHEN %7 IS ODD?
```

```
                                        ;*********************************************************************************
        012330  005237  000304          TST100: INC     @#$TESTN                ;UPDATE TEST NUMBER
        012334  022737  000100  000304          CMP     #100,@#$TESTN           ;SEQUENCE ERROR?
        012342  001120                          BNE     TST101-12               ;BR TO ERROR HALT ON SEQ ERROR
        012344  012706  000500                  MOV     #BUFF,%6                ;SET UP STACK POINTER
        012350  012767  012374  165426          MOV     #R7TR1,4                ;RETURN FROM TRAP
        012356  012707  000001                  MOV     #1,%7                   ;PC EQUALS ONE
        012362  012737  000260  000302          MOV     #260,@#$FATAL           ;MOVE TO MAILBOX #  *******  260  *******
        012370  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012372  000000                          HALT                            ;ODD ADDRESS SHOULD HAVE TRAPPED
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 763
        012374  022767  000001  166072  R7TR1:  CMP     #1,BUFF-4
        012402  001405                          BEQ     1$
        012404  012737  000261  000302          MOV     #261,@#$FATAL           ;MOVE TO MAILBOX #  *******  261  *******
        012412  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012414  000000                          HALT                            ;CORRECT PC WAS NOT SAVED ON STACK
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 752

        012416  012706  000500          1$:     MOV     #BUFF,%6                ;STACK POINTER
        012422  012767  012444  165354          MOV     #R7TR2,4
        012430  005207                          INC     %7                      ;PC BECOMES ODD
        012432                          R7TR2A:
        012432  012737  000262  000302          MOV     #262,@#$FATAL           ;MOVE TO MAILBOX #  *******  262  *******
        012440  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012442  000000                          HALT                            ;
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 737
        012444  022767  012433  166022  R7TR2:  CMP     #R7TR2A+1,BUFF-4
        012452  001405                          BEQ     1$
        012454  012737  000263  000302          MOV     #263,@#$FATAL           ;MOVE TO MAILBOX #  *******  263  *******
        012462  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012464  000000                          HALT                            ;CORRECT PC NOT ON STACK
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 726

        012466  012706  000500          1$:     MOV     #BUFF,%6
        012472  012767  012514  165304          MOV     #R7TR3,4
        012500  005307                  BR60:   DEC     %7                      ;MAKE PC ODD
        012502  012737  000264  000302          MOV     #264,@#$FATAL           ;MOVE TO MAILBOX #  *******  264  *******
        012510  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012512  000000                          HALT                            ;SHOULD TRAP
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 713
        012514  022767  012501  165752  R7TR3:  CMP     #BR60+1,BUFF-4          ;CHECK VALUE OF PC ON STACK
        012522  001405                          BEQ     1$
        012524  012737  000265  000302          MOV     #265,@#$FATAL           ;MOVE TO MAILBOX #  *******  265  *******
        012532  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
        012534  000000                          HALT                            ;WRONG VALUE ON STACK
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 702

        012536  012706  000500          1$:     MOV     #BUFF,%6
        012542  012767  012566  165234          MOV     #R7TR4,4
        012550  000261                          SEC                             ;CARRY EQUALS A 1
        012552  006107                          ROL     %7                      ;PC BECOMES ODD
```

```
                                TR4A:
012554                          
012554 012737 000266 000302             MOV     #266,@#$FATAL   ;MOVE TO MAILBOX #  *******  266  *******
012562 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012564 000000                           HALT                    ;ODD ADDRESS DIDN'T TRAP
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 666
012566 012767 000006 165210     R7TR4:  MOV     #6,4            ;RESET UP A HALT FOR TRAP
012574 022767 025331 165672             CMP     #<2*TR4A+1>,BUFF-4 ;CHECK FOR VALUE ON STACK
012602 001405                           BEQ     TST101
012604 012737 000267 000302             MOV     #267,@#$FATAL   ;MOVE TO MAILBOX #  *******  267  *******
012612 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012614 000000                           HALT                    ;WRONG VALUE ON STACK,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 652
                                ;*****************************************************************************
                                ;TEST 101       TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
                                ;*****************************************************************************
012616 005237 000304            TST101: INC     @#$TESTN        ;UPDATE TEST NUMBER
012622 022737 000101 000304             CMP     #101,@#$TESTN   ;SEQUENCE ERROR?
012630 001027                           BNE     BR70            ;BR TO ERROR HALT ON SEQ ERROR

012632 012706 000500                    MOV     #BUFF,%6
012636 012767 012676 165150             MOV     #TRACE,14       ;TRACE TRAP
012644 005027 000016                    CLR     #16
012650 005027 000022                    CLR     #22
012654 012767 012722 165136             MOV     #TONT1,20       ;IOT TRAP
012662 012746 000020                    MOV     #20,-(SP)       ;PUSH T BIT
012666 012746 012674                    MOV     #.+6,-(SP)      ;PUSH PC
012672 000006                           RTI
012674 000004                           IOT                     ;TRAP, NEW CC HAVE TRACE RESET
012676                          TRACE:
012676 012737 000270 000302             MOV     #270,@#$FATAL   ;MOVE TO MAILBOX #  *******  270  *******
012704 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012706 000000                           HALT                    ;TRACE TRAP WAS NOT INHIBITED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 750

012710                          BR70:
012710 012737 000271 000302             MOV     #271,@#$FATAL   ;MOVE TO MAILBOX #  *******  271  *******
012716 005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
012720 000000                           HALT                    ;WRONG TSTNM,OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 743

012722 012767 000016 165064     TONT1:  MOV     #16,14
012730 012767 000022 165062             MOV     #22,20
                                ;*****************************************************************************
                                ;TEST 102       TEST THAT THE TRACE BIT IS SAVED IN THE STACK
                                ;*****************************************************************************
012736 005237 000304            TST102: INC     @#$TESTN        ;UPDATE TEST NUMBER
012742 022737 000102 000304             CMP     #102,@#$TESTN   ;SEQUENCE ERROR?
012750 001020                           BNE     STP3            ;BR TO ERROR HALT ON SEQ ERROR
012752 012706 000500                    MOV     #BUFF,%6        ;SET UP STACK POINTER
012756 012767 013002 165030             MOV     #TRC1,14        ;TRACE TRAP RETURN
012764 005067 165026                    CLR     16
012770 012746 000020                    MOV     #20,-(SP)       ;SET THE T BIT
012774 012746 013002                    MOV     #TRC1,-(SP)
013000 000002                           RTI
```

```
2338  013002  036727  165470  000020  TRC1:   BIT     BUFF-2,#20      ;CHECK FOR T BIT ON STACK
2339  013010  001005                  BNE     STP3D
2340  013012                        STP3:
2341  013012  012737  000272  000302         MOV     #272,@#$FATAL   ;MOVE TO MAILBOX #  *******  272  *******
2342  013020  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
2343  013022  000000                  HALT                            ;T BIT NOT SAVED ON THE STACK,OR WRONG $TSTNM
2344                                                                   ; TO SCOPE REPLACE HALT W/ 240
2345                                                                   ; AND REPLACE NEXT INST W/ 752
2346  013024  012767  000016  164762  STP3D:  MOV     #16,14
2347
2348
2349                                  ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
2350                                  ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
2351                                  ;*************************************************************************************
2352                                  ;TEST 103       TEST  NON-EXISTENT ADDRESS TRAPS
2353                                  ;*************************************************************************************
2354  013032  005237  000304          TST103: INC     @#$TESTN        ;UPDATE TEST NUMBER
2355  013036  022737  000103  000304          CMP     #103,@#$TESTN   ;SEQUENCE ERROR?
2356  013044  001063                  BNE     AUTO1                   ;BR TO ERROR HALT ON SEQ ERROR
2357
2358                                  ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM TRAP
2359  013046  000402                  BR      ADALL
2360  013050  000000                  TSL:    0
2361  013052  000000                  CORH:   0
2362  013054  005000                  ADALL:  CLR     %0
2363  013056  005067  164724                  CLR     6
2364  013062  012767  013116  164714          MOV     #ATRAP,4        ;SET UP ADDRESS TRAP ENTRANCE
2365  013070  012706  000500          NOR:    MOV     #BUFF,SP
2366  013074  105720                  TSTB    (0)+                    ;IF OUTSIDE OF CORE, TRAP TO 4
2367  013076  020027  160000                  CMP     %0,#160000              ;IS POINTER IN SIDE CORE
2368  013102  101772                  BLOS    NOR                     ;TEST THE REST OF CORE
2369  013104                        AUTO:
2370  013104  012737  000273  000302          MOV     #273,@#$FATAL   ;MOVE TO MAILBOX #  *******  273  *******
2371  013112  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
2372  013114  000000                  HALT                            ;SHOULD HAVE TRAPED
2373                                                                   ; TO SCOPE REPLACE HALT W/ 240
2374                                                                   ; AND REPLACE NEXT INST W/ 753
2375                                  ;RETURN HERE ON AN ADDRESS TRAP
2376  013116  010067  177730          ATRAP:  MOV     R0,CORH         ;MOVE THE FIRST NXM LOCATION IN CORH
2377                                  ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
2378  013122  012700  160001          MOV     #160001,R0              ;SET UP THE HIGHEST MEM LOCATION
2379  013126  012767  013164  164650  CTRAP:  MOV     #BTRAP,4        ;SET UP THE VECTOR
2380  013134  012706  000500          MOV     #BUFF,SP
2381  013140  105740                  TSTB    -(R0)                   ;DOES IT EXIST?
2382  013142  C05200                  DTRAP:  INC     R0              ;IF YES INCREMENT IT
2383  013144  020067  177702          CMP     R0,CORH                 ;IS IT THE SAME LOCATION?
2384  013150  001426                  BEQ     TRAPB
2385  013152  012737  000274  000302          MOV     #274,@#$FATAL   ;MOVE TO MAILBOX #  *******  274  *******
2386  013160  005212                  INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
2387  013162  000000                  HALT                            ;CONTENTS OF R0 AND CORH SHOULD HAVE BEEN EQUAL
2388                                                                   ; TO SCOPE REPLACE HALT W/ 240
2389                                                                   ; AND REPLACE NEXT INST W/ 730
2390                                                                   ;IF THIS COMPARISON FAILS IT MEANS
2391                                                                   ;THAT SOME LEGAL ADDRESS TRAPPED OR
2392                                                                   ;THAT AN ILLEGAL ADDRESS DID NOT TRAP
2393  013164  005767  164606          BTRAP:  TST     STATUS
```

```
                                        BEQ     1$
                                        MOV     #275,@#$FATAL   ;MOVE TO MAILBOX #  *******  275  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 720

                                1$:     CMP     BUFF-4,#DTRAP
                                        BEQ     CTRAP
                                AUTO1:
                                        MOV     #276,@#$FATAL   ;MOVE TO MAILBOX #  *******  276  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 707

                                TRAPB:  MOV     #6,4
                                        CLR     6
                                ;THIS ROUTINE WILL FIGURE OUT IF YOU HAVE A DL11W

                                        CLR     PROFTE
                                        MOV     #BUFF,SP        ;SET UP THE STACK POINTER
                                        MOV     #DL11W,4        ;SET UP THE TRAP VECTOR
                                        TST     TPS             ;TEST THE PUNCH STATUS REGISTER
                                        BR      DL11W1          ;BRANCH IF IT EXISTS
                                PROFTE: 000000
                                DL11W:  INC     PROFTE          ;INCREMENT IF NO DL11W
                                DL11W1: MOV     #6,4

;*****************************************************************************************************
;TEST 104        TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
;*****************************************************************************************************

                                TST104: INC     @#$TESTN        ;UPDATE TEST NUMBER
                                        CMP     #104,@#$TESTN   ;SEQUENCE ERROR?
                                        BNE     TDEC8           ;BR TO ERROR HALT ON SEQ ERROR
                                        TST     PROFTE
                                        BNE     R7TRX
                                        RESET
                                        MOV     #340,STATUS     ;LOCK OUT INTERRUPT
                                        MOV     #400,%6         ;SET UP STACK TO OVERFLOW
                                        MOV     #TDEC77,4       ;SET UP OVERFLOW TRAP
                                        MOV     #TDEC8,64       ;SET UP INTERRUPT VECTOR
                                        MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
                                        CLR     STATUS          ;ALLOW INTERRUPT TO OCCUR
                                        MOV     #277,@#$FATAL   ;MOVE TO MAILBOX #  *******  277  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;NO INTERRUPT OCCURRED
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 746

                                TDEC8:
                                        MOV     #300,@#$FATAL   ;MOVE TO MAILBOX #  *******  300  *******
                                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                        HALT                    ;OVERFLOW TRAP DID NOT OCCUR OR WRONG $TSTNM
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 741

                                TDEC77: CLR     TTCSR           ;CLEAR INTERRUPT ENABLE
                                        MOV     #6,4
                                        CLR     6
```

```
2450  013426                          R7TRX:
2451                                  ;*****************************************************************************
2452                                  ;TEST 105       TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2453                                  ;*****************************************************************************
2454  013426  005237  000304         TST105: INC     @#$TESTN        ;UPDATE TEST NUMBER
2455  013432  022737  000105  000304         CMP     #105,@#$TESTN   ;SEQUENCE ERROR?
2456  013440  001037                        BNE     BR71            ;BR TO ERROR HALT ON SEQ ERROR
2457  013442  005767  177616                TST     PROFTE
2458  013446  001046                        BNE     NODL
2459  013450  012706  000500                MOV     #BUFF,%6
2460  013454  012767  000340  164314       MOV     #340,STATUS     ;SET TO A HIGH PRIORITY LEVEL
2461  013462  012767  013526  164374       MOV     #TR0,64
2462  013470  012767  000100  164066       MOV     #100,TTCSR      ;INTERRUPT FOR TTY PUNCH/PRINTER
2463  013476  012767  013540  164330       MOV     #BR71,34        ;TRAP VECTOR
2464  013504  012767  013552  164352       MOV     #TR2,64         ;TTY VECTOR
2465  013512  012767  000340  164316       MOV     #340,36         ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2466  013520  005067  164252               CLR     STATUS          ;SHOULD INTERRUPT AT END OF CLR INST
2467  013524  104400                        TRAP                    ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2468  013526                          TR0:
2469  013526  012737  000301  000302       MOV     #301,@#$FATAL   ;MOVE TO MAILBOX #  *******  301  *******
2470  013534  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2471  013536  000000                        HALT                    ;TTY SHOULDN'T HAVE INTERRUPTED
2472                                                                ; TO SCOPE REPLACE HALT W/ 240
2473                                                                ; AND REPLACE NEXT INST W/ 740
2474  013540                          BR71:
2475  013540  012737  000302  000302       MOV     #302,@#$FATAL   ;MOVE TO MAILBOX #  *******  302  *******
2476  013546  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2477  013550  000000                        HALT                    ;TRAP OCCURRED FIRST,OR WRONG $TSTNM
2478                                                                ; TO SCOPE REPLACE HALT W/ 240
2479                                                                ; AND REPLACE NEXT INST W/ 733
2480  013552  005067  164260         TR2:    CLR     36
2481  013556  042767  000100  164000         BIC     #100,TTCSR
2482  013564                          NODL:
2483                                  ;*****************************************************************************
2484                                  ;TEST 106       TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
2485                                  ;*****************************************************************************
2486  013564  005237  000304         TST106: INC     @#$TESTN        ;UPDATE TEST NUMBER
2487  013570  022737  000106  000304         CMP     #106,@#$TESTN   ;SEQUENCE ERROR?
2488  013576  001031                        BNE     TR5             ;BR TO ERROR HALT ON SEQ ERROR
2489  013600  005767  177460                TST     PROFTE
2490  013604  001046                        BNE     NODL1
2491  013606  012706  000500                MOV     #BUFF,%6
2492  013612  012767  000340  164156       MOV     #340,STATUS
2493  013620  012767  000100  163736       MOV     #100,TTCSR
2494  013626  012767  013660  164200       MOV     #TR3,34         ;TRAP
2495  013634  012767  013674  164222       MOV     #TR4,64         ;TTY OUTPUT
2496  013642  012767  013662  164150       MOV     #TR5,20         ;IOT
2497  013650  012767  000340  164144       MOV     #340,22         ;IOT PRIORITY
2498  013656  104400                        TRAP                    ;THE ACT OF TRAPPING LOWER PRIORITY
2499  013660  000004                  TR3:  IOT                     ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
2500  013662                          TR5:
2501  013662  012737  000303  000302       MOV     #303,@#$FATAL   ;MOVE TO MAILBOX #  *******  303  *******
2502  013670  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2503  013672  000000                        HALT                    ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $TSTNM
2504                                                                ; TO SCOPE REPLACE HALT W/ 240
2505                                                                ; AND REPLACE NEXT INST W/ 741
```

```
2506  013674  005067  164122          TR4:    CLR     22              ;CLR IOT PRIORITY
2507  013700  012767  000036  164126          MOV     #36,34
2508  013706  012767  000066  164150          MOV     #66,64
2509  013714  012767  000022  164076          MOV     #22,20
2510  013722                          NODL1:
2511                                  ;*************************************************************************************
2512                                  ;TEST 107       TEST THAT 'RESET'' GOES TO OUTSIDE WORLD
2513                                  ;*************************************************************************************
2514                                  ;
2515  013722  005237  000304          TST107: INC     @#$TESTN        ;UPDATE TEST NUMBER
2516  013726  022737  000107  000304          CMP     #107,@#$TESTN   ;SEQUENCE ERROR?
2517  013734  001027                          BNE     TST110-12       ;BR TO ERROR HALT ON SEQ ERROR
2518  013736  005767  177322                  TST     PROFTE
2519  013742  001031                          BNE     NODL2
2520  013744  012767  000100  163612          MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
2521  013752  012767  000100  163600          MOV     #100,TRCSR      ;SET INTERRUPT ENABLE
2522  013760  000005                          RESET                   ;SHOULD CLEAR INTERRUPT ENABLE
2523  013762  032767  000100  163574          BIT     #100,TTCSR      ;TEST FOR CLEAR
2524  013770  001405                          BEQ     1$
2525  013772  012737  000304  000302          MOV     #304,@#$FATAL   ;MOVE TO MAILBOX #  *******  304  *******
2526  014000  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2527  014002  000000                          HALT                    ;RESET FAILED TO CLEAR TTCSR
2528                                                                  ; TO SCOPE REPLACE HALT W/ 240
2529                                                                  ; AND REPLACE NEXT INST W/ 754
2530  014004  032767  000100  163546  1$:     BIT     #100,TRCSR      ;TEST FOR CLEAR
2531  014012  001405                          BEQ     TST110
2532  014014  012737  000305  000302          MOV     #305,@#$FATAL   ;MOVE TO MAILBOX #  *******  305  *******
2533  014022  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2534  014024  000000                          HALT                    ;RESET FAILED TO CLEAR TRCSR,OR WRONG $TSTNM
2535                                                                  ; TO SCOPE REPLACE HALT W/ 240
2536                                                                  ; AND REPLACE NEXT INST W/ 743
2537  014026                          NODL2:
2538                                  ;*************************************************************************************
2539                                  ;TEST 110       TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
2540                                  ;*************************************************************************************
2541  014026  005237  000304          TST110: INC     @#$TESTN        ;UPDATE TEST NUMBER
2542  014032  022737  000110  000304          CMP     #110,@#$TESTN   ;SEQUENCE ERROR?
2543  014040  001014                          BNE     RESET3          ;BR TO ERROR HALT ON SEQ ERROR
2544  014042  012706  000500                  MOV     #BUFF,%6        ;SET STACK
2545  014046  012767  014104  163740          MOV     #RESET2,14      ;SET UP TRACE VECTOR
2546  014054  012746  000020                  MOV     #20,-(R6)       ;SET THE T-BIT ON STACK
2547  014060  012746  014066                  MOV     #1$,-(R6)       ;MOVE NEW PC ON STACK
2548  014064  000006                          RTT
2549  014066  000005                  1$:     RESET                   ;SHOULD HAVE NO EFFECT
2550  014070  000005                          RESET                   ;NO EFFECT
2551  014072                          RESET3:
2552  014072  012737  000306  000302          MOV     #306,@#$FATAL   ;MOVE TO MAILBOX #  *******  306  *******
2553  014100  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2554  014102  000000                          HALT                    ;TRACE TRAP FAILED,OR WRONG $TSTNM
2555                                                                  ; TO SCOPE REPLACE HALT W/ 240
2556                                                                  ; AND REPLACE NEXT INST W/ 756
2557  014104  005067  163666          RESET2: CLR     STATUS          ;CLEAR TRACK
2558  014110  005067  163702                  CLR     16              ;TRACE STATUS
2559  014114  012767  000016  163672          MOV     #16,14
2560
2561                                  ;*************************************************************************************
```

```
                                        ;TEST 111       TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
                                        ;*****************************************************************************
014122 005237 000304                    TST111: INC     @#$TESTN        ;UPDATE TEST NUMBER
014126 022737 000111 000304                     CMP     #111,@#$TESTN   ;SEQUENCE ERROR?
014134 001051                                   BNE     TTY11           ;BR TO ERROR HALT ON SEQ ERROR
014136 005767 177122                            TST     PROFTE
014142 001055                                   BNE     NODL3
014144 000005                                   RESET
014146 012706 000500                            MOV     #BUFF,%6        ;SET UP STACK
014152 012767 014176 163704                     MOV     #TTY3,64        ;INTERRUPT VECTOR
014160 005067 163612                            CLR     STATUS          ;DROP PROCESSOR PRIORITY
014164 012767 000357 163674                     MOV     #357,66         ;HIGH PRIORITY ON INTERRUPT
014172 005167 163366                            COM     TTCSR           ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
014176 026727 163574 000357             TTY3:   CMP     STATUS,#357
014204 001405                                   BEQ     1$
014206 012737 000307 000302                     MOV     #307,@#$FATAL   ;MOVE TO MAILBOX #  *******  307  *******
014214 005212                                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
014216 000000                                   HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 746
014220 000005                           1$:     RESET                   ;CLR NTERRUPT ENABLE
014222 012706 000500                            MOV     #BUFF,%6        ;STACK SET UP
014226 012767 014252 163630                     MOV     #TTY4,64        ;INTERRUPT VECTOR
014234 005067 163626                            CLR     66              ;CLR NEW STATUS
014240 012767 000157 163530                     MOV     #157,STATUS     ;PROCESSOR STATUS
014246 005167 163312                            COM     TTCSR           ;SET INTERRUPT ENABLE
014252 005767 163520                    TTY4:   TST     STATUS
014256 001405                                   BEQ     TTT37
014260                                  TTY11:
014260 012737 000310 000302                     MOV     #310,@#$FATAL   ;MOVE TO MAILBOX #  *******  310  *******
014266 005212                                   INC     (R2)            ;SET MSGTYP TO FATAL ERROR
014270 000000                                   HALT                    ;INCORRECT STATUS,OR WRONG $TSTNM
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 721
014272 005067 163266                    TTT37:  CLR     TTCSR
014276                                  NODL3:
                                        ;*****************************************************************************
                                        ;TEST 112       TEST THE 'WAIT' INSTRUCTION
                                        ;*****************************************************************************
014276 005237 000304                    TST112: INC     @#$TESTN        ;UPDATE TEST NUMBER
014302 022737 000112 000304                     CMP     #112,@#$TESTN   ;SEQUENCE ERROR?
014310 001055                                   BNE     STP4            ;BR TO ERROR HALT ON SEQ ERROR
014312 042767 000100 163244                     BIC     #100,TPS        ;CLEAR INTERRUPT ENABLE
014320 012706 000500                            MOV     #BUFF,SP        ;SET UP THE STACK
014324 012767 014414 163532                     MOV     #WATE,64        ;SET UP THE INTERRUPT VECTOR
014332 005067 163530                            CLR     66
014336 105767 163222                    WATE1:  TSTB    TPS             ;WAIT FOR READY
014342 100375                                   BPL     WATE1           ;TO BE UP
014344 012767 000015 163214                     MOV     #15,TPB         ;DO A CARRIAGE RETURN
014352 105767 163206                    WATE2:  TSTB    TPS             ;WAIT FOR READY TO COME UP
014356 100375                                   BPL     WATE2
014360 012767 000015 163200                     MOV     #15,TPB         ;DO ANOTHER CARRIAGE RETURN
014366 052767 000100 163170                     BIS     #100,TPS        ;SET THE INTERRUPT ENABLE
014374 005067 163376                            CLR     STATUS          ;CLEAR THE PSW
014400 000001                           WATE3:  WAIT                    ;WAIT FOR THE INTERRUPT
```

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2618  014402  012737  000311  000302          MOV     #311,@#$FATAL   ;MOVE TO MAILBOX #  *******  311  *******
2619  014410  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2620  014412  000000                          HALT                    ;WAIT INSTRUCTION DID NOT LOOP
2621                                                                  ; TO SCOPE REPLACE HALT W/ 240
2622                                                                  ; AND REPLACE NEXT INST W/ 736
2623  014414  005767  163356          WATE:   TST     STATUS  ;IS THE PSW CORRECT?
2624  014420  001405                          BEQ     1$
2625  014422  012737  000312  000302          MOV     #312,@#$FATAL   ;MOVE TO MAILBOX #  *******  312  *******
2626  014430  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2627  014432  000000                          HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2628                                                                  ; TO SCOPE REPLACE HALT W/ 240
2629                                                                  ; AND REPLACE NEXT INST W/ 726
2630  014434  026727  164034  014402  1$:     CMP     BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
2631  014442  001405                          BEQ     STP4E
2632  014444                          STP4:
2633  014444  012737  000313  000302          MOV     #313,@#$FATAL   ;MOVE TO MAILBOX #  *******  313  *******
2634  014452  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2635  014454  000000                          HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2636                                                                  ; TO SCOPE REPLACE HALT W/ 240
2637                                                                  ; AND REPLACE NEXT INST W/ 715
2638  014456  012767  000066  163400  STP4E:  MOV     #66,64
2639
2640  014464  004767  001424                  JSR     %7,CLRALL               ;CLEAR ALL KT11-D REGISTERS
2641  014470  012777  077406  164060          MOV     #77406,@KPDR0           ;MAP KERNEL 0 TO BANK 0, RW, 4K
2642  014476  004767  001500                  JSR     PC,KERN7                ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2643  014502  012777  014536  164002          MOV     #INT25,@KTVEC           ;SETUP RETURN VECTOR
2644  014510  005077  164000                  CLR     @KTSTA
2645  014514  012704  020000                  MOV     #20000,R4               ;USE R4 TO REFERENCE NR KERNEL 1
2646  014520  005277  163756                  INC     @SR0                    ;TURN ON KT11-D
2647  014524  005724                  ADR25:  TST     (R4)+                   ;REFERENCE NR KERNEL 1
2648  014526  000000                  ADR25A: HALT                            ;SHOULD HAVE ABORTED ALREADY
2649  014530  005077  163746                  CLR     @SR0                    ;TURN OFF KT11-D
2650  014534  000442                          BR      DON25
2651  014536  017701  163740          INT25:  MOV     @SR0,R1                 ;SAVE CONTENTS OF SR0
2652  014542  005377  163734                  DEC     @SR0                    ;TURN OFF KT11-D
2653  014546  022701  100003                  CMP     #100003,R1              ;CHECK SAVED CONTENTS OF SR0
2654  014552  001401                          BEQ     .+4
2655  014554  000000                          HLT                             ;SR0 INCORRECT AFTER NR ABORT
2656                                                                          ;(SEE SAVED CONTENTS IN R1)
2657  014556  022777  014524  163724          CMP     #ADR25,@SR2             ;CK SR2
2658  014564  001401                          BEQ     .+4
2659  014566  000000                          HLT                             ;SR2 INCORRECT-SHOULD CONTAIN ADDRESS
2660                                                                          ;OF LAST FETCH BEFORE THE ABORT
2661  014570  005077  163714                  CLR     @SR2                    ;TRY TO WRITE INTO SR2
2662  014574  022777  014524  163706          CMP     #ADR25,@SR2             ;SR2 SHOULD BE READ ONLY
2663  014602  001401                          BEQ     .+4
2664  014604  000000                          HLT                             ;SR2 NOT READ ONLY
2665  014606  022777  077506  163742          CMP     #77506,@KPDR0
2666  014614  001401                          BEQ     .+4
2667  014616  000000                          HLT                             ;KERNEL PDR 0 INCORRECT
2668                                                                          ;W BIT SHOULD HAVE BEEN SET BY THE STACK WRITE
2669  014620  005777  163734                  TST     @KPDR1
2670  014624  001401                          BEQ     .+4
2671  014626  000000                          HLT                             ;KERNEL PDR 1 INCORRECT
2672  014630  021627  014526                  CMP     (R6),#ADR25A            ;CHECK VALUE PUSHED ON STACK
2673  014634  001401                          BEQ     .+4
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2674  014636  000000                        HLT                     ;INCORRECT VALUE ON STACK
2675  014640  022626                        CMP     (R6)+,(R6)+     ;RESTORE STACK
2676  014642  005077  163646        DON25:  CLR     @KTSTA          ;CHANGE TRAP VECTOR TO CAUSE A
2677  014646  016777  163642  163636        MOV     KTSTA,@KTVEC    ;HALT ON A FALSE TRAP
2678
2679
2680
2681  014654  004767  001260                JSR     %7,RWALL        ;MAP ALL PAGES RW,4K,BANK 0
2682  014660  012777  000004  163672        MOV     #4,@KPDR1       ;MAP KERNEL 1 NR, 1 PAGE
2683  014666  004767  001310                JSR     PC,KERN7        ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2684  014672  012777  014716  163612        MOV     #RET33,@KTVEC   ;SETUP ABORT RETURN
2685  014700  005077  163610                CLR     @KTSTA
2686  014704  005277  163572                INC     @SR0            ;TURN ON KT11-D
2687  014710  005737  030000                TST     @#30000         ;REFERENCE NR KERNEL 1 - SHOULD ABORT
2688  014714  000000                        HALT                    ;NO NR ABORT
2689  014716  022777  140003  163556  RET33:  CMP     #140003,@SR0    ;CHECK SR0
2690  014724  001401                        BEQ     .+4
2691  014726  000000                        HLT                     ;SR0 INCORRECT - SHOULD SHOW KERNEL
2692                                                                ;PAGE 1, AND BOTH NR + PL ERRORS SET
2693  014730  005077  163546                CLR     @SR0
2694  014734  016777  163554  163550        MOV     KTSTA,@KTVEC    ;RESTORE TRAP CATCHER
2695
2696
2697  014742  004767  001146                JSR     %7,CLRALL       ;CLEAR ALL KT11-D REGISTERS
2698  014746  004767  001230                JSR     PC,KERN7        ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2699  014752  012777  077406  163576        MOV     #77406,@KPDR0   ;MAP KERNEL 0 RW,RK,BANK0
2700  014760  012777  077402  163572        MOV     #77402,@KPDR1   ;MAP KERNEL 1 NAM,KSZ K,BANK0
2701  014766  012777  015022  163516        MOV     #INT40,@KTVEC   ;SETUP RETURN VECTOR
2702  014774  005077  163514                CLR     @KTSTA
2703  015000  005277  163476                INC     @SR0            ;TURN ON KT11-D
2704  015004  013737  037776  037776  ADR40:  MOV     @#37776,@#37776 ;REFERENCE KERNEL 1 - 1ST ABORT
2705  015012  005077  163464                CLR     @SR0            ;TURN OFF KT11-D
2706  015016  000000                        HLT                     ;REFERENCE TO KERNEL 1
2707  015020  000510                        BR      DONE40          ;DIDN'T ABORT
2708  015022  042777  000001  163452  INT40:  BIC     #1,@SR0         ;TURN OFF KT11-D
2709  015030  022777  020002  163444        CMP     #20002,@SR0     ;CHECK SR0
2710  015036  001401                        BEQ     .+4
2711  015040  000000                        HLT                     ;SR0 INCORRECT AFTER NAM ABORT
2712  015042  012777  015076  163442        MOV     #INT40A,@KTVEC  ;SETUP NEW RETURN VECTOR
2713  015050  022626                        CMP     (R6)+,(R6)+     ;RESTORE STACK POINTER
2714  015052  012702  037776                MOV     #37776,R2       ;SETUP R2 TO REFERENCE KERNEL 1
2715  015056  052777  000001  163416        BIS     #1,@SR0         ;TURN ON KT11-D
2716  015064  012242                        MOV     (R2)+,-(R2)     ;REFERENCE KERNEL 1 -2ND ABORT
2717  015066  005077  163410        ADR40A: CLR     @SR0            ;TURN OFF KT11-D
2718  015072  000000                        HLT                     ;2ND REFERENCE TO KERNEL 1
2719  015074  000462                        BR      DONE40          ;DIDN'T ABORT
2720  015076  042777  000001  163376  INT40A: BIC     #1,@SR0         ;TURN OFF KT11-D
2721  015104  022777  020002  163370        CMP     #20002,@SR0     ;CHECK SR0
2722  015112  001401                        BEQ     .+4
2723  015114  000000                        HLT                     ;SR0 INCORRECT AFTER 2ND NAM ABORT
2724  015116  022777  015004  163364        CMP     #ADR40,@SR2     ;CHECK SR2
2725  015124  001401                        BEQ     .+4
2726  015126  000000                        HLT                     ;SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
2727  015130  021627  015066                CMP     (R6),#ADR40A    ;CHECK ADDRESS PUSHED ON STACK
2728  015134  001401                        BEQ     .+4
2729  015136  000000                        HLT                     ;INCORRECT ADDRESS ON STACK
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2730  015140  022626                        CMP     (R6)+,(R6)+             ;RESTORE STACK POINTER
2731  015142  012777  015176  163342        MOV     #INT40B,@KTVEC          ;CHANGE RETURN ADDRESS
2732  015150  005077  163326                CLR     @SR0                    ;CLEAR NAM ERROR BIT-SHOULD
2733                                                                          ;''UNLOCK'' ERROR TRACKING
2734  015154  012702  037776                MOV     #37776,R2               ;SETUP R2 TO REFERENCE KERNEL 1
2735  015160  005277  163316                INC     @SR0                    ;TURN ON KT11-D
2736  015164  012242              ADR40B:   MOV     (R2)+,-(R2)     ;3RD NAM REFERENCE, ERROR BIT WAS CLEARED
2737  015166  005077  163310      ADR40C:   CLR     @SR0            ;TURN OFF KT11-D
2738  015172  000000                        HLT                             ;3RD REFERENCE TO KERNEL 1
2739  015174  000422                        BR      DONE40                  ;DIDN'T ABORT
2740  015176  042777  000001  163276  INT40B: BIC     #1,@SR0         ;TURN OFF KT11-D
2741  015204  022777  020002  163270        CMP     #20002,@SR0             ;CHECK SR0
2742  015212  001401                        BEQ     .+4
2743  015214  000000                        HLT                             ;SR0 INCORRECT
2744  015216  022777  015164  163264        CMP     #ADR40B,@SR2            ;CHECK SR2
2745  015224  001401                        BEQ     .+4
2746  015226  000000                        HLT                             ;SR2 INCORRECT - SHOULD CONTAIN
2747                                                                          ;LAST FETCH ADDRESS BEFORE ABORT
2748  015230  022716  015166                CMP     #ADR40C,(SP)            ;CHECK STACK
2749  015234  001401                        BEQ     .+4
2750  015236  000000                        HLT                             ;PC ON STACK INCORRECT
2751  015240  022626                        CMP     (R6)+,(R6)+             ;RESTORE STACK POINTER
2752  015242  005077  163234      DONE40:   CLR     @SR0                    ;CLEAR ERROR BIT
2753  015246  005077  163242                CLR     @KTSTA                  ;CHANGE TRAP RETURN TO CAUSE A HALT
2754  015252  016777  163236  163232        MOV     KTSTA,@KTVEC            ;ON A FALSE INTERRUPT
2755
2756                                ;*****************************************************************************
2757                                ;TEST 113       TEST THAT ALL RESERVED INSTRUCTIONS TRAP
2758                                ;*****************************************************************************
2759  015260  005237  000304      TST113: INC     @#$TESTN                ;UPDATE TEST NUMBER
2760  015264  022737  000113  000304        CMP     #113,@#$TESTN           ;SEQUENCE ERROR?
2761  015272  001156                        BNE     RET4                    ;BR TO ERROR HALT ON SEQ ERROR
2762  015274  042767  000100  162262        BIC     #100,TPS
2763  015302  012737  015330  000244        MOV     #TRAP244,@#244          ; SET UP TO SEE IF
2764  015310  013767  000010  000024        MOV     @#10,TENSAVE            ;  THIS PROCESSOR HAS THE
2765  015316  012737  015340  000010        MOV     #TRAP10,@#10            ;  FLOATING POINT OPTION
2766  015324  170007                        .WORD   170007                  ; AN ILLEGAL FPP INSTRUCTION
2767  015326  000406                        BR      AROUND                  ; THE FOLLOWING
2768  015330                        TRAP244:                                ; IF FPP IN--
2769  015330  013767  015674  000342        MOV     @#FPP,FINISH            ;  RESET END OF TABLE POINTER
2770  015336  000002                        RTI                             ; AND RETURN
2771  015340                        TRAP10:                                 ; LEAVE THE TABLE ALONE
2772  015340  000002                        RTI                             ; AND RETURN
2773  015342  000000              TENSAVE:  .WORD   0                       ; A PLACE TO STORE CONTENTS OF 10
2774
2775  015344                        AROUND:                                 ;  CONTINUATION POINT
2776  015344  012737  000246  000244        MOV     #246,@#244              ;  RESTORE THE TRAP VECTOR
2777  015352  016737  177764  000010        MOV     TENSAVE,@#10            ; RESTORE THE ILLEGAL INST. VECTOR
2778  015360  012703  015654                MOV     #TABLE,TAB              ;TABLE POINTER
2779  015364  012305              GIN1:     MOV     (TAB)+,FIRST            ;FIRST OR CURRENT INSTRUCTION
2780  015366  012301                        MOV     (TAB)+,LAST             ;LAST INSTRUCTION OR GROUP
2781  015370  020567  000304                CMP     FIRST,FINISH            ;TESTED ALL
2782  015374  001415                        BEQ     GIN3                    ;YES BRANCH
2783  015376  010567  000300                MOV     FIRST,INST              ;SET UP INST
2784  015402  005267  000274      GIN2:     INC     INST
2785  015406  012767  015560  162374        MOV     #RET,10                 ;SET UP RETURN FROM TRAP
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2786  015414  012706  000500          MOV     #BUFF,SP        ;SET UP STACK POINTER
2787  015420  005067  162352          CLR     CC              ;CLEAR PRIORITY
2788  015424  000167  000252          JMP     INST            ;EXECUTE RESERVED INSTRUCTION
2789  015430  005237  000306  GIN3:   INC     @#$PASS
2790  015434  105267  000116          INCB    PASSPT          ;SHOULD PRINT THIS PASS?
2791  015440  001027                  BNE     ACT             ;NO
2792  015442  132767  000040  162651  BITB    #40,$ENVM       ;WILL APT ALLOW PRINTING?
2793  015450  001023                  BNE     ACT             ;NO
2794  015452  023727  000042  015530  CMP     @#42,#$ENDAD
2795  015460  001417                  BEQ     ACT
2796  015462  012700  016000          MOV     #MSG,R0         ;GET MSG ADDR.
2797  015466  105737  177564  WAIT:   TSTB    @#TPS           ;TTY READY
2798  015472  100375                  BPL     WAIT            ;NO WAIT
2799  015474  112037  177566          MOVB    (R0)+,@#TPB     ;PRINT CHARACTER
2800  015500  001372                  BNE     WAIT            ;NEXT IF NOT DONE.
2801  015502  105737  177564  WAIT1:  TSTB    @#TPS
2802  015506  100375                  BPL     WAIT1
2803  015510  000005                  RESET
2804  015512  012767  177761  000036  MOV     #177761,PASSPT  ;DO IT ABOUT 15 DECIMAL TIMES
2805  015520  013700  000042  ACT:    MOV     @#42,R0         ;CHECK ACT
2806  015524  001405                  BEQ     GOAGIN          ;KEEP GOING
2807  015526  000005                  RESET
2808  015530  004710          $ENDAD: JSR     PC,(R0)         ;ACT HOOKS
2809  015532  000240                  NOP
2810  015534  000240                  NOP
2811  015536  000240                  NOP
2812  015540  012767  000012  162242  GOAGIN: MOV     #12,10
2813  015546  005067  162240          CLR     12
2814  015552  000167  163076          JMP     RESTRT          ;DO NEXT PASS
2815  015556  177777          PASSPT: -1
2816
2817                          ;TRAPPING SHOULD SEND YOU HERE
2818  015560  020627  000474  RET:    CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
2819  015564  001405                  BEQ     RET1
2820  015566  012737  000314  000302  MOV     #314,@#$FATAL   ;MOVE TO MAILBOX #  *******  314  *******
2821  015574  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2822  015576  000000                  HALT                    ;WRONG DECREMENT
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 635
2823
2824
2825  015600  026727  162670  015704  RET1:   CMP     BUFF-4,#INST+2  ;LOC OF INST UNINCREMENTED
2826  015606  001405                  BEQ     RET2
2827  015610  012737  000315  000302  MOV     #315,@#$FATAL   ;MOVE TO MAILBOX #  *******  315  *******
2828  015616  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2829  015620  000000                  HALT                    ;INST INC ON TRAP
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 624
2830
2831
2832  015622  005767  162650  RET2:   TST     BUFF-2
2833  015626  001405                  BEQ     RET3
2834  015630          RET4:
2835  015630  012737  000316  000302  MOV     #316,@#$FATAL   ;MOVE TO MAILBOX #  *******  316  *******
2836  015636  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
2837  015640  000000                  HALT                    ;CONDITION CODES SET ON TRAP OR WRONG $TSTNM
                                                              ; TO SCOPE REPLACE HALT W/ 240
                                                              ; AND REPLACE NEXT INST W/ 614
2838
2839
2840  015642  026701  000034  RET3:   CMP     INST,LAST
2841  015646  001646                  BEQ     GIN1            ;SET UP NEW GROUP
```

```
2842  015650  000167  177526                  JMP     GIN2            ;FINISH OLD GROUP
2843                                                                    ;END OF INSTRUCTION GROUP
2844  015654  000006                  TABLE:  6                       ;END OF OPERATE
2845  015656  000077                          77
2846  015660  000207                          207                     ;RTS,RTI,JMP
2847  015662  000227                          227
2848  015664  006777                          6777
2849  015666  007777                          7777
2850  015670  075037                          075037
2851  015672  076777                          76777
2852  015674  167777                  FPP:    167777                  ;  START OF THE FPP INSTRUCTIONS
2853  015676  177777                          177777
2854  015700  015700                  FINISH: .                       ;END FLAG
2855  015702  000000                  INST:   HALT                    ;WILL CONTINUE RESERVED INST
2856  015704  000000                          HALT                    ;SHOULD TRAP TO LOC 10
2857  015706  000000                          HALT                    ;LOC 10 SHOULD SEND YOU TO
2858  015710  000000                          HALT                    ;RET
2859  015712  000000                          HALT
2860  015714  012767  015724  162102  PWRDWN: MOV     #PWRUP,24
2861  015722  000000                          HALT
2862
2863  015724  012767  015714  162072  PWRUP:  MOV     #PWRDWN,24
2864  015732  012706  000500                  MOV     #BUFF,SP
2865  015736  132767  000040  162355          BITB    #40,$ENVM       ;WILL APT ALLOW PRINTING?
2866  015744  001013                          BNE     PFRES           ;NO
2867  015746  012700  016041                  MOV     #MSGPWF,R0      ;GET MSG ADDR.
2868  015752  105737  177564          PWAIT:  TSTB    @#TPS           ;TTY READY
2869  015756  100375                          BPL     PWAIT           ;NO WAIT
2870  015760  112037  177566                  MOVB    (R0)+,@#TPB     ;PRINT CHARACTER
2871  015764  001372                          BNE     PWAIT           ;NEXT IF NOT DONE.
2872  015766  105737  177564          PWAIT1: TSTB    @#TPS
2873  015772  100375                          BPL     PWAIT1
2874  015774  000167  162654          PFRES:  JMP     RESTRT
2875  016000  005015  043103  040513  MSG:    .ASCIZ  <15><12>.CFKABD0 11/34 TRAPS TST DONE  .
2876  016006  042102  020060  030461
2877  016014  031457  020064  051124
2878  016022  050101  020123  051524
2879  016030  020124  047504  042516
2880  016036  020040     000
2881  016041     015  050012  053517  MSGPWF: .ASCIZ  <15><12>.POWER FAILED!.
2882  016046  051105  043040  044501
2883  016054  042514  020504     000
2884  016061     015  041412  045506  MSG1:   .ASCIZ  <15><12>.CFKABD0 11/34 TRAPS TST .
2885  016066  041101  030104  030440
2886  016074  027461  032063  052040
2887  016102  040522  051520  052040
2888  016110  052123  000040
2889  016114  005077  162362          CLRALL: CLR     @SR0
2890  016120  005000                          CLR     R0
2891  016122  012701  000040                  MOV     #32.,R1         ;COUNT OF REGISTERS TO BE CLEARED
2892  016126  005070  000516          CLRLP:  CLR     @ADRTAB(R0)     ;CLEAR REGISTERS THRU ADDRESS TABLE
2893  016132  005720                          TST     (R0)+           ;MOVE POINTER
2894  016134  077104                          SOB     R1,CLRLP        ;LOOP TILL DONE
2895  016136  000207                          RTS     %7
2896
2897                                  ;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, UP
```

```
2898  016140  005077  162336          RWALL:  CLR     @SR0
2899  016144  012701  000516                  MOV     #ADRTAB,R1      ;R1 POINTS TO ADDRESS TABLE
2900  016150  012700  000010          RWL1:   MOV     #10,R0          ;R0 IS COUNTER
2901  016154  005071  000020          RWL2:   CLR     @20(R1)         ;CLEAR PAR
2902  016160  012731  077406                  MOV     #77406,@(R1)+   ;SET PDR RW, 4K
2903  016164  077005                          SOB     R0,RWL2
2904  016166  062701  000020                  ADD     #20,R1
2905  016172  020127  000616                  CMP     R1,#ADREND      ;POINTER TO NEXT GROUP
2906  016176  002764                          BLT     RWL1
2907  016200  000207                          RTS     %7
2908                          ;MAP KERNEL PAR/PDR 7 TO EXTERNAL BANK
2909  016202  012777  007600  162404  KERN7:  MOV     #7600,@KPAR7
2910  016210  012777  077406  162356          MOV     #77406,@KPDR7
2911  016216  000207                          RTS     PC
2912          000001                          .END
```

```
ABASE = 000000            59
ACDW1 = 000000            59
ACDW2 = 000000            59
ACPUOP= 000000            59    77
ACT     015520          2791  2793    2795    2805#
ADALL   013054          2359  2362#
ADDW0 = 000000            59
ADDW1 = 000000            59
ADDW10= 000000            59
ADDW11= 000000            59
ADDW12= 000000            59
ADDW13= 000000            59
ADDW14= 000000            59
ADDW15= 000000            59
ADDW2 = 000000            59
ADDW3 = 000000            59
ADDW4 = 000000            59
ADDW5 = 000000            59
ADDW6 = 000000            59
ADDW7 = 000000            59
ADDW8 = 000000            59
ADDW9 = 000000            59
ADEVCT= 000000            59    68
ADEVM = 000000            59
ADREND  000616          155#  2905
ADRTAB  000516          119#  2892*   2899
ADR25   014524         2647#  2657    2662
ADR25A  014526         2648#  2672
ADR40   015004         2704#  2724
ADR40A  015066         2717#  2727
ADR40B  015164         2736#  2744
ADR40C  015166         2737#  2748
AENV  = 000000            59    73
AENVM = 000000            59    74
AFATAL= 000000            59    65
AMADR1= 000000            59
AMADR2= 000000            59
AMADR3= 000000            59
AMADR4= 000000            59
AMAMS1= 000000            59
AMAMS2= 000000            59
AMAMS3= 000000            59
AMAMS4= 000000            59
AMSGAD= 000000            59    70
AMSGLG= 000000            59    71
AMSGTY= 000000            59    64
AMTYP1= 000000            59
AMTYP2= 000000            59
AMTYP3= 000000            59
AMTYP4= 000000            59
APASS = 000000            59    67
APRIOR= 000000            59
AROUND  015344          2767  2775#
ASWREG= 000000            59    75
ATESTN= 000000            59    66
ATRAP   013116          2364  2376#
```

```
AUNIT = 000000              59      69
AUSWR = 000000              59      76
AUTO    013104            2369#
AUTO1   013214            2356    2402#
AVECT1= 000000              59
AVECT2= 000000              59
BEGIN   000620              41      44      160#
BELL  = 000240              32#
BR1     001002             198     205#
BR10    001234             272     279#
BR11    001350             300     307#
BR12    001420             313     320#
BR13    001470             326     333#
BR14    001540             339     346#
BR15    001646             365     372#
BR16    001670             373     380#
BR17    001712             381     388#
BR2     001032             208     215#
BR20    001734             389     395#
BR21    001756             396     403#
BR22    002000             404     411#
BR23    002022             412     419#
BR3     001056             218     225#
BR33    002102             436     442#
BR34    002116             443     449#
BR35    002132             450     456#
BR36    002146             457     463#
BR37    002172             466     472#
BR4     001104             229     236#
BR40    002206             473     479#
BR41    002222             480     486#
BR45    003722             829     834#
BR46    004552             927    1003#
BR46A   004564            1002    1009#
BR47    005432            1178    1183#
BR5     001132             240     247#
BR51    006262            1278    1354#
BR51A   006274            1353    1360#
BR6     001160             251     257#
BR60    012500            2264#   2270
BR7     001206             261     268#
BR70    012710            2301    2318#
BR71    013540            2456    2463    2474#
BTRAP   013164            2379    2393#
BUFF    000500             112#    499     515     518     531     534     547     552     559     564     577     616     668
                           683     686     699     702     715     720     727     731     744     783     832     851     866
                           869     882     885     898     903     910     915     928     967    1017    1032    1035    1048
                          1051    1064    1069    1076    1081    1094    1133    1181    1201    1216    1219    1232    1235
                          1248    1253    1261    1266    1279    1318    1375    1390    1393    1406    1409    1422    1427
                          1434    1439    1452    1491    1537    1552    1555    1568    1571    1585    1590    1597    1602
                          1615    1654    1701    1716    1719    1732    1735    1748    1753    1760    1765    1778    1817
                          2087    2105    2116    2129    2135    2151    2173    2203    2230    2238    2246    2255    2262
                          2270    2278    2289    2303    2332    2338    2365    2380    2400    2413    2459    2491    2544
                          2570    2583    2606    2630    2786    2818    2825    2832    2864
CC      = 177776            39#     549*    561*    609     648     717*    729*    776     815     900*    912*    960     999
                          1066*   1078*   1126    1166    1250*   1263*   1311    1350    1424*   1436*   1484    1523    1587*
```

```
                    1599*   1647    1686    1750*   1762*   1810    1849    2787*
CLRALL  016114      2640    2697    2889#
CLRLP   016126      2892#   2894
CORH    013052      2361#   2376*   2383
CTRAP   013126      2379#   2401
DL11W   013266      2414    2418#
DL11W1  013272      2416    2419#
DONE40  015242      2707    2719    2739    2752#
DON25   014642      2650    2676#
DTRAP   013142      2382#   2400
FINISH  015700      2769*   2781    2854#
FOVER   011566      2059    2061    2073#
FPP     015674      2769    2852#
GIN1    015364      2779#   2841
GIN2    015402      2784#   2842
GIN3    015430      2782    2789#
GOAGIN  015540      2806    2812#
HERE  = 000000       176#    196*    206*    280
HLT   = 000000        20#    2655    2659    2664    2667    2671    2674    2691    2706    2711    2718    2723    2726
                    2729    2738    2743    2746    2750
ILLA  = 004700         37#   2021
ILLB  = 000100         38#   2045
INST    015702      2783*   2784*   2788    2825    2840    2855#
INSTC   002376       533#
INSTK   007244      1570#   1571
INT25   014536      2643    2651#
INT40   015022      2701    2708#
INT40A  015076      2712    2720#
INT40B  015176      2731    2740#
ITRAP5= 000004        22#
KERN7   016202      2642    2683    2698    2909#
KPAR0   000576       147#
KPAR1   000600       148#
KPAR2   000602       149#
KPAR3   000604       150#
KPAR4   000606       151#
KPAR5   000610       152#
KPAR6   000612       153#
KPAR7   000614       154#   2909*
KPDR0   000556       138#   2641*   2665    2699*
KPDR1   000560       139#   2669    2682*   2700*
KPDR2   000562       140#
KPDR3   000564       141#
KPDR4   000566       142#
KPDR5   000570       143#
KPDR6   000572       144#
KPDR7   000574       145#   2910*
KTSTA   000514       118#   2644*   2676*   2677    2685*   2694    2702*   2753*   2754
KTVEC   000512       117#   2643*   2677*   2684*   2694*   2701*   2712*   2731*   2754*
K1      000714       179#    295*    296     299     308*    309     312     320*    322     333*    335     346*    348
                     351
K10     000732       186#    380     388     395     403     411     419
K11     000734       187#
K12     000736       188#
K2      000716       180#
K3      000720       181#
```

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K4      000722            182#
K5      000724            183#    294*    297     307*    321*    323     325     334*    336     338     347*    349
K6      000726            184#    310     388
K7      000730            185#    364     372     380     395     419
MSG     016000           2796    2875#
MSGPWF  016041           2867    2881#
MSG1    016061            161    2884#
NODL    013564           2458    2482#
NODL1   013722           2490    2510#
NODL2   014026           2519    2537#
NODL3   014276           2568    2597#
NOP   = 000240             33#
NOR     013070           2365#   2368
PASSPT  015556            160*   2790*   2804*   2815#
PFRES   015774           2866    2874#
PROFTE  013264           2412*   2417#   2418*   2427    2457    2489    2518    2567
PWAIT   015752           2868#   2869    2871
PWAIT1  015766           2872#   2873
PWRDWN  015714            169    2860#   2863
PWRUP   015724           2860    2863#
RA      005444           1180    1189#
RA1     003734            831     840#
RB      005430           1179*   1182#   1189*   1190
RB1     003720            830*    833#    840*    841
RC      005424           1181#   1191
RC1     003714            832#    842
RESET2  014104           2545    2557#
RESET3  014072           2543    2551#
RESTRT  000654            168#   2814    2874
RET     015560           2785    2818#
RETA    002266            498     502#
RETAH   002300            500     508#
RETAT   011666           2088    2098#
RETA1   003126            669     676#
RETA2   004024            852     859#
RETA3   004640           1018    1025#
RETA4   005534           1202    1209#
RETA5   006350           1376    1383#
RETB    002330            516     518#
RETBT   011742           2106    2116#
RETB1   003156            684     686#
RETB2   004054            867     869#
RETB3   004670           1033    1035#
RETB4   005564           1217    1219#
RETB5   006400           1391    1393#
RETC    002400            532     534#
RETCT   012022           2130    2135#
RETC1   003226            700     702#
RETC2   004124            883     885#
RETC3   004740           1049    1051#
RETC4   005634           1233    1235#
RETC5   006450           1407    1409#
RETD    002460            548     552#
RETD1   003306            716     720#
RETD2   004204            899     903#
RETD3   005020           1065    1069#
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RETD4    005714            1249    1253#
RETD5    006530            1423    1427#
RETE     002526             560     564#
RETE1    003352             728     731#
RETE2    004252             911     915#
RETE3    005066            1077    1081#
RETE4    005762            1262    1266#
RETE5    006576            1435    1439#
RETF     002604             578     581#
RETF1    003430             745     748#
RETF2    004330             929     932#
RETF3    005144            1095    1098#
RETF4    006040            1280    1283#
RETF5    006654            1453    1456#
RETG     002730             617     620#
RETG1    003554             784     787#
RETG2    004454             968     971#
RETG3    005270            1134    1137#
RETG4    006164            1319    1322#
RETG5    007000            1492    1495#
RETH5    007146            1538    1545#
RETJ     007176            1553    1555#
RETK     007246            1569    1571#
RETL     007326            1586    1590#
RETM     007374            1598    1602#
RETN     007452            1616    1619#
RETO     007574            1655    1658#
RETP     007744            1702    1709#
RETQ     007776            1717    1719#
RETR     010050            1733    1735#
RETS     010132            1749    1753#
RETT     010202            1761    1765#
RETU     010262            1779    1782#
RETV     010410            1818    1821#
RET1     015600            2819    2825#
RET2     015622            2826    2832#
RET3     015642            2833    2840#
RET33    014716            2684    2689#
RET4     015630            2761    2834#
RTI1     012276            2205    2209#
RTI2     012312            2206    2215#
RTRAP  = 000010              36#     500*    516*    532*    548*    560*    578*    579*    617*    618*
RTRAP1= 000034               27#     669*    684*    700*    716*    728*    745*    746*    784*    785*
RTRAP2= 000020               26#     852*    867*    883*    899*    911*    929*    930*    968*    969*
RTRAP3= 000030               25#    1018*   1033*   1049*   1065*   1077*   1095*   1096*   1134*   1135*
RTRAP4= 000014               24#    1202*   1217*   1233*   1249*   1262*   1280*   1281*   1319*   1320*   2088*   2106*   2130*
RTRAP5= 000004               23#    1376*   1391*   1407*   1423*   1435*   1453*   1454*   1492*   1493*   1538*   1553*   1569*
                           1586*    1598*   1616*   1617*   1655*   1656*   1702*   1717*   1733*   1749*   1761*   1779*   1780*
                           1818*    1819*
RTT1     012106            2154    2157#
RTT2     012124            2155    2165#
RTT3     012172            2175    2179#
RTT4     012212            2176    2187#
RTT5     012144            2173#   2181    2190
RTT6     012234            2188    2196#
RWALL    016140            2681    2898#
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RWL1    016150          2900#   2906
RWL2    016154          2901#   2903
R7TRX   013426          2428    2450#
R7TR1   012374          2231    2238#
R7TR2   012444          2247    2255#
R7TR2A  012432          2249#   2255
R7TR3   012514          2263    2270#
R7TR4   012566          2279    2288#
SR0     000502           113#   2646*   2649*   2651    2652*   2686*   2689    2693*   2703*   2705*   2708*   2709    2715*
                        2717*   2720*   2721    2732*   2735*   2737*   2740*   2741    2752*   2889*   2898*
SR0H    000504           114#
SR1     000506           115#
SR2     000510           116#   2657    2661*   2662    2724    2744
STATUS= 177776            34#    435*    464*   2393    2430*   2435*   2460*   2466*   2492*   2557*   2572*   2575    2586*
                        2588    2616*   2623
STP     011600          2072    2079#
STPP    003026           576     652#
STPPA   003040           651     658#
STP3    013012          2331    2340#
STP3D   013024          2339    2346#
STP4    014444          2604    2632#
STP4E   014456          2631    2638#
TABLE   015654          2778    2844#
TDEC1   010556          1864    1871#
TDEC2   010606          1880    1882#
TDEC3   010662          1898    1900#
TDEC4   010734          1909    1916#
TDEC6   010750          1919#
TDEC7   010762          1917    1925#
TDEC77  013410          2432    2447#
TDEC8   013376          2426    2433    2441#
TENSAV  015342          2764*   2773#   2777
TONT1   012722          2307    2324#
TPB     = 177566          31#    164*   2611*   2614*   2799*   2870*
TPS     = 177564          30#    162     166    2415    2605*   2609    2612    2615*   2762*   2797    2801    2868    2872
TRACE   012676          2304    2312#
TRAPA   = 000007          35#    501     517     533     551     563     580     619
TRAPB   013226          2384    2408#
TRAP10  015340          2765    2771#
TRAP24  015330          2763    2768#
TRCSR   = 177560          29#   2521*   2530
TRC1    013002          2333    2336    2338#
TRT     = 000003          21#   1203    1218    1234    1252    1265    1282    1321    2004
TR0     013526          2461    2468#
TR2     013552          2464    2480#
TR3     013660          2494    2499#
TR4     013674          2495    2506#
TR4A    012554          2282#   2289
TR5     013662          2488    2496    2500#
TSL     013050          2360#
TST1    000740           178     192#
TST10   002422           530     535     544#
TST100  012330          2202    2217    2227#
TST101  012616          2229    2290    2299#
TST102  012736          2329#
TST103  013032          2354#
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TST104  013300            2424#
TST105  013426            2454#
TST106  013564            2486#
TST107  013722            2515#
TST11   002550             546      565      574#
TST110  014026            2517     2531     2541#
TST111  014122            2564#
TST112  014276            2602#
TST113  015260            2759#
TST12   003052             663#
TST13   003126             665      680#
TST14   003176             682      687      696#
TST15   003250             698      703      712#
TST16   003374             714      732      741#
TST17   003664             743      818      827#
TST2    001264             194      282      291#
TST20   003762             848#
TST21   004024             850      863#
TST22   004074             865      870      879#
TST23   004146             881      886      895#
TST24   004274             897      916      925#
TST25   004576            1014#
TST26   004640            1016     1029#
TST27   004710            1031     1036     1045#
TST3    001610             293      352      361#
TST30   004762            1047     1052     1061#
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TST44   006620            1421     1440     1449#
TST45   007104            1451     1525     1534#
TST46   007146            1536     1549#
TST47   007216            1551     1556     1565#
TST5    002236             433      487      496#
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TST55   010072            1731     1736     1745#
TST56   010224            1747     1766     1775#
TST57   010514            1777     1851     1860#
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TST60   010556            1862     1876#
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TST62   010762            1895     1930#
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TST66   011252            1998#
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TST72   011612            2084#
TST73   011666            2086    2102#
TST74   011762            2104    2117    2126#
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TST76   012124            2149    2158    2169#
TST77   012234            2171    2200#
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TTY3    014176            2571    2575#
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VDEC9   011322            2003    2011#
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                405    406#    413    414#    421    422#    437    438#    444    445#    451    452#    458
                459#    467    468#    474    475#    481    482#    488    489#    503    504#    520    521#
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                451*    458*    467*    474*    481*    488*    503*    520*    536*    554*    566*    583*    590*
                597*    604*    611*    622*    629*    636*    643*    653*    671*    688*    704*    722*    733*
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                712*  713   741*  742   827*  828   848*  849   863*  864   879*  880   895*
                896   925*  926   1014*  1015  1029*  1030  1045*  1046  1061*  1062  1091*  1092
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                2299*  2300  2329*  2330  2354*  2355  2424*  2425  2454*  2455  2486*  2487  2515*
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                646   656   666#  674   683#  691   699#  707   715#  725   736   744#  753
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2108	2114	2121	2129	2132	2135	2140	2150	2162	2172	2185	2194	2203
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2316	2322	2332	2344	2357	2373	2388	2398	2406	2427	2439	2445	2457
2472	2478	2489	2504	2518	2528	2535	2544	2555	2567	2580	2594	2605
2621	2628	2636	2654	2658	2663	2666	2670	2673	2690	2710	2722	2725
2728	2742	2745	2749	2762	2823	2830	2838	2854				

.$A 000336 91# 9#

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             365  373  381  389  396  404  412  420  436  442  449  456  466  472  479
             486  502  519  535  553  565  582  588  595  602  610  621  627  634  641
             651  671  687  703  721  732  749  755  762  769  777  788  794  801  808
             818  834  854  870  886  904  916  933  939  946  953  961  972  978  985
             992 1002 1020 1036 1052 1070 1082 1099 1105 1112 1119 1127 1138 1144 1151
            1158 1167 1183 1204 1220 1236 1255 1267 1284 1290 1297 1304 1312 1323 1329
            1336 1343 1353 1378 1394 1410 1428 1440 1457 1463 1470 1477 1485 1496 1502
            1509 1516 1525 1540 1556 1572 1591 1603 1620 1626 1633 1640 1648 1659 1665
            1672 1679 1688 1704 1720 1736 1754 1766 1783 1789 1796 1803 1811 1822 1828
            1835 1842 1851 1866 1883 1901 1911 1919 1937 1954 1971 1988 2005 2022 2030
            2046 2072 2093 2111 2117 2136 2158 2182 2190 2210 2217 2233 2239 2249 2256
            2265 2271 2282 2290 2312 2318 2339 2369 2384 2394 2401 2436 2441 2468 2474
            2500 2524 2531 2551 2576 2589 2618 2624 2631 2820 2827 2833
ESCAPE    1#
GETPRI    1#
LOOP      1#  202  212  222  233  244  255  265  276  286  304  317  330  343  356
             369  377  385  393  400  408  416  424  440  447  454  461  470  477  484
             491  506  523  539  557  569  586  593  600  607  614  625  632  639  646
             656  674  691  707  725  736  753  760  767  774  781  792  799  806  813
             822  838  857  874  890  908  920  937  944  951  958  965  976  983  990
             997 1007 1023 1040 1056 1074 1086 1103 1110 1117 1124 1131 1142 1149 1156
            1163 1171 1187 1207 1224 1240 1259 1271 1288 1295 1302 1309 1316 1327 1334
            1341 1348 1358 1381 1398 1414 1432 1444 1461 1468 1475 1482 1489 1500 1507
            1514 1521 1529 1543 1560 1576 1595 1607 1624 1631 1638 1645 1652 1663 1670
            1677 1684 1692 1707 1724 1740 1758 1770 1787 1794 1801 1808 1815 1826 1833
            1840 1847 1855 1869 1887 1905 1914 1923 1941 1958 1975 1992 2009 2026 2034
            2050 2077 2096 2114 2121 2140 2162 2185 2194 2213 2221 2236 2243 2253 2260
            2268 2275 2286 2294 2316 2322 2344 2373 2388 2398 2406 2439 2445 2472 2478
            2504 2528 2535 2555 2580 2594 2621 2628 2636 2823 2830 2838
MULT      1#
NEWTST    1#  189  288  358  428  493  509  525  541  571  660  677  693  709  738
             824  845  860  876  892  922 1011 1026 1042 1058 1088 1173 1195 1210 1226
            1242 1273 1369 1384 1400 1416 1446 1531 1546 1562 1579 1609 1695 1710 1726
            1742 1772 1857 1873 1890 1927 1944 1961 1978 1995 2012 2036 2054 2081 2099
            2123 2144 2166 2197 2224 2296 2326 2351 2421 2451 2483 2512 2538 2561 2599
            2756
POP       1#
PUSH      1#
REPORT    1#
SETPRI    1#
SETUP     1#
SKIP      1#
SLASH     1#
STARS     1#   46   56   86   90   97  189  191  288  290  358  360  428  430  493
             495  509  511  525  527  541  543  571  573  660  662  677  679  693  695
             709  711  738  740  824  826  845  847  860  862  876  878  892  894  922
             924 1011 1013 1026 1028 1042 1044 1058 1060 1088 1090 1173 1175 1195 1197
            1210 1212 1226 1228 1242 1244 1273 1275 1369 1371 1384 1386 1400 1402 1416
            1418 1446 1448 1531 1533 1546 1548 1562 1564 1579 1581 1609 1611 1695 1697
            1710 1712 1726 1728 1742 1744 1772 1774 1857 1859 1873 1875 1890 1892 1927
            1929 1944 1946 1961 1963 1978 1980 1995 1997 2012 2014 2036 2038 2054 2056
            2081 2083 2099 2101 2123 2125 2144 2146 2166 2168 2197 2199 2224 2226 2296
            2298 2326 2328 2351 2353 2421 2423 2451 2453 2483 2485 2512 2514 2538 2540
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SWRSU     1#
TYPBIN    1#
TYPDEC    1#
TYPNAM    1#
TYPNUM    1#
TYPOCS    1#
TYPOCT    1#
TYPTXT    1#
VIRP    1926#   1927    1944    1961    1978    1995    2012    2036
$$ERCD    1#    199     209     219     230     241     252     262     273     283     301     314     327     340     353
         366    374     382     390     397     405     413     421     437     444     451     458     467     474     481
         488    503     520     536     554     566     583     590     597     604     611     622     629     636     643
         653    671     688     704     722     733     750     757     764     771     778     789     796     803     810
         819    835     854     871     887     905     917     934     941     948     955     962     973     980     987
         994   1004    1020    1037    1053    1071    1083    1100    1107    1114    1121    1128    1139    1146    1153
        1160   1168    1184    1204    1221    1237    1256    1268    1285    1292    1299    1306    1313    1324    1331
        1338   1345    1355    1378    1395    1411    1429    1441    1458    1465    1472    1479    1486    1497    1504
        1511   1518    1526    1540    1557    1573    1592    1604    1621    1628    1635    1642    1649    1660    1667
        1674   1681    1689    1704    1721    1737    1755    1767    1784    1791    1798    1805    1812    1823    1830
        1837   1844    1852    1866    1884    1902    1911    1920    1938    1955    1972    1989    2006    2023    2031
        2047   2074    2093    2111    2118    2137    2159    2182    2191    2210    2218    2233    2240    2250    2257
        2265   2272    2283    2291    2313    2319    2341    2370    2385    2395    2403    2436    2442    2469    2475
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$$ERNU    1#    199     209     219     230     241     252     262     273     283     301     314     327     340     353
         366    374     382     390     397     405     413     421     437     444     451     458     467     474     481
         488    503     520     536     554     566     583     590     597     604     611     622     629     636     643
         653    671     688     704     722     733     750     757     764     771     778     789     796     803     810
         819    835     854     871     887     905     917     934     941     948     955     962     973     980     987
         994   1004    1020    1037    1053    1071    1083    1100    1107    1114    1121    1128    1139    1146    1153
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        1837   1844    1852    1866    1884    1902    1911    1920    1938    1955    1972    1989    2006    2023    2031
        2047   2074    2093    2111    2118    2137    2159    2182    2191    2210    2218    2233    2240    2250    2257
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$$ERRO    1#    282     352     420     487     519     535     565     687     703     732     818     870     886     916
        1036   1052    1082    1167    1220    1236    1267    1394    1410    1440    1525    1556    1572    1603    1688
        1720   1736    1766    1851    1883    2030    2117    2136    2158    2217    2290    2531
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         369    377     385     393     400     408     416     424     440     447     454     461     470     477     484
         491    506     523     539     557     569     586     593     600     607     614     625     632     639     646
         656    674     691     707     725     736     753     760     767     774     781     792     799     806     813
         822    838     857     874     890     908     920     937     944     951     958     965     976     983     990
         997   1007    1023    1040    1056    1074    1086    1103    1110    1117    1124    1131    1142    1149    1156
        1163   1171    1187    1207    1224    1240    1259    1271    1288    1295    1302    1309    1316    1327    1334
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        1840   1847    1855    1869    1887    1905    1914    1923    1941    1958    1975    1992    2009    2026    2034
        2050   2077    2096    2114    2121    2140    2162    2185    2194    2213    2221    2236    2243    2253    2260
        2268   2275    2286    2294    2316    2322    2344    2373    2388    2398    2406    2439    2445    2472    2478
        2504   2528    2535    2555    2580    2594    2621    2628    2636    2823    2830    2838
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$$NEWT          1#     189     288     358     428     493     509     525     541     571     660     677     693     709     738
                824     845     860     876     892     922    1011    1026    1042    1058    1088    1173    1195    1210    1226
               1242    1273    1369    1384    1400    1416    1446    1531    1546    1562    1579    1609    1695    1710    1726
               1742    1772    1857    1873    1890    1927    1944    1961    1978    1995    2012    2036    2054    2081    2099
               2123    2144    2166    2197    2224    2296    2326    2351    2421    2451    2483    2512    2538    2561    2599
               2756
$$SKIP          1#
.EQUAT          1#
.HEADE          1#
.KT11           1#
.SETUP          1#
.SWRHI          1#
.$ACTI          1#      40#     46
.$APTB          1#      40#     56
.$APTH          1#      40#     86
.$APTY          1#
.$ASTA          1#
.$CATC          1#
.$CMTA          1#
.$DB2D          1#
.$DB2O          1#
.$DIV           1#
.$EOP           1#
.$ERRO          1#
.$ERRT          1#
.$MULT          1#
.$POWE          1#
.$RAND          1#
.$RDDE          1#
.$RDOC          1#
.$READ          1#
.$R2AZ          1#
.$SAVE          1#
.$SB2D          1#
.$SB2O          1#
.$SCOP          1#
.$SIZE          1#
.$SUPR          1#
.$TRAP          1#
.$TYPB          1#
.$TYPD          1#
.$TYPE          1#
.$TYPO          1#
.$40CA          1#

. ABS.  016220      000

 ERRORS DETECTED:  0

 CFKABD.BIN,CFKABD.LST/CRF/SOL=CFKABD.SML,CFKABD.P11
 RUN-TIME: 47 56 5 SECONDS
 RUN-TIME RATIO: 212/109=1.9
 CORE USED:  29K  (57 PAGES)
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