LSI-11

TRAPS TEST

MD-11-DVKAD-A

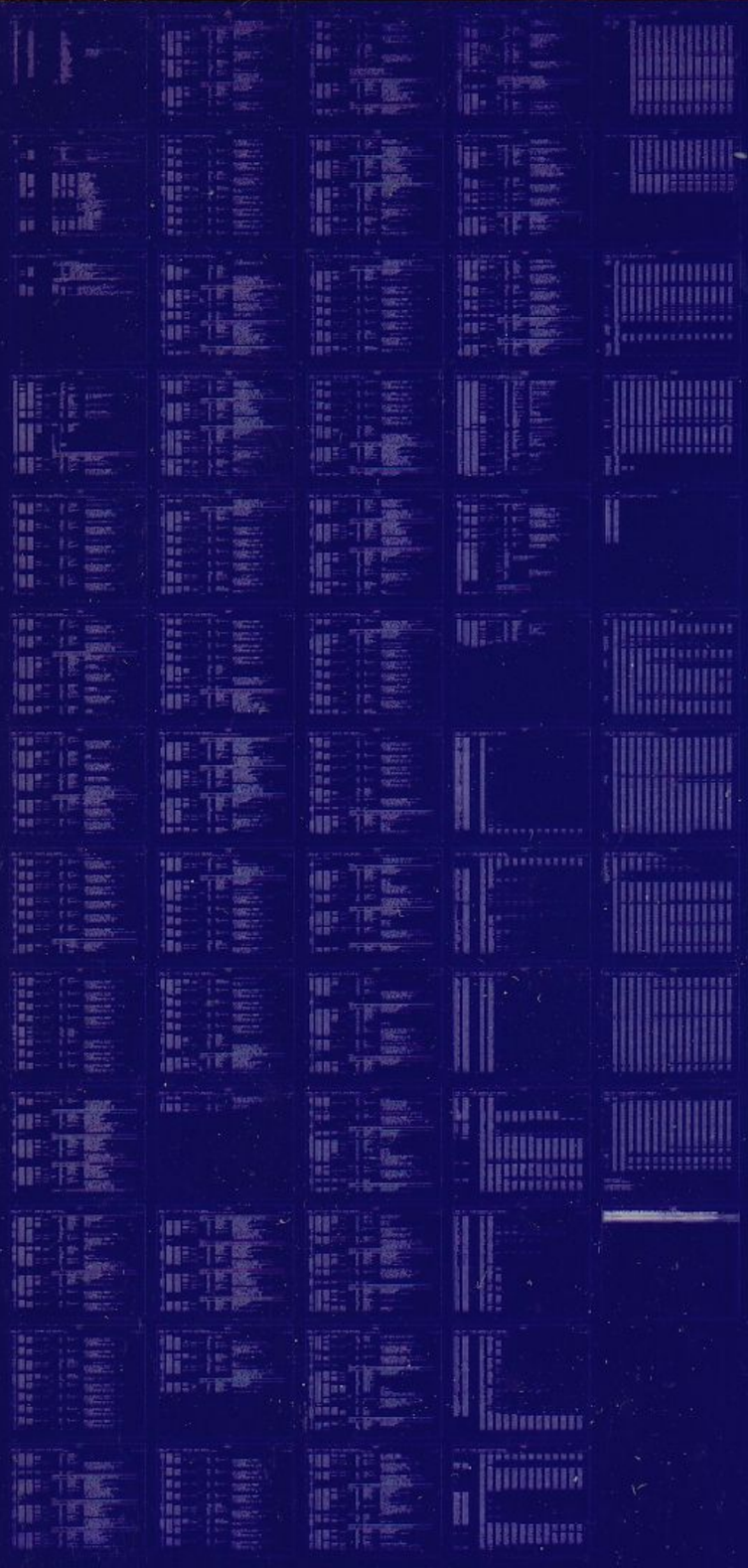
EP-DVKAD-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA



```
                                        .NLIST  MD,CND,MC
                                        .LIST   ME


                                        PC=%7
                                        SP=%6
                                        TAB=%3
                                        R0=%0
                                        LAST=%1
                                        FIRST=%2
                                        HLT=HALT
                                        TRAP=104400
                                        EMT=104000
                                        TRT=3
                                        ITRAP5=4
                                        RTRAP5=4                ;RESERVED INST AND ILLEGAL ADDRESSES
                                        RTRAP4=14               ;FOR TRACE TRAP
                                        RTRAP3=30               ;FOR EMULATOR TRAP
                                        RTRAP2=20               ;FOR IOT TRAP
                                        RTRAP1=34               ;FOR TRAP INST
                                        TTCSR=177564
                                        TRCSR=177560
                                        TPS=177564
                                        TPB=177566
                                        BELL=240
                                        NOP=240
                                        TRAPA=000007
                                        RTRAP=10
                                        ILLA=004700
                                        ILLB=100
                                        $TSTNM=$TESTN
                                        $ERROR=$FATAL
                                        .ABS
                                .MCALL  .$APTHDR
                                .MCALL  .$APTBLS
                                .MCALL  .$ACT11
```

C01


```
 5052
 5053                   000400                          .=400
 5054                                  ;*****************************************************************************
                                       .SBTTL  ACT11 HOOKS
                                       ;HOOKS REQUIRED BY ACT11
                   000400                      $SVPC=.                     ;SAVE PC
                   000046                      .=46
          000046   012670                      $ENDAD                      ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOP
                   000052                      .=52
          000052   000000                      .WORD   0                   ;;2)SET LOC.52 TO ZERO
                   000400                      .=$SVPC                     ;; RESTORE PC
 5055                                  ;*****************************************************************************
                                       .SBTTL  APT MAILBOX-ETABLE


                                               .EVEN
          000400                       $MAIL:                              ;;APT MAILBOX
          000400   000000              $MSGTY: .WORD   AMSGTY              ;;MESSAGE TYPE CODE
          000402   000000              $FATAL: .WORD   AFATAL              ;;FATAL ERROR NUMBER
          000404   000000              $TESTN: .WORD   ATESTN              ;;TEST NUMBER
          000406   000000              $PASS:  .WORD   APASS               ;;PASS COUNT
          000410   000000              $DEVCT: .WORD   ADEVCT              ;;DEVICE COUNT
          000412   000000              $UNIT:  .WORD   AUNIT               ;;I/O UNIT NUMBER
          000414   000000              $MSGAD: .WORD   AMSGAD              ;;MESSAGE ADDRESS
          000416   000000              $MSGLG: .WORD   AMSGLG              ;;MESSAGE LENGTH
          000420                       $ETABLE:                            ;;APT ENVIRONMENT TABLE
          000420       000             $ENV:   .BYTE   AENV                ;;ENVIRONMENT BYTE
          000421       000             $ENVM:  .BYTE   AENVM               ;;ENVIRONMENT MODE BITS
          000422   000000              $SWREG: .WORD   ASWREG              ;;APT SWITCH REGISTER
          000424   000000              $USWR:  .WORD   AUSWR               ;;USER SWITCHES
          000426   000000              $CPUOP: .WORD   ACPUOP              ;;CPU TYPE,OPTIONS
                                       ;*                                  BITS 15-11=CPU TYPE
                                       ;*                                          11/04=01,11/05=02,11 20=03,11 40=04,11 45=05
                                       ;*                                          11/70=06,PDQ=07,J=10
                                       ;*                                  BIT 10=REAL TIME CLOCK
                                       ;*                                  BIT  9=FLOATING POINT PROCESSOR
                                       ;*                                  BIT  8=MEMORY MANAGEMENT
          000430   000000              $MTYP1: .WORD   AMTYP1              ;;MEM. TYPE,BLK#1
                                       ;*                                  MEM.TYPE BYTE   --  "BYTE"  ??
                                       ;*                                          900 NSEC CORE=001
                                       ;*                                          300 NSEC BIPOLAR=002
                                       ;*                                          500 NSEC MOS=003
          000432   000000              $MADR1: .WORD   AMADR1              ;;MEM.LAST ADDRESS,BLK#1
                                       ;*                                    MEM.LAST ADDR.=3 BYTES,THIS WORD AND LAST WORD OF "TYPE" ABOVE
          000434   000000              $MTYP2: .WORD   AMTYP2              ;;MEM.TYPE,BLK#2
          000436   000000              $MADR2: .WORD   AMADR2              ;;MEM.LAST ADDRESS,BLK#2
          000440   000000              $MTYP3: .WORD   AMTYP3              ;;MEM.TYPE,BLK#3
          000442   000000              $MADR3: .WORD   AMADR3              ;;MEM.LAST ADDRESS,BLK#3
          000444   000000              $MTYP4: .WORD   AMTYP4              ;;MEM.TYPE,BLK#4
          000446   000000              $MADR4: .WORD   AMADR4              ;;MEM.LAST ADDRESS,BLK#4
          000450                       $ETEND:
                                               .MEXIT
 5056                                  ;*****************************************************************************
```

```
(1)
(1)                                     .SBTTL  APT PARAMETER BLOCK
(1)                                     ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
(2)                                     ;******************************************************************************
(1)             000450                          .$X=.   ;;SAVE CURRENT LOCATION
(1)             000024                          .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
(1)  000024     000200                          200     ;;FOR APT START UP
(1)             000044                          .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
(1)  000044     000450                          $APTHDR ;;POINT TO APT HEADER BLOCK
(1)             000450                          .=.$X   ;;RESET LOCATION COUNTER
(2)                                     ;******************************************************************************
(1)                                     ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
(1)                                     ;INTERFACE SPEC.
(1)
(1)  000450                             $APTHD:
(1)  000450  000000                     $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
(1)  000452  000400                     $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
(1)  000454  000011                     $TSTM:  .WORD   11      ;;RUN TIM OF LONGEST TEST
(1)  000456  000011                     $PASTM: .WORD   11      ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
(1)  000460  000000                     $UNITM: .WORD   0       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
(1)  000462  000024                             .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE.WORDS.
```

```
                        000200                          .=200
000200  000200  000167  000276                          JMP     START
                        000210                          .=210
000210  000210  005037  000406                          CLR     @#$PASS         ;CLEAR THE PASS COUNT
000214  000214  000167  000262                          JMP     START
                        000500                          .=500
000500  000500  000000                          BUFF:   00000
000502  000502  012767  013100  177314          START:  MOV     #PWRDWN,24      ;SET UP THE POWER DOWN VECTOR
000510  000510  012767  000340  177310                  MOV     #340,26         ;SET UP POWER DOWN PRIORITY
000516  000516  105767  177676                          TSTB    $ENV            ;ARE WE UNDER APT?
000522  000522  001023                                  BNE     BEGIN           ;YES
000524  000524  005067  177671                          CLR     $ENVM
000530  000530  005067  177672                          CLR     $CPUOP
000534  000534  132767  000040  177660                  BITB    #40,$SWREG      ;DO WE PRINT END OF PASS
000542  000542  001403                                  BEQ     1$              ;YES
000544  000544  152767  000040  177647                  BISB    #40,$ENVM

000552  000552  016700  177644          1$:     MOV     $SWREG,R0       ;GET CONTENT OF $SWREG
000556  000556  032700  000100                  BIT     #100,R0         ;DO WE HAVE EIS.FIS OPTION?
000562  000562  001403                          BEQ     BEGIN           ;NO
000564  000564  052767  000300  177634          BIS     #300,$CPUOP     ;YES SET UP LOCATION #CPUOP

000572  000572  012737  177777  012716  BEGIN:  MOV     #-1,@#PASSPT
000600  000600  012702  000400          RESTRT: MOV     #$MSGTY,%2
000604  000604  005067  177570                  CLR     $MSGTY
000610  000610  005067  177570                  CLR     $TSTNM
000614  000614  005067  177562                  CLR     $ERROR
000620  000620  000167  000026                  JMP     TST1
000624  000624  000000                  K1:     0
000626  000626  000000                  K2:     0
000630  000630  000000                  K3:     0
000632  000632  000000                  K4:     0
000634  000634  000000                  K5:     0
000636  000636  000000                  K6:     0
000640  000640  052525                  K7:     052525
000642  000642  052400                  K10:    052400
000644  000644  000000                  K11:    0
000646  000646  000000                  K12:    0
000650  000650  000000                  HERE:   0
                                        ;*******************************************************************************
                                        ;TEST 1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES
                                        ;*******************************************************************************
000652  000652  005237  000404          TST1:   INC     @#$TESTN        ;UPDATE TEST NUMBER
000656  000656  022737  000001  000404          CMP     #1,@#$TESTN     ;SEQUENCE ERROR?
000664  000664  001124                          BNE     TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
000666  000666  005006                  R6TST:  CLR     %6
000670  000670  112567  177754                  MOVB    (6)+,HERE       ;SIX SHOULD INCREMENT BY TWO
000674  000674  020627  000002                  CMP     %6,#2
000700  000700  001405                          BEQ     1$
000702  000702  012737  000001  000402          MOV     #1,@#$FATAL     ;MOVE TO MAILBOX #  *******  1  *******
000710  000710  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
000712  000712  000000                          HALT                    ;R6 DID NOT AUTO INCREMENT BY TWO
                                                                        ; TO SCOPE REPLACE HALT W  240
```

F01


```
  (4)                                                                   ; AND REPLACE NEXT INST W/ 764
 5105
 5106  000714  012706  001000          1$:     MOV     #1000,%6
 5107  000720  114667  177724                  MOVB    -(6),HERE       ;SHOULD DECREMENT BY TWO
 5108  000724  020627  000776                  CMP     %6,#776
 5109  000730  001405                          BEQ     2$
  (3)  000732  012737  000002  000402          MOV     #2,@#$FATAL     ;MOVE TO MAILBOX #  *******  2  *******
  (2)  000740  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  000742  000000                          HALT                    ;R6 DID NOT AUTO DECREMENT BY 2
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 750
 5110
 5111  000744  005006                  2$:     CLR     %6
 5112  000746  112626                          MOVB    (6)+,(6)+       ;DOUBLES AUTO INCREMENT OF R6
 5113  000750  020627  000004                  CMP     %6,#4
 5114  000754  001405                          BEQ     3$
  (3)  000756  012737  000003  000402          MOV     #3,@#$FATAL     ;MOVE TO MAILBOX #  *******  3  *******
  (2)  000764  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  000766  000000                          HALT                    ;WRONG AUTO INCREMENT OF R6
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 736
 5115
 5116  000770  005006                  3$:     CLR     %6
 5117  000772  005004                          CLR     %4
 5118  000774  122624                          CMPB    (6)+,(4)+       ;TEST INCREMENT OF R6
 5119  000776  020627  000002                  CMP     %6,#2
 5120  001002  001405                          BEQ     4$
  (3)  001004  012737  000004  000402          MOV     #4,@#$FATAL     ;MOVE TO MAILBOX #  *******  4  *******
  (2)  001012  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001014  000000                          HALT                    ;WRONG INCREMENT OF R6
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 723
 5121
 5122  001016  005006                  4$:     CLR     %6
 5123  001020  005004                          CLR     %4
 5124  001022  122426                          CMPB    (4)+,(6)+       ;TEST INCREMENT OF R6
 5125  001024  020627  000002                  CMP     %6,#2
 5126  001030  001405                          BEQ     5$
  (3)  001032  012737  000005  000402          MOV     #5,@#$FATAL     ;MOVE TO MAILBOX #  *******  5  *******
  (2)  001040  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001042  000000                          HALT                    ;WRONG INCREMENT OF R6
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 710
 5127
 5128  001044  005006                  5$:     CLR     %6
 5129  001046  005004                          CLR     %4
 5130  001050  122624                          CMPB    (6)+,(4)+       ;TEST INCREMENT OF R4
 5131  001052  020427  000001                  CMP     %4,#1
 5132  001056  001405                          BEQ     6$
  (3)  001060  012737  000006  000402          MOV     #6,@#$FATAL     ;MOVE TO MAILBOX #  *******  6  *******
  (2)  001066  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001070  000000                          HALT                    ;WRONG INCREMENT OF R4
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 675
 5133
 5134  001072  005006                  6$:     CLR     %6
```

```
 5135  001074  005004                          CLR     %4
 5136  001076  122426                          CMPB    (4)+,(6)+       ;TEST INCREMENT OF R4
 5137  001100  020427  000001                  CMP     %4,#1
 5138  001104  001405                          BEQ     7$
   (3) 001106  012737  000007  000402          MOV     #7,@#$FATAL     ;MOVE TO MAILBOX #  *******  7  *******
   (2) 001114  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 001116  000000                          HALT                    ;WRONG INCREMENT OF R4
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 662
 5139
 5140  001120  012706  001000          7$:     MOV     #1000,%6
 5141  001124  124667  177520                  CMPB    -(6),HERE       ;TEST DECREMENT OF R6
 5142  001130  022706  000776                  CMP     #776,%6
 5143  001134  001405                          BEQ     TST2
   (4) 001136  012737  000010  000402          MOV     #10,@#$FATAL    ;MOVE TO MAILBOX #  *******  10  *******
   (3) 001144  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3) 001146  000000                          HALT                    ;WRONG DECREMENT OF R6,OR WRONG $TESTN
   (5)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                 ; AND REPLACE NEXT INST W/ 646
 5144                              ;*************************************************************************
   (2)                             ;TEST 2 TEST TRANSFER OF BYTE USING R6
   (3)                             ;*************************************************************************
   (2) 001150  005237  000404      TST2:   INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 001154  022737  000002  000404      CMP     #2,@#$TESTN     ;SEQUENCE ERROR?
   (2) 001162  001137                      BNE     TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
 5145  001164  012767  123456  177442      MOV     #123456,K5
 5146  001172  012767  050505  177424      MOV     #050505,K1
 5147  001200  012705  000624              MOV     #K1,%5          ;%5=(050505)K1
 5148  001204  012706  000634              MOV     #K5,%6          ;%6=(123456)K5
 5149  001210  112625                      MOVB    (6)+,(5)+       ;LOW .BYTE OF R6 TO R5
 5150  001212  022767  050456  177404      CMP     #050456,K1
 5151  001220  001405                      BEQ     1$
   (3) 001222  012737  000011  000402      MOV     #11,@#$FATAL    ;MOVE TO MAILBOX #  *******  11  *******
   (2) 001230  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 001232  000000                      HALT                    ;FALSE TRANSFER OF .BYTE
   (4)                                                             ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                             ; AND REPLACE NEXT INST W/ 753
 5152
 5153  001234  012767  123456  177372  1$:     MOV     #123456,K5
 5154  001242  012767  050505  177354          MOV     #050505,K1
 5155  001250  012705  000624                  MOV     #K1,%5          ;%5(050505)K1
 5156  001254  012706  000636                  MOV     #K6,%6          ;%6(123456)K5
 5157  001260  114625                          MOVB    -(6),(5)+       ;LOW .BYTE OF R6 TO R5 (DECREMENT)
 5158  001262  026727  177336  050456          CMP     K1,#050456
 5159  001270  001405                          BEQ     2$
   (3) 001272  012737  000012  000402          MOV     #12,@#$FATAL    ;MOVE TO MAILBOX #  *******  12  *******
   (2) 001300  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 001302  000000                          HALT                    ;FALSE R6 .BYTE TRANSFER
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 727
 5160
 5161  001304  012767  123456  177312  2$:     MOV     #123456,K1
 5162  001312  012767  050505  177314          MOV     #050505,K5
 5163  001320  012705  000624                  MOV     #K1,%5          ;(123456)
 5164  001324  012706  000634                  MOV     #K5,%6          ;(050505)
 5165  001330  112526                          MOVB    (5)+,(6)+       ;LOW OF R5 TO LOW OF R6
```

```
 5166  001332  022767  050456  177274          CMP     #050456,K5
 5167  001340  001405                          BEQ     3$
  (3)  001342  012737  000013  000402          MOV     #13,@#$FATAL    ;MOVE TO MAILBOX #  *******  13  *******
  (2)  001350  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001352  000000                          HALT                    ;FALSE R6 .BYTE TRANSFER
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 703
 5168
 5169  001354  012767  123456  177242  3$:     MOV     #123456,K1
 5170  001362  012767  050505  177244          MOV     #050505,K5
 5171  001370  012705  000625                  MOV     #K1+1,%5        ;123456
 5172  001374  012706  000634                  MOV     #K5,%6          ;050505
 5173  001400  112526                          MOVB    (5)+,(6)+       ;HIGH OF R5 TO LOW OF R6
 5174  001402  026727  177226  050647          CMP     K5,#050647
 5175  001410  001405                          BEQ     4$
  (3)  001412  012737  000014  000402          MOV     #14,@#$FATAL    ;MOVE TO MAILBOX #  *******  14  *******
  (2)  001420  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001422  000000                          HALT                    ;FALSE R6 .BYTE TRANSFER
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 657
 5176
 5177  001424  012767  123456  177172  4$:     MOV     #123456,K1
 5178  001432  012767  050505  177174          MOV     #050505,K5
 5179  001440  012705  000625                  MOV     #K1+1,%5        ;R5-123456-ODD ADDRESS
 5180  001444  012706  000634                  MOV     #K5,%6          ;R6-050505--.EVEN ADDRESS
 5181  001450  112625                          MOVB    (6)+,(5)+       ;LOW OF R6 TO HIGH OF R5
 5182  001452  022767  042456  177144          CMP     #042456,K1
 5183  001460  001405                          BEQ     TST3
  (4)  001462  012737  000015  000402          MOV     #15,@#$FATAL    ;MOVE TO MAILBOX #  *******  15  *******
  (3)  001470  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  001472  000000                          HALT                    ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TESTN
  (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                  ; AND REPLACE NEXT INST W/ 633
 5184                                 ;*************************************************************************
  (2)                                 ;TEST 3 TEST BYTE OPERATION WITH SEQUENTIAL ODD; .EVEN ADDRESS
  (3)                                 ;*************************************************************************
  (2)  001474  005237  000404          TST3:   INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  001500  022737  000003  000404          CMP     #3,@#$TESTN     ;SEQUENCE ERROR?
  (2)  001506  001103                          BNE     TST4-12 ;BR TO ERROR HALT ON SEQ ERROR
 5185  001510  126767  177124  177123          CMPB    K7,K7+1         ;SAME .WORD LOW TO HIGH
 5186  001516  001405                          BEQ     1$
  (3)  001520  012737  000016  000402          MOV     #16,@#$FATAL    ;MOVE TO MAILBOX #  *******  16  *******
  (2)  001526  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001530  000000                          HALT                    ;SHOULD COMPARE LOW TO HIGH
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 766
 5187
 5188  001532  126767  177103  177100  1$:     CMPB    K7+1,K7         ;COMPARE ODD TO .EVEN SAME .WORD
 5189  001540  001405                          BEQ     2$
  (3)  001542  012737  000017  000402          MOV     #17,@#$FATAL    ;MOVE TO MAILBOX #  *******  17  *******
  (2)  001550  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001552  000000                          HALT                    ;ODD TO .EVEN .BYTE FAILURE
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 755
 5190
 5191  001554  126767  177063  177056  2$:     CMPB    K10+1,K7        ;SEQUENTIAL .BYTES
```

I01


```
5192                                                                    ;DIFFERENT .WORDS
5193  001562  001462                          BEQ     TST4
 (4)  001564  012737  000020  000402          MOV     #20,@#$FATAL      ;MOVE TO MAILBOX #  *******  20  *******
 (3)  001572  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (3)  001574  000000                          HALT                      ;ODD TO .EVEN FAILED
 (5)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (5)                                                                    ; AND REPLACE NEXT INST W/ 744
5194
5195  001576  126767  177040  177032          CMPB    K10,k6
5196  001604  001405                          BEQ     3$
 (3)  001606  012737  000021  000402          MOV     #21,@#$FATAL      ;MOVE TO MAILBOX #  *******  21  *******
 (2)  001614  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (2)  001616  000000                          HALT                      ;.EVEN TO EVEN FAILED
 (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (4)                                                                    ; AND REPLACE NEXT INST W/ 733
5197  001620  126767  177015  177015  3$:     CMPB    k7+1,K10+1
5198  001626  001405                          BEQ     4$
 (3)  001630  012737  000022  000402          MOV     #22,@#$FATAL      ;MOVE TO MAILBOX #  *******  22  *******
 (2)  001636  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (2)  001640  000000                          HALT                      ;ODD TO ODD FAILED
 (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (4)                                                                    ; AND REPLACE NEXT INST W/ 722
5199
5200  001642  126767  176774  176773  4$:     CMPB    K10,K10+1
5201  001650  001005                          BNE     5$
 (3)  001652  012737  000023  000402          MOV     #23,@#$FATAL      ;MOVE TO MAILBOX #  *******  23  *******
 (2)  001660  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (2)  001662  000000                          HALT                      ;LOW TO HIGH IN SAME .WORD FAILED
 (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (4)                                                                    ; AND REPLACE NEXT INST W/ 711
5202
5203  001664  126767  176753  176751  5$:     CMPB    K10+1,K10+1
5204  001672  001405                          BEQ     6$
 (3)  001674  012737  000024  000402          MOV     #24,@#$FATAL      ;MOVE TO MAILBOX #  *******  24  *******
 (2)  001702  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (2)  001704  000000                          HALT                      ;HIGH TO LOW IN SAME .WORD FAILED
 (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (4)                                                                    ; AND REPLACE NEXT INST W/ 700
5205
5206  001706  126767  176730  176725  6$:     CMPB    K10,K7+1
5207  001714  001005                          BNE     TST4
 (4)  001716  012737  000025  000402          MOV     #25,@#$FATAL      ;MOVE TO MAILBOX #  *******  25  *******
 (3)  001724  005212                          INC     (R2)              ;SET MSGTYP TO FATAL ERROR
 (3)  001726  000000                          HALT                      ;.EVEN TO ODD FAILED,OR WRONG $TESTN,OR WRONG $TESTN
 (5)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (5)                                                                    ; AND REPLACE NEXT INST W/ 667
5208
5209                                ;*************************************************************************************
 (2)                                ;TEST 4 TEST THE CC BITS
 (3)                                ;*************************************************************************************
 (2)  001730  005237  000404        TST4:   INC     @#$TESTN          ;UPDATE TEST NUMBER
 (2)  001734  022737  000004  000404        CMP     #4,@#$TESTN       ;SEQUENCE ERROR?
 (2)  001742  001070                        BNE     TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
5210  001744  000277                        SCC                       ;SET STATUS
5211  001746  005067  011124               CLR     STATUS            ;CLEAR STATUS
5215  001752                               MTPS    STATUS
```

```
  (1)  001752  106467                                .WORD   106400!..C
5219   001756  103005                                BCC     1$
  (3)  001760  012737  000026  000402                MOV     #26,@#$FATAL    ;MOVE TO MAILBOX #  *******  26  *******
  (2)  001766  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  001770  000000                                HALT                    ;C NOT CLEAR
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 764
5220   001772                              1$:
  (1)  001772  102005                                BVC     2$
  (3)  001774  012737  000027  000402                MOV     #27,@#$FATAL    ;MOVE TO MAILBOX #  *******  27  *******
  (2)  002002  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002004  000000                                HALT                    ;V NOT CLEAR
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 756
5221   002006                              2$:
  (1)  002006  001005                                BNE     3$
  (3)  002010  012737  000030  000402                MOV     #30,@#$FATAL    ;MOVE TO MAILBOX #  *******  30  *******
  (2)  002016  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002020  000000                                HALT                    ;Z NOT CLEAR
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 750
5222   002022                              3$:
  (1)  002022  100005                                BPL     4$
  (3)  002024  012737  000031  000402                MOV     #31,@#$FATAL    ;MOVE TO MAILBOX #  *******  31  *******
  (2)  002032  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002034  000000                                HALT                    ;N NOT CLEAR
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 742
5223
5224   002036  000257                              4$:   CCC                 ;CLEAR CONDITION CODES
5228   002040                                     MFPS    STATUS
  (1)  002040  106767                                .WORD   106700!..C
5232   002044  052767  000017  011024              BIS     #17,STATUS      ;SET STATUS TO ONES
5236   002052                                     MTPS    STATUS
  (1)  002052  106467                                .WORD   106400!..C
5240
5241   002056  103405                                BCS     5$
  (3)  002060  012737  000032  000402                MOV     #32,@#$FATAL    ;MOVE TO MAILBOX #  *******  32  *******
  (2)  002066  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002070  000000                                HALT                    ;C NOT SET
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 724
5242   002072                              5$:
  (1)  002072  102405                                BVS     6$
  (3)  002074  012737  000033  000402                MOV     #33,@#$FATAL    ;MOVE TO MAILBOX #  *******  33  *******
  (2)  002102  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002104  000000                                HALT                    ;V NOT SET
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 716
5243   002106                              6$:
  (1)  002106  001405                                BEQ     7$
  (3)  002110  012737  000034  000402                MOV     #34,@#$FATAL    ;MOVE TO MAILBOX #  *******  34  *******
  (2)  002116  005212                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002120  000000                                HALT                    ;Z NOT SET
  (4)                                                                        ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                        ; AND REPLACE NEXT INST W/ 710
```

```
 5244  002122                          7$:
  (2)  002122  100405                          BMI     TST5
  (4)  002124  012737  000035  000402          MOV     #35,@#$FATAL    ;MOVE TO MAILBOX #  *******  35  *******
  (3)  002132  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  002134  000000                          HALT                    ;N NOT SET,OR WRONG $TESTN
  (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                  ; AND REPLACE NEXT INST W/ 702
 5245                             ;*************************************************************************
  (2)                             ;TEST 5 TEST THAT A TRAP OCCURES ON A RESERVED INSTRUCTION
  (3)                             ;*************************************************************************
  (2)  002136  005237  000404     TST5:   INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002142  022737  000005  000404     CMP     #5,@#$TESTN     ;SEQUENCE ERROR?
  (2)  002150  001006                     BNE     TST6-12 ;BR TO ERROR HALT ON SEQ ERROR
 5246  002152  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
 5247  002156  012767  002200  175624      MOV     #RETA,RTRAP     ;RETURN LOCATION
 5248  002164  000007                     TRAPA                   ;RESERVED INSTRUCTION, SHOULD TRAP
 5249  002166  012737  000036  000402     MOV     #36,@#$FATAL    ;MOVE TO MAILBOX #  *******  36  *******
  (2)  002174  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002176  000000                     HALT                    ;DID NOT TRAP OR WRONG $TESTN
  (4)                                                             ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                             ; AND REPLACE NEXT INST W/ 764
 5250  002200                          RETA:
 5251                             ;*************************************************************************
  (2)                             ;TEST 6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
  (3)                             ;*************************************************************************
  (2)  002200  005237  000404     TST6:   INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002204  022737  000006  000404     CMP     #6,@#$TESTN     ;SEQUENCE ERROR?
  (2)  002212  001011                     BNE     TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
 5252  002214  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
 5253  002220  012767  002230  175562      MOV     #RETB,RTRAP     ;RETURN POINTER
 5254  002226  000007                     TRAPA                   ;RESERVED INSTRUCTION
 5255  002230  020627  000474     RETB:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
 5256  002234  001405                     BEQ     TST7
  (4)  002236  012737  000037  000402     MOV     #37,@#$FATAL    ;MOVE TO MAILBOX #  *******  37  *******
  (3)  002244  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  002246  000000                     HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
  (5)                                                             ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                             ; AND REPLACE NEXT INST W/ 761
 5257                             ;*************************************************************************
  (2)                             ;TEST 7 TEST THAT PROPER P.C. IS SAVED
  (3)                             ;*************************************************************************
  (2)  002250  005237  000404     TST7:   INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002254  022737  000007  000404     CMP     #7,@#$TESTN     ;SEQUENCE ERROR?
  (2)  002262  001012                     BNE     TST10-12        ;BR TO ERROR HALT ON SEQ ERROR
 5258  002264  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
 5259  002270  012767  002300  175512      MOV     #RETC,RTRAP     ;RETURN FROM TRAP POINTER
 5260  002276  000007              INSTC:  TRAPA                   ;TRAP ON THIS INSTRUCTION
 5261  002300  022767  002300  176166 RETC:   CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
 5262  002306  001405                     BEQ     TST10
  (4)  002310  012737  000040  000402     MOV     #40,@#$FATAL    ;MOVE TO MAILBOX #  *******  40  *******
  (3)  002316  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  002320  000000                     HALT                    ;INCORRECT P.C. OR WRONG $TESTN
  (5)                                                             ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                             ; AND REPLACE NEXT INST W/ 760
 5263                             ;*************************************************************************
  (2)                             ;TEST 10        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
```

```
  (3)                                   ;*************************************************************************
  (2)  002322  005237  000404           TST10:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002326  022737  000010  000404           CMP     #10,@#$TESTN    ;SEQUENCE ERROR?
  (2)  002334  001044                          BNE     TST11-12        ;BR TO ERROR HALT ON SEQ ERROR
 5264  002336  012706  000500                  MOV     #BUFF,SP        ;SET UP
 5265  002342  012767  002364  175440          MOV     #RETD,RTRAP     ;SET UP
 5266  002350  005067  010522                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
 5270  002354                                  MTPS    STATUS
  (1)  002354  106467                          .WORD   106400!..C
 5274  002360  000257                          CCC
 5275  002362  000007                          TRAPA                   ;TRAP
 5276  002364  026727  176106  000000  RETD:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 5277  002372  001405                          BEQ     1$
  (3)  002374  012737  000041  000402          MOV     #41,@#$FATAL    ;MOVE TO MAILBOX #  *******  41  *******
  (2)  002402  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002404  000000                          HALT                    ;INCORRECT STATUS
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 753
 5278  002406  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
 5279  002412  012767  002436  175370          MOV     #RETE,RTRAP     ;SET UP
 5280  002420  012767  000357  010450          MOV     #357,STATUS     ;SET PRIORITY
 5284  002426                                  MTPS    STATUS
  (1)  002426  106467                          .WORD   106400!..C
 5288  002432  000277                          SCC                     ;SET STATUS
 5289  002434  000007                          TRAPA                   ;TRAP
 5290  002436  026727  176034  000357  RETE:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
 5291  002444  001405                          BEQ     TST11
  (4)  002446  012737  000042  000402          MOV     #42,@#$FATAL    ;MOVE TO MAILBOX #  *******  42  *******
  (3)  002454  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  002456  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
  (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                  ; AND REPLACE NEXT INST W/ 726
 5292                                   ;*************************************************************************
  (2)                                   ;TEST 11        TEST  THAT "NEW" STATUS IS CORRECT
  (3)                                   ;*************************************************************************
  (2)  002460  005237  000404           TST11:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002464  022737  000011  000404           CMP     #11,@#$TESTN    ;SEQUENCE ERROR?
  (2)  002472  001132                          BNE     TST12-12        ;BR TO ERROR HALT ON SEQ ERROR
 5293  002474  012706  000500                  MOV     #BUFF,SP
 5294  002500  012767  002514  175302          MOV     #RETF,RTRAP
 5295  002506  005067  175300                  CLR     RTRAP+2         ;CLEAR FUTURE PRIORITY AND CC
 5296  002512  000007                          TRAPA
 5297  002514                                RETF:
 5298  002514  100005                          BPL     1$
  (3)  002516  012737  000043  000402          MOV     #43,@#$FATAL    ;MOVE TO MAILBOX #  *******  43  *******
  (2)  002524  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002526  000000                          HALT                    ;C NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 761
 5299  002530                                1$:
  (1)  002530  001005                          BNE     2$
  (3)  002532  012737  000044  000402          MOV     #44,@#$FATAL    ;MOVE TO MAILBOX #  *******  44  *******
  (2)  002540  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002542  000000                          HALT                    ;Z NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 753
```

```
 5300  002544                                  2$:
  (1)  002544  102005                            BVC     3$
  (3)  002546  012737  000045  000402           MOV     #45,@#$FATAL    ;MOVE TO MAILBOX #  *******  45  *******
  (2)  002554  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002556  000000                            HALT                    ;V NOT CLEARED
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 745
 5301  002560                                  3$:
  (1)  002560  103005                            BCC     4$
  (3)  002562  012737  000046  000402           MOV     #46,@#$FATAL    ;MOVE TO MAILBOX #  *******  46  *******
  (2)  002570  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002572  000000                            HALT                    ;C NOT CLEARED
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 737
 5305  002574                                  4$:     MFPS    STATUS
  (1)  002574  106767                            .WORD   106700!..C
 5309  002600  032767  000340  010270           BIT     #340,STATUS             ;TEST PRIORITY
 5310  002606  001405                            BEQ     5$
  (3)  002610  012737  000047  000402           MOV     #47,@#$FATAL    ;MOVE TO MAILBOX #  *******  47  *******
  (2)  002616  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002620  000000                            HALT                    ;PRIORITY NOT ZERO
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 724
 5311  002622  012706  000500                  5$:     MOV     #BUFF,SP
 5312  002626  012767  002644  175154           MOV     #RETG,RTRAP
 5313  002634  012767  000357  175150           MOV     #357,RTRAP+2    ;SET NEW "CC" AND PRIORITY
 5314  002642  000007                            TRAPA                   ;TRAP HERE
 5315  002644                                  RETG:
 5316  002644  100405                            BMI     1$
  (3)  002646  012737  000050  000402           MOV     #50,@#$FATAL    ;MOVE TO MAILBOX #  *******  50  *******
  (2)  002654  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002656  000000                            HALT                    ;N NOT SET
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 705
 5317  002660                                  1$:
  (1)  002660  001405                            BEQ     2$
  (3)  002662  012737  000051  000402           MOV     #51,@#$FATAL    ;MOVE TO MAILBOX #  *******  51  *******
  (2)  002670  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002672  000000                            HALT                    ;Z NOT SET
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 677
 5318  002674                                  2$:
  (1)  002674  102405                            BVS     3$
  (3)  002676  012737  000052  000402           MOV     #52,@#$FATAL    ;MOVE TO MAILBOX #  *******  52  *******
  (2)  002704  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002706  000000                            HALT                    ;V NOT SET
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 671
 5319  002710                                  3$:
  (1)  002710  103405                            BCS     4$
  (3)  002712  012737  000053  000402           MOV     #53,@#$FATAL    ;MOVE TO MAILBOX #  *******  53  *******
  (2)  002720  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002722  000000                            HALT                    ;C NOT SET
  (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                    ; AND REPLACE NEXT INST W/ 663
 5323  002724                                  4$:     MFPS    STATUS
```

```
  (1)  002724  106767                          .WORD   106700!..C
5327   002730  016706  010142                  MOV     STATUS,SP
5328   002734  042706  000017                  BIC     #17,SP
5329   002740  022706  000340                  CMP     #340,SP
5330   002744  001405                          BEQ     5$
  (3)  002746  012737  000054  000402          MOV     #54,@#$FATAL    ;MOVE TO MAILBOX #  *******  54  *******
  (2)  002754  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  002756  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 645
5331   002760  012767  000012  175022  5$:     MOV     #12,10
5332   002766  005067  175020                  CLR     12
5333                                 ;*************************************************************************
  (2)                                ;TEST 12        TEST  THAT A TRAP OCCURES FOR A "TRAP" INSTRUCTION
  (3)                                ;*************************************************************************
  (2)  002772  005237  000404        TST12:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  002776  022737  000012  000404          CMP     #12,@#$TESTN    ;SEQUENCE ERROR?
  (2)  003004  001006                          BNE     TST13-12        ;BR TO ERROR HALT ON SEQ ERROR
5334   003006  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
5335   003012  012767  003034  175014          MOV     #RETA1,RTRAP1   ;RETURN LOCATION
5336   003020  104400                          TRAP                    ;RESERVED INSTRUCTION, SHOULD TRAP
5337   003022  012737  000055  000402          MOV     #55,@#$FATAL    ;MOVE TO MAILBOX #  *******  55  *******
  (2)  003030  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  003032  000000                          HALT                    ;DID NOT TRAP,OR WRONG $TESN
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 764
5338   003034                        RETA1:
5339                                 ;*************************************************************************
  (2)                                ;TEST 13        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
  (3)                                ;*************************************************************************
  (2)  003034  005237  000404        TST13:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  003040  022737  000013  000404          CMP     #13,@#$TESTN    ;SEQUENCE ERROR?
  (2)  003046  001011                          BNE     TST14-12        ;BR TO ERROR HALT ON SEQ ERROR
5340   003050  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
5341   003054  012767  003064  174752          MOV     #RETB1,RTRAP1   ;RETURN POINTER
5342   003062  104400                          TRAP                    ;RESERVED INSTRUCTION
5343   003064  020627  000474        RETB1:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
5344   003070  001405                          BEQ     TST14
  (4)  003072  012737  000056  000402          MOV     #56,@#$FATAL    ;MOVE TO MAILBOX #  *******  56  *******
  (3)  003100  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  003102  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
  (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                  ; AND REPLACE NEXT INST W/ 761
5345                                 ;*************************************************************************
  (2)                                ;TEST 14        TEST  THAT PROPER P.C. IS SAVED
  (3)                                ;*************************************************************************
  (2)  003104  005237  000404        TST14:  INC     @#$TESTN        ;UPDATE TEST NUMBER
       003110  022737  000014  000404          CMP     #14,@#$TESTN    ;SEQUENCE ERROR?
       003116  001012                          BNE     TST15-12        ;BR TO ERROR HALT ON SEQ ERROR
       003120  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
       003124  012767  003134  174702          MOV     #RETC1,RTRAP1   ;RETURN FROM TRAP POINTER
       003132  104400                          TRAP                    ;TRAP ON THIS INSTRUCTION
       003134  022767  003134  175332  RETC1:  CMP     .,BUFF-4        ;CHECK INCREMENTED P.C.
       003142  001405                          BEQ     TST15
       003144  012737  000057  000402          MOV     #57,@#$FATAL    ;MOVE TO MAILBOX #  *******  57  *******
       003152  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
   (3)  003154  000000                          HALT                    ;INCORRECT P.C. OR WRONG $TESTN
   (3)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (3)                                                                  ; AND REPLACE NEXT INST W/ 760
 5351                                  ;*************************************************************************
   (3)                                 ;TEST 15        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
   (3)                                 ;*************************************************************************
   (3)  003156  005237  000404         TST15:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (3)  003162  022737  000015  000404         CMP     #15,@#$TESTN    ;SEQUENCE ERROR?
   (3)  003170  001043                         BNE     TST16-12        ;BR TO ERROR HALT ON SEQ ERROR
 5355  003172  012706  000500                  MOV     #BUFF,SP        ;SET UP
 5356  003176  012767  003220  174630          MOV     #RETD1,RTRAP1   ;SET UP
 5357  003204  005067  007666                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
 5358  003210                                  MTPS    STATUS
   (1)  003210  106467                         .WORD   106400!..C
 5362  003214  000257                          CCC
 5363  003216  104400                          TRAP                    ;TRAP
 5364  003220  026727  175252  000000  RETD1:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 5365  003226  001405                          BEQ     1$
   (2)  003230  012737  000060  000402         MOV     #60,@#$FATAL    ;MOVE TO MAILBOX #  *******  60  *******
   (2)  003236  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  003240  000000                          HALT                    ;INCORRECT STATUS
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 753
 5366  003242  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
 5367  003246  012767  003270  174560          MOV     #RETE1,RTRAP1   ;SET UP
 5368  003254  012767  000357  007614          MOV     #357,STATUS             ;SET PRIORITY
 5372  003262                                  MTPS    STATUS
   (1)  003262  106467                         .WORD   106400!..C
 5376  003266  104400                          TRAP                    ;SET CC
 5377  003270  026727  175202  000357  RETE1:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
 5378  003276  001405                          BEQ     TST16
   (4)  003300  012737  000061  000402         MOV     #61,@#$FATAL    ;MOVE TO MAILBOX #  *******  61  *******
   (3)  003306  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  003310  000000                          HALT                    ;INCORRECT STATUS ON STACK
   (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                  ; AND REPLACE NEXT INST W/ 727
 5                                     ;*************************************************************************
   (3)                                 ;TEST 16        TEST THAT "NEW" STATUS IS CORRECT
   (3)                                 ;*************************************************************************
   (2)  003312  005237  000404         TST16:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  003316  022737  000016  000404         CMP     #16,@#$TESTN    ;SEQUENCE ERROR?
   (2)  003324  001125                         BNE     TST17-12        ;BR TO ERROR HALT ON SEQ ERROR
 5380  003326  012706  000500                  MOV     #BUFF,SP
 5381  003332  012767  003346  174474          MOV     #RETF1,RTRAP1
 5382  003340  005067  174472                  CLR     RTRAP1+2        ;CLEAR FUTURE PRIORITY AND CC
 5383  003344  104400                          TRAP
 5384  003346                          RETF1:
 5385  003346  100005                          BPL     1$
   (3)  003350  012737  000062  000402         MOV     #62,@#$FATAL    ;MOVE TO MAILBOX #  *******  62  *******
   (2)  003356  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  003360  000000                          HALT                    ;C NOT CLEARED
   (4)                                                                  ; TO SCOPE REPLACE HALT W  240
   (4)                                                                  ; AND REPLACE NEXT INST W  761
 5386  003362                          1$:
   (3)  003362  001005                          BNE     2$
   (3)  003364  012737  000063  000402         MOV     #63,@#$FATAL    ;MOVE TO MAILBOX #  *******  63  *******
```

```
                003372  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003374  000000                  HALT                    ;Z NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 753
5387            003376                  2$:
                003376  102005                  BVC     3$
                003400  012737  000064  000402  MOV     #64,@#$FATAL    ;MOVE TO MAILBOX #  *******  64  *******
                003406  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003410  000000                  HALT                    ;V NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 745
5388            003412                  3$:
                003412  103005                  BCC     4$
                003414  012737  000065  000402  MOV     #65,@#$FATAL    ;MOVE TO MAILBOX #  *******  65  *******
                003422  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003424  000000                  HALT                    ;C NOT CLEARED
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 737
5392            003426                  4$:     MFPS    STATUS
                003426  106767                  .WORD   106700!..C
5396            003432  032767  000340  007436  BIT     #340,STATUS             ;TEST PRIORITY
5397            003440  001405                  BEQ     5$
                003442  012737  000066  000402  MOV     #66,@#$FATAL    ;MOVE TO MAILBOX #  *******  66  *******
                003450  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003452  000000                  HALT                    ;PRIORITY NOT ZERO
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 724
5398            003454  012706  000500          5$:     MOV     #BUFF,SP
5399            003460  012767  003476  174346          MOV     #RETG1,RTRAP1
5400            003466  012767  000357  174342          MOV     #357,RTRAP1+2   ;SET NEW "CC" AND PRIORITY
5401            003474  104400                  TRAP                    ;TRAP HERE
5402            003476                  RETG1:
5403            003476  100405                  BMI     1$
                003500  012737  000067  000402  MOV     #67,@#$FATAL    ;MOVE TO MAILBOX #  *******  67  *******
                003506  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003510  000000                  HALT                    ;N NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 705
5404            003512                  1$:
                003512  001405                  BEQ     2$
                003514  012737  000070  000402  MOV     #70,@#$FATAL    ;MOVE TO MAILBOX #  *******  70  *******
                003522  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003524  000000                  HALT                    ;Z NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 677
5405            003526                  2$:
                003526  102405                  BVS     3$
                003530  012737  000071  000402  MOV     #71,@#$FATAL    ;MOVE TO MAILBOX #  *******  71  *******
                003536  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                003540  000000                  HALT                    ;V NOT SET
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 671
5406            003542                  3$:
                003542  103405                  BCS     4$
                003544  012737  000072  000402  MOV     #72,@#$FATAL    ;MOVE TO MAILBOX #  *******  72  *******
                003552  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
   (2)  003554  000000                        HALT                    ;C NOT SET
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 663
  5410  003556                        4$:     MFPS    STATUS
   (1)  003556  106767                        .WORD   106700!..C
  5414  003562  016706  007310                MOV     STATUS,SP
  5415  003566  042706  000017                BIC     #17,SP
  5416  003572  022706  000340                CMP     #340,SP
  5417  003576  001405                        BEQ     TST17
   (4)  003600  012737  000073  000402        MOV     #73,@#$FATAL    ;MOVE TO MAILBOX #  *******  73  *******
   (3)  003606  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  003610  000000                        HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
   (5)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                 ; AND REPLACE NEXT INST W/ 545
  5418                              ;*****************************************************************************
   (2)                              ;TEST 17        TEST  THAT ALL COMBINATION OF "TRAP" WILL CAUSE A TRAP
   (3)                              ;*****************************************************************************
   (2)  003612  005237  000404      TST17:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  003616  022737  000017  000404      CMP     #17,@#$TESTN    ;SEQUENCE ERROR?
   (2)  003624  001011                      BNE     RB1AA           ;BR TO ERROR HALT ON SEQ ERROR
  5419  003626  012767  104400  000012      MOV     #TRAP,RB1       ;INITIALIZE BASE TRAP INSTRUCTION
  5420  003634  012767  003662  174172      MOV     #RA1,34         ;RETURN FROM TRAP TO RA1
  5421  003642  012706  000500      RC1:    MOV     #BUFF,SP        ;SET UP STACK POINTER
  5422  003646  104400              RB1:    TRAP                    ;TRAP INST WILL BE MODIFIED TO TRAP+377
  5423  003650                      RB1AA:
   (3)  003650  012737  000074  000402      MOV     #74,@#$FATAL    ;MOVE TO MAILBOX #  *******  74  *******
   (2)  003656  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  003660  000000                      HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TESTN
   (4)                                                              ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                              ; AND REPLACE NEXT INST W/ 761
  5424  003662  005267  177760      RA1:    INC     RB1
  5425  003666  022767  104777  177752      CMP     #104777,RB1     ;TRAP+377 TO UPPER LIMIT
  5426  003674  103362                      BHIS    RC1             ;HAVE WE TESTED ALL
  5427  003676  012767  000036  174130      MOV     #36,34
  5428  003704  005067  174126              CLR     36
  5429                              ;*****************************************************************************
   (2)                              ;TEST 20        TEST  THAT A TRAP OCCURES ON AN "IOT" INSTRUCTION
   (3)                              ;*****************************************************************************
   (2)  003710  005237  000404      TST20:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  003714  022737  000020  000404      CMP     #20,@#$TESTN    ;SEQUENCE ERROR?
   (2)  003722  001006                      BNE     TST21-12        ;BR TO ERROR HALT ON SEQ ERROR
  5430  003724  012706  000500              MOV     #BUFF,SP        ;STACK POINTER SETUP
  5431  003730  012767  003752  174062      MOV     #RETA2,RTRAP2   ;RETURN LOCATION
  5432  003736  000004                      IOT                     ;RESERVE INSTRUCTION, SHOULD TRAP
  5433  003740  012737  000075  000402      MOV     #75,@#$FATAL    ;MOVE TO MAILBOX #  *******  75  *******
   (2)  003746  005212                      INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  003750  000000                      HALT                    ;IOT DID NOT TRAP,OR WRONG $TESTN
   (4)                                                              ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                              ; AND REPLACE NEXT INST W/ 764
  5434  003752                      RETA2:
  5435                              ;*****************************************************************************
   (2)                              ;TEST 21        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
   (3)                              ;*****************************************************************************
   (2)  003752  005237  000404      TST21:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  003756  022737  000021  000404      CMP     #21,@#$TESTN    ;SEQUENCE ERROR?
   (2)  003764  001011                      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     #76,@#$FATAL    ;MOVE TO MAILBOX #  *******  76  *******
                                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                                HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 761
                                ;*****************************************************************************
                                ;TEST 22        TEST  THAT PROPER P.C. IS SAVED
                                ;*****************************************************************************
                                TST22:          INC     @#$TESTN        ;UPDATE TEST NUMBER
                                                CMP     #22,@#$TESTN    ;SEQUENCE ERROR?
                                                BNE     TST23-12        ;BR TO ERROR HALT ON SEQ ERROR
                                                MOV     #BUFF,SP        ;STACK POINTER SETUP
                                                MOV     #RETC2,RTRAP2   ;RETURN FROM TRAP POINTER
                                                IOT                     ;TRAP ON THIS INSTRUCTION
                                RETC2:          CMP     .,BUFF-4        ;CHECK FOR INCREMENTED P.C.
                                                BEQ     TST23
                                                MOV     #77,@#$FATAL    ;MOVE TO MAILBOX #  *******  77  *******
                                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                                HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 760
                                ;*****************************************************************************
                                ;TEST 23        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
                                ;*****************************************************************************
                                TST23:          INC     @#$TESTN        ;UPDATE TEST NUMBER
                                                CMP     #23,@#$TESTN    ;SEQUENCE ERROR?
                                                BNE     TST24-12        ;BR TO ERROR HALT ON SEQ ERROR
                                                MOV     #BUFF,SP        ;SET UP
                                                MOV     #RETD2,RTRAP2   ;SET UP
                                                CLR     STATUS          ;CLEAR STATUS AND PRIORITY
                                                MTPS    STATUS
                                                .WORD   106400!..C
                                                CCC
                                                IOT                     ;TRAP
                                RETD2:          CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
                                                BEQ     1$
                                                MOV     #100,@#$FATAL   ;MOVE TO MAILBOX #  *******  100  ****-**
                                                INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                                                HALT                    ;INCORRECT STATUS
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 753
                                1$:             MOV     #BUFF,SP        ;SET UP
                                                MOV     #RETE2,RTRAP2   ;SET UP
                                                MOV     #357,STATUS             ;SET PRIORITY
                                                MTPS    STATUS
                                                .WORD   106400!..C
                                                SCC                     ;SET CC
                                                IOT                     ;TRAP
                                RETE2:          CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
                                                BEQ     TST24
                                                MOV     #101,@#$FATAL   ;MOVE TO MAILBOX #  *******  101  *******
```

F02


```
(3)  004226  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(3)  004230  000000                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
(5)                                                                ; TO SCOPE REPLACE HALT W/ 240
(5)                                                                ; AND REPLACE NEXT INST W/ 726
5476                                ;*******************************************************************************
(2)                                 ;TEST 24        TEST  THAT "NEW" STATUS IS CORRECT
(3)                                 ;*******************************************************************************
(2)  004232  005237  000404         TST24:  INC     @#$TESTN        ;UPDATE TEST NUMBER
(2)  004236  022737  000024  000404         CMP     #24,@#$TESTN    ;SEQUENCE ERROR?
(2)  004244  001125                         BNE     STP             ;BR TO ERROR HALT ON SEQ ERROR
5477  004246  012706  000500               MOV     #BUFF,SP
5478  004252  012767  004266  173540       MOV     #RETF2,RTRAP2
5479  004260  005067  173536               CLR     RTRAP2+2        ;CLEAR FUTURE PRIORITY AND CC
5480  004264  000004                       IOT
5481  004266                      RETF2:
5482  004266  100005                       BPL     1$
(3)  004270  012737  000102  000402         MOV     #102,@#$FATAL   ;MOVE TO MAILBOX #  *******  102  *******
(2)  004276  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  004300  000000                         HALT                    ;C NOT CLEARED
(4)                                                                ; TO SCOPE REPLACE HALT W/ 240
(4)                                                                ; AND REPLACE NEXT INST W/ 761
5483  004302                      1$:
(1)  004302  001005                         BNE     2$
(3)  004304  012737  000103  000402         MOV     #103,@#$FATAL   ;MOVE TO MAILBOX #  *******  103  *******
(2)  004312  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  004314  000000                         HALT                    ;Z NOT CLEARED
(4)                                                                ; TO SCOPE REPLACE HALT W/ 240
(4)                                                                ; AND REPLACE NEXT INST W/ 753
5484  004316                      2$:
(1)  004316  102005                         BVC     3$
(3)  004320  012737  000104  000402         MOV     #104,@#$FATAL   ;MOVE TO MAILBOX #  *******  104  *******
(2)  004326  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  004330  000000                         HALT                    ;V NOT CLEARED
(4)                                                                ; TO SCOPE REPLACE HALT W/ 240
(4)                                                                ; AND REPLACE NEXT INST W/ 745
5485  004332                      3$:
(1)  004332  103005                         BCC     4$
(3)  004334  012737  000105  000402         MOV     #105,@#$FATAL   ;MOVE TO MAILBOX #  *******  105  *******
(2)  004342  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  004344  000000                         HALT                    ;C NOT CLEARED
(4)                                                                ; TO SCOPE REPLACE HALT W/ 240
(4)                                                                ; AND REPLACE NEXT INST W/ 737
5489  004346                      4$:    MFPS    STATUS
(1)  004346  106767                        .WORD   106700!..C
5493  004352  032767  000340  006516       BIT     #340,STATUS             ;TEST PRIORITY
5494  004360  001405                       BEQ     5$
(3)  004362  012737  000106  000402         MOV     #106,@#$FATAL   ;MOVE TO MAILBOX #  *******  106  *******
(2)  004370  005212                         INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  004372  000000                         HALT                    ;PRIORITY NOT ZERO
(4)                                                                ; TO SCOPE REPLACE HALT W/ 240
(4)                                                                ; AND REPLACE NEXT INST W/ 724
5495  004374  012706  000500         5$:    MOV     #BUFF,SP
5496  004400  012767  004416  173412       MOV     #RETG2,RTRAP2
5497  004406  012767  000357  173406       MOV     #357,RTRAP2+2   ;SET NEW "CC" AND PRIORITY
5498  004414  000004                       IOT                     ;TRAP HERE
5499  004416                      RETG2:
```

```
 5500  004416  100405                        BMI     1$
  (3)  004420  012737  000107  000402        MOV     #107,@#$FATAL   ;MOVE TO MAILBOX #  *******  107  *******
  (2)  004426  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004430  000000                        HALT                    ;N NOT SET
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 705
 5501  004432                        1$:
  (1)  004432  001405                        BEQ     2$
  (3)  004434  012737  000110  000402        MOV     #110,@#$FATAL   ;MOVE TO MAILBOX #  *******  110  *******
  (2)  004442  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004444  000000                        HALT                    ;Z NOT SET
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 677
 5502  004446                        2$:
  (1)  004446  102405                        BVS     3$
  (3)  004450  012737  000111  000402        MOV     #111,@#$FATAL   ;MOVE TO MAILBOX #  *******  111  *******
  (2)  004456  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004460  000000                        HALT                    ;V NOT SET
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 671
 5503  004462                        3$:
  (1)  004462  103405                        BCS     4$
  (3)  004464  012737  000112  000402        MOV     #112,@#$FATAL   ;MOVE TO MAILBOX #  *******  112  *******
  (2)  004472  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004474  000000                        HALT                    ;C NOT SET
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 663
 5507  004476                        4$:     MFPS    STATUS
  (1)  004476  106767                        .WORD   106700!..C
 5511  004502  016706  006370                MOV     STATUS,SP
 5512  004506  042706  000017                BIC     #17,SP
 5513  004512  022706  000340                CMP     #340,SP
 5514  004516  001405                        BEQ     STPA
  (1)  004520                        STP:
  (3)  004520  012737  000113  000402        MOV     #113,@#$FATAL   ;MOVE TO MAILBOX #  *******  113  *******
  (2)  004526  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004530  000000                        HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 645
 5515  004532  012767  000022  173260  STPA:  MOV     #22,20
 5516  004540  005067  173256                CLR     22
 5517                                ;*************************************************************************
  (2)                                ;TEST 25        TEST  THAT A TRAP OCCURS ON AN EMT RESTRICTED INSTRUCTION
  (3)                                ;*************************************************************************
  (2)  004544  005237  000404        TST25:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  004550  022737  000025  000404        CMP     #25,@#$TESTN    ;SEQUENCE ERROR?
  (2)  004556  001006                        BNE     TST26-12        ;BR TO ERROR HALT ON SEQ ERROR
 5518  004560  012706  000500                MOV     #BUFF,SP        ;STACK POINTER SETUP
 5519  004564  012767  004606  173236        MOV     #RETA3,RTRAP3   ;RETURN LOCATION
 5520  004572  104000                        EMT                     ;RESERVE INSTRUCTIOM, SHOULD TRAP
 5521  004574  012737  000114  000402        MOV     #114,@#$FATAL   ;MOVE TO MAILBOX #  *******  114  *******
  (2)  004602  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  004604  000000                        HALT                    ;EMT DID NOT TRAP,OR WRONG $TESTN
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 764
 5522  004606                        RETA3:
```

```
5523                                    ;*****************************************************************************
 (2)                                    ;TEST 26        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
 (3)                                    ;*****************************************************************************
 (2) 004606  005237  000404             TST26:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 (2) 004612  022737  000026  000404             CMP     #26,@#$TESTN    ;SEQUENCE ERROR?
 (2) 004620  001011                             BNE     TST27-12        ;BR TO ERROR HALT ON SEQ ERROR
5524 004622  012706  000500                     MOV     #BUFF,SP        ;STACK POINTER SETUP
5525 004626  012767  004636  173174             MOV     #RETB3,RTRAP3   ;RETURN POINTER
5526 004634  104000                             EMT                     ;RESERVED INSTRUCTION
5527 004636  020627  000474             RETB3:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
5528 004642  001405                             BEQ     TST27
 (4) 004644  012737  000115  000402             MOV     #115,@#$FATAL   ;MOVE TO MAILBOX #  *******  115  *******
 (3) 004652  005212                             INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 (3) 004654  000000                             HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
 (5)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (5)                                                                    ; AND REPLACE NEXT INST W/ 761
5529                                    ;*****************************************************************************
 (2)                                    ;TEST 27        TEST  THAT PROPER P.C. IS SAVED
 (3)                                    ;*****************************************************************************
 (2) 004656  005237  000404             TST27:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 (2) 004662  022737  000027  000404             CMP     #27,@#$TESTN    ;SEQUENCE ERROR?
 (2) 004670  001012                             BNE     TST30-12        ;BR TO ERROR HALT ON SEQ ERROR
5530 004672  012706  000500                     MOV     #BUFF,SP        ;STACK POINTER SETUP
5531 004676  012767  004706  173124             MOV     #RETC3,RTRAP3   ;RTURN FROM TRAP POINTER
5532 004704  104000                             EMT                     ;TRAP ON THIS INSTRICTION
5533 004706  022767  004706  173560  RETC3:    CMP     .,BUFF-4        ;CHECK FOR INCREMENTED P.C.
5534 004714  001405                             BEQ     TST30
 (4) 004716  012737  000116  000402             MOV     #116,@#$FATAL   ;MOVE TO MAILBOX #  *******  116  *******
 (3) 004724  005212                             INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 (3) 004726  000000                             HALT                    ;INCORRECT P.C. OR WRONG $TESTN
 (5)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (5)                                                                    ; AND REPLACE NEXT INST W/ 760
5535                                    ;*****************************************************************************
 (2)                                    ;TEST 30        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
 (3)                                    ;*****************************************************************************
 (2) 004730  005237  000404             TST30:  INC     @#$TESTN        ;UPDATE TEST NUMBER
 (2) 004734  022737  000030  000404             CMP     #30,@#$TESTN    ;SEQUENCE ERROR?
 (2) 004742  001044                             BNE     TST31-12        ;BR TO ERROR HALT ON SEQ ERROR
5536 004744  012706  000500                     MOV     #BUFF,SP        ;SET UP
5537 004750  012767  004772  173052             MOV     #RETD3,RTRAP3   ;SET UP
5538 004756  005067  006114                     CLR     STATUS          ;CLEAR STATUS AND PRIORITY
5542 004762                                     MTPS    STATUS
 (1) 004762  106467                             .WORD   106400!..C
5546 004766  000257                             CCC
5547 004770  104000                             EMT                     ;TRAP
5548 004772  026727  173500  000000  RETD3:    CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
5549 005000  001405                             BEQ     1$
 (3) 005002  012737  000117  000402             MOV     #117,@#$FATAL   ;MOVE TO MAILBOX #  *******  117  *******
 (2) 005010  005212                             INC     (R2)            ;SET MSGTYP TO FATAL ERROR
 (2) 005012  000000                             HALT                    ;INCORRECT STATUS
 (4)                                                                    ; TO SCOPE REPLACE HALT W/ 240
 (4)                                                                    ; AND REPLACE NEXT INST W/ 753
5550 005014  012706  000500             1$:     MOV     #BUFF,SP        ;SET UP
5551 005020  012767  005044  173002             MOV     #RETE3,RTRAP3   ;SET UP
5552 005026  012767  000357  006042             MOV     #357,STATUS             ;SET PRIORITY
5556 005034                                     MTPS    STATUS
```

```
   (1)  005034  106467                          .WORD   106400!..C
5560    005040  000277                          SCC                     ;SET CC
5561    005042  104000                          EMT                     ;TRAP
5562    005044  026727  173426  000357  RETE3:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
5563    005052  001405                          BEQ     TST31
   (4)  005054  012737  000120  000402          MOV     #120,@#$FATAL   ;MOVE TO MAILBOX #  *******  120  *******
   (3)  005062  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  005064  000000                          HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
   (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                  ; AND REPLACE NEXT INST W/ 726
5564                                    ;*******************************************************************************
   (2)                                  ;TEST 31        TEST  THAT "NEW" STATUS IS CORRECT
   (3)                                  ;*******************************************************************************
   (2)  005066  005237  000404  TST31:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  005072  022737  000031  000404  CMP     #31,@#$TESTN    ;SEQUENCE ERROR?
   (2)  005100  001125                  BNE     TST32-12        ;BR TO ERROR HALT ON SEQ ERROR
5565    005102  012706  000500          MOV     #BUFF,SP
5566    005106  012767  005122  172714  MOV     #RETF3,RTRAP3
5567    005114  005067  172712          CLR     RTRAP3+2        ;CLEAR FUTURE PRIORITY AND CC
5568    005120  104000                  EMT
5569    005122                  RETF3:                          ;TEST FOR "C" CLEARED
5570    005122  100005                  BPL     1$
   (3)  005124  012737  000121  000402          MOV     #121,@#$FATAL   ;MOVE TO MAILBOX #  *******  121  *******
   (2)  005132  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005134  000000                          HALT                    ;C NOT CLEARED
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 761
5571    005136                  1$:
   (1)  005136  001005                  BNE     2$
   (3)  005140  012737  000122  000402          MOV     #122,@#$FATAL   ;MOVE TO MAILBOX #  *******  122  *******
   (2)  005146  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005150  000000                          HALT                    ;Z NOT CLEARED
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 753
5572    005152                  2$:
   (1)  005152  102005                  BVC     3$
   (3)  005154  012737  000123  000402          MOV     #123,@#$FATAL   ;MOVE TO MAILBOX #  *******  123  *******
   (2)  005162  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005164  000000                          HALT                    ;V NOT CLEARED
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 745
5573    005166                  3$:
   (1)  005166  103005                  BCC     4$
   (3)  005170  012737  000124  000402          MOV     #124,@#$FATAL   ;MOVE TO MAILBOX #  *******  124  *******
   (2)  005176  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005200  000000                          HALT                    ;C NOT CLEARED
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 737
5577    005202                  4$:     MFPS    STATUS
   (1)  005202  106767                  .WORD   106700!..C
5581    005206  032767  000340  005662  BIT     #340,STATUS             ;TEST PRIORITY
5582    005214  001405                  BEQ     5$
   (3)  005216  012737  000125  000402          MOV     #125,@#$FATAL   ;MOVE TO MAILBOX #  *******  125  *******
   (2)  005224  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005226  000000                          HALT                    ;PRIORITY NOT ZERO
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
```

```
  (4)                                                                   ; AND REPLACE NEXT INST W/ 724
5583  005230  012706  000500          5$:     MOV     #BUFF,SP
5584  005234  012767  005252  172566          MOV     #RETG3,RTRAP3
5585  005242  012767  000357  172562          MOV     #357,RTRAP3+2   ;SET NEW "CC" AND PRIORITY
5586  005250  104000                          EMT                     ;TRAP HERE
5587  005252                          RETG3:
5588  005252  100405                          BMI     1$
  (3) 005254  012737  000126  000402          MOV     #126,@#$FATAL   ;MOVE TO MAILBOX #  *******  126  *******
  (2) 005262  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2) 005264  000000                          HALT                    ;N NOT SET
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 705
5589  005266                          1$:
  (1) 005266  001405                          BEQ     2$
  (3) 005270  012737  000127  000402          MOV     #127,@#$FATAL   ;MOVE TO MAILBOX #  *******  127  *******
  (2) 005276  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2) 005300  000000                          HALT                    ;Z NOT SET
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 677
5590  005302                          2$:
  (1) 005302  102405                          BVS     3$
  (3) 005304  012737  000130  000402          MOV     #130,@#$FATAL   ;MOVE TO MAILBOX #  *******  130  *******
  (2) 005312  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2) 005314  000000                          HALT                    ;V NOT SET
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 671
5591  005316                          3$:
  (1) 005316  103405                          BCS     4$
  (3) 005320  012737  000131  000402          MOV     #131,@#$FATAL   ;MOVE TO MAILBOX #  *******  131  *******
  (2) 005326  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2) 005330  000000                          HALT                    ;C NOT SET
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 663
5595  005332                          4$:     MFPS    STATUS
  (1) 005332  106767                          .WORD   106700!..C
5599  005336  016706  005534                  MOV     STATUS,SP
5600  005342  042706  000017                  BIC     #17,SP
5601  005346  022706  000340                  CMP     #340,SP
5602  005352  001405                          BEQ     TST32
  (4) 005354  012737  000132  000402          MOV     #132,@#$FATAL   ;MOVE TO MAILBOX #  *******  132  *******
  (3) 005362  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3) 005364  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
  (5)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                   ; AND REPLACE NEXT INST W/ 645
5603                            ;*****************************************************************************
  (2)                           ;TEST 32        TEST  THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
  (3)                           ;*****************************************************************************
  (2) 005366  005237  000404    TST32:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2) 005372  022737  000032  000404      CMP     #32,@#$TESTN    ;SEQUENCE ERROR?
  (2) 005400  001011                      BNE     RBBB            ;BR TO ERROR HALT ON SEQ ERROR
5604  005402  012767  104000  000012      MOV     #EMT,RB         ;INITIALIZE BASE EMT INSTRUCTION
5605  005410  012767  005436  172412      MOV     #RA,30          ;RETURN FROM TRAP TO RA
5606  005416  012706  000500        RC:     MOV     #BUFF,SP        ;SET UP STACK POINTER
5607  005422  104000                RB:     EMT                     ;TRAP INST. WILL BE MODIFIED TO EMT+377
5608  005424                        RBBB:
  (3) 005424  012737  000133  000402          MOV     #133,@#$FATAL   ;MOVE TO MAILBOX #  *******  133  *******
```

```
   (2)  005432  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  005434  000000                          HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TESTN
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 761
  5609  005436  005267  177760          RA:     INC     RB
  5610  005442  022767  104377  177752          CMP     #104377,RB      ;EMT+377 TO EMT?
  5611  005450  103362                          BHIS    RC              ;HAVE WE TESTED ALL
  5612  005452  012767  000032  172350          MOV     #32,30
  5613  005460  005067  172346                  CLR     32              ;HALT
```

```
 5615                                   ;*****************************************************************************
  (2)                                   ;TEST 33        TEST  THAT A TRAP OCCURES ON AN "BPT" INSTRUCTION
  (3)                                   ;*****************************************************************************
  (2) 005464  005237  000404            TST33:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2) 005470  022737  000033  000404            CMP     #33,@#$TESTN    ;SEQUENCE ERROR?
  (2) 005476  001006                            BNE     TST34-12        ;BR TO ERROR HALT ON SEQ ERROR
 5616 005500  012706  000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
 5617 005504  012767  005526  172302            MOV     #RETA4,RTRAP4   ;RETURN LOCATION
 5618 005512  000003                            TRT                     ;RESERVED INSTRUCTION, SHOULD TRAP
 5619 005514  012737  000134  000402            MOV     #134,@#$FATAL   ;MOVE TO MAILBOX #  *******  134  *******
  (2) 005522  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2) 005524  000000                            HALT                    ;DID NOT TRAP,OR WRONG $TESTN
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 764
 5620 005526                            RETA4:
 5621                                   ;*****************************************************************************
  (2)                                   ;TEST 34        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
  (3)                                   ;*****************************************************************************
  (2) 005526  005237  000404            TST34:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2) 005532  022737  000034  000404            CMP     #34,@#$TESTN    ;SEQUENCE ERROR?
  (2) 005540  001011                            BNE     TST35-12        ;BR TO ERROR HALT ON SEQ ERROR
 5622 005542  012706  000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
 5623 005546  012767  005556  172240            MOV     #RETB4,RTRAP4   ;RETURN POINTER
 5624 005554  000003                            TRT                     ;RESERVED INSTRUCTION
 5625 005556  020627  000474            RETB4:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
 5626 005562  001405                            BEQ     TST35
  (4) 005564  012737  000135  000402            MOV     #135,@#$FATAL   ;MOVE TO MAILBOX #  *******  135  *******
  (3) 005572  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3) 005574  000000                            HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
  (5)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                   ; AND REPLACE NEXT INST W/ 761
 5627                                   ;*****************************************************************************
  (2)                                   ;TEST 35        TEST  THAT PROPER P.C. IS SAVED
  (3)                                   ;*****************************************************************************
  (2) 005576  005237  000404            TST35:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2) 005602  022737  000035  000404            CMP     #35,@#$TESTN    ;SEQUENCE ERROR?
  (2) 005610  001012                            BNE     TST36-12        ;BR TO ERROR HALT ON SEQ ERROR
 5628 005612  012706  000500                    MOV     #BUFF,SP        ;STACK POINTER SETUP
 5629 005616  012767  005626  172170            MOV     #RETC4,RTRAP4   ;RETURN FROM TRAP POINTER
 5630 005624  000003                            TRT                     ;TRAP ON THIS INSTRUCTION
 5631 005626  022767  005626  172640  RETC4:    CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
 5632 005634  001405                            BEQ     TST36
  (4) 005636  012737  000136  000402            MOV     #136,@#$FATAL   ;MOVE TO MAILBOX #  *******  136  *******
  (3) 005644  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3) 005646  000000                            HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
  (5)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                   ; AND REPLACE NEXT INST W/ 760
 5633                                   ;*****************************************************************************
  (2)                                   ;TEST 36        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
  (3)                                   ;*****************************************************************************
  (2) 005650  005237  000404            TST36:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2) 005654  022737  000036  000404            CMP     #36,@#$TESTN    ;SEQUENCE ERROR?
  (2) 005662  001044                            BNE     TST37-12        ;BR TO ERROR HALT ON SEQ ERROR
 5634 005664  012706  000500                    MOV     #BUFF,SP        ;SET UP
 5635 005670  012767  005712  172116            MOV     #RETD4,RTRAP4   ;SET UP
 5636 005676  005067  005174                    CLR     STATUS          ;CLEAR STATUS AND PRIORITY
```

M02


```
 5640  005702                                  MFPS    STATUS
  (1)  005702  106467                          .WORD   106400!..C
 5644  005706  000257                          CCC
 5645  005710  000003                          TRT                             ;TRAP
 5646  005712  026727  172560  000000  RETD4:  CMP     BUFF-2,#0               ;TEST THAT OLD STATUS WENT TO STACK
 5647  005720  001405                          BEQ     1$
  (3)  005722  012737  000137  000402          MOV     #137,@#$FATAL           ;MOVE TO MAILBOX #  *******  137  *******
  (2)  005730  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
  (2)  005732  000000                          HALT                            ;INCORRECT STATUS
  (4)                                                                          ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                          ; AND REPLACE NEXT INST W/ 753
 5648  005734  012706  000500          1$:     MOV     #BUFF,SP                ;SET UP
 5649  005740  012767  005764  172046          MOV     #RETE4,RTRAP4           ;SET UP
 5650  005746  012767  000357  005122          MOV     #357,STATUS                     ;SET PRIORITY
 5654  005754                                  MTPS    STATUS
  (1)  005754  106467                          .WORD   106400!..C
 5658  005760  000277                          SCC                             ;SET-SET CC
 5659  005762  000003                          TRT                             ;TRAP
 5660  005764  026727  172506  000357  RETE4:  CMP     BUFF-2,#357             ;COMPARES STATUS ON STACK
 5661  005772  001405                          BEQ     TST37
  (4)  005774  012737  000140  000402          MOV     #140,@#$FATAL           ;MOVE TO MAILBOX #  *******  140  *******
  (3)  006002  005212                          INC     (R2)                    ;SET MSGTYP TO FATAL ERROR
  (3)  006004  000000                          HALT                            ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
  (5)                                                                          ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                          ; AND REPLACE NEXT INST W/ 726
 5662                             ;*************************************************************************
  (2)                             ;TEST 37        TEST  THAT "NEW" STATUS IS CORRECT
  (3)                             ;*************************************************************************
  (2)  006006  005237  000404     TST37:  INC     @#$TESTN                ;UPDATE TEST NUMBER
  (2)  006012  022737  000037  000404     CMP     #37,@#$TESTN            ;SEQUENCE ERROR?
  (2)  006020  001132                     BNE     TST40-12                ;BR TO ERROR HALT ON SEQ ERROR
 5663  006022  012706  000500              MOV     #BUFF,SP
 5664  006026  012767  006042  171760      MOV     #RETF4,RTRAP4
 5665  006034  005067  171756              CLR     RTRAP4+2                ;CLEAR FUTURE PRIORITY AND CC
```

```
 5668  006040  000003                          TRT
 5669  006042                          RETF4:
 5670  006042  100005                          BPL     1$
  (3)  006044  012737  000141  000402          MOV     #141,@#$FATAL   ;MOVE TO MAILBOX #  *******  141  *******
  (2)  006052  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006054  000000                          HALT                    ;C NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 761
 5671  006056                          1$:
  (1)  006056  001005                          BNE     2$
  (3)  006060  012737  000142  000402          MOV     #142,@#$FATAL   ;MOVE TO MAILBOX #  *******  142  *******
  (2)  006066  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006070  000000                          HALT                    ;Z NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 753
 5672  006072                          2$:
  (1)  006072  102005                          BVC     3$
  (3)  006074  012737  000143  000402          MOV     #143,@#$FATAL   ;MOVE TO MAILBOX #  *******  143  *******
  (2)  006102  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006104  000000                          HALT                    ;V NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 745
 5673  006106                          3$:
  (1)  006106  103005                          BCC     4$
  (3)  006110  012737  000144  000402          MOV     #144,@#$FATAL   ;MOVE TO MAILBOX #  *******  144  *******
  (2)  006116  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006120  000000                          HALT                    ;C NOT CLEARED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 737
 5677  006122                          4$:     MFPS    STATUS
  (1)  006122  106767                          .WORD   106700!..C
 5681  006126  032767  000340  004742          BIT     #340,STATUS             ;TEST PRIORITY
 5682  006134  001405                          BEQ     5$
  (3)  006136  012737  000145  000402          MOV     #145,@#$FATAL   ;MOVE TO MAILBOX #  *******  145  *******
  (2)  006144  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006146  000000                          HALT                    ;PRIORITY NOT ZERO
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 724
 5683  006150  012706  000500          5$:     MOV     #BUFF,SP
 5684  006154  012767  006172  171632          MOV     #RETG4,RTRAP4
 5685  006162  012767  000357  171626          MOV     #357,RTRAP4+2   ;SET NEW "CC" AND PRIORITY
 5686  006170  000003                          TRT                     ;TRAP HERE
 5687  006172                          RETG4:
 5688  006172  100405                          BMI     1$
  (3)  006174  012737  000146  000402          MOV     #146,@#$FATAL   ;MOVE TO MAILBOX #  *******  146  *******
  (2)  006202  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006204  000000                          HALT                    ;N NOT SET
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 705
 5689  006206                          1$:
  (1)  006206  001405                          BEQ     2$
  (3)  006210  012737  000147  000402          MOV     #147,@#$FATAL   ;MOVE TO MAILBOX #  *******  147  *******
  (2)  006216  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  006220  000000                          HALT                    ;Z NOT SET
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 677
```

```
                                        2$:
006222                                          BVS     3$
006232  102405                                  MOV     #150,@#$FATAL   ;MOVE TO MAILBOX #  *******  150  *******
006224  012737  000150  000402                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006232  005212                                  HALT                    ;V NOT SET
006234  000000                                  ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 671
                                        3$:
006236                                          BCS     4$
006236  103405                                  MOV     #151,@#$FATAL   ;MOVE TO MAILBOX #  *******  151  *******
006240  012737  000151  000402                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006246  005212                                  HALT                    ;C NOT SET
006250  000000                                  ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 663
006252                                  4$:     MFPS    STATUS
006252  106767                                  .WORD   106700!..C
006256  016706  004614                          MOV     STATUS,SP
006262  042706  000017                          BIC     #17,SP
006266  022706  000340                          CMP     #340,SP
006272  001405                                  BEQ     5$
006274  012737  000152  000402                  MOV     #152,@#$FATAL   ;MOVE TO MAILBOX #  *******  152  *******
006302  005212                                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006304  000000                                  HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
                                                ; TO SCOPE REPLACE HALT W/ 240
                                                ; AND REPLACE NEXT INST W/ 645
006306  012767  000016  171500          5$:     MOV     #16,14
006314  005067  171476                          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
                                        ;*****************************************************************************
006320  005237  000404          TST40:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006324  022737  000040  000404          CMP     #40,@#$TESTN    ;SEQUENCE ERROR?
006332  001006                          BNE     TST41-12        ;BR TO ERROR HALT ON SEQ ERROR
006334  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
006340  012767  006362  171436          MOV     #RETA5,RTRAP5   ;RETURN LOCATION
006346  000100                          JMP     %0              ;ILLEGAL INSTRUCTION, SHOULD TRAP
006350  012737  000153  000402          MOV     #153,@#$FATAL   ;MOVE TO MAILBOX #  *******  153  *******
006356  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
006360  000000                          HALT                    ;DID NOT TRAP,OR WRONG $TESTN
                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                ; AND REPLACE NEXT INST W/ 764
006362                          RETA5:
                                        ;*****************************************************************************
                                        ;TEST 41        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
                                        ;*****************************************************************************
006362  005237  000404          TST41:  INC     @#$TESTN        ;UPDATE TEST NUMBER
006366  022737  000041  000404          CMP     #41,@#$TESTN    ;SEQUENCE ERROR?
006374  001011                          BNE     TST42-12        ;BR TO ERROR HALT ON SEQ ERROR
006376  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
```

```
                006402  012767  000412  171374          MOV     #RETB5,RTRAPS   ;RETURN POINTER
                006410  000100                          JMP     %0              ;RESERVED INSTRUCTION
                006412  020627  000474          RETB5:  CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
                006416  001405                          BEQ     TST42
                006420  012737  000154  000402          MOV     #154,@#$FATAL   ;MOVE TO MAILBOX #  *******  154  *******
                006426  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                006430  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 761
                                        ;***************************************************************************
                                        ;TEST 42        TEST  THAT PROPER P.C. IS SAVED
                                        ;***************************************************************************
                006432  005237  000404  TST42:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                006436  022737  000042  000404          CMP     #42,@#$TESTN    ;SEQUENCE ERROR?
                006444  001012                          BNE     TST43-12        ;BR TO ERROR HALT ON SEQ ERROR
                006446  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
                006452  012767  006462  171324          MOV     #RETC5,RTRAPS   ;RETURN FROM TRAP POINTER
                006460  000100                          JMP     %0              ;TRAP ON THIS INSTRUCTION
                006462  022767  006462  172004  RETC5:  CMP     #.,BUFF-4       ;CHECK FOR INCREMENTED P.C.
                006470  001405                          BEQ     TST43
                006472  012737  000155  000402          MOV     #155,@#$FATAL   ;MOVE TO MAILBOX #  *******  155  *******
                006500  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                006502  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 760
                                        ;***************************************************************************
                                        ;TEST 43        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
                                        ;***************************************************************************
                006504  005237  000404  TST43:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                006510  022737  000043  000404          CMP     #43,@#$TESTN    ;SEQUENCE ERROR?
                006516  001044                          BNE     TST44-12        ;BR TO ERROR HALT ON SEQ ERROR
                006520  012706  000500                  MOV     #BUFF,SP        ;SET UP
                006524  012767  006546  171252          MOV     #RETD5,RTRAPS   ;SET UP
                006532  005067  004340                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
                006536                                  MTPS    STATUS
                006536  106467                          .WORD   106400!..C
                006542  000257                          CCC
                006544  000100                          JMP     %0              ;TRAP
                006546  026727  171724  000000  RETD5:  CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
                006554  001405                          BEQ     1$
                006556  012737  000156  000402          MOV     #156,@#$FATAL   ;MOVE TO MAILBOX #  *******  156  *******
                006564  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                006566  000000                          HALT                    ;INCORRECT STATUS
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 753
                006570  012706  000500  1$:     MOV     #BUFF,SP        ;SET UP
                006574  012767  006620  171202          MOV     #RETE5,RTRAPS   ;SET UP
                006602  012767  000357  004266          MOV     #357,STATUS             ;SET PRIORITY
                006610                                  MTPS    STATUS
                006610  106467                          .WORD   106400!..C
                006614  000277                          SCC                     ;SET CC
                006616  000100                          JMP     %0              ;TRAP
                006620  026727  171652  000357  RETE5:  CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
                006626  001405                          BEQ     TST44
                006630  012737  000157  000402          MOV     #157,@#$FATAL   ;MOVE TO MAILBOX #  *******  157  *******
                006636  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
(3)  006640  000000                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
(5)                                                                 ; TO SCOPE REPLACE HALT W/ 240
(5)                                                                 ; AND REPLACE NEXT INST W/ 726
5759                            ;*******************************************************************************
(2)                             ;TEST 44        TEST  THAT "NEW" STATUS IS CORRECT
(3)                             ;*******************************************************************************
(2)  006642  005237  000404     TST44:  INC     @#$TESTN        ;UPDATE TEST NUMBER
(2)  006646  022737  000044  000404     CMP     #44,@#$TESTN    ;SEQUENCE ERROR?
(2)  006654  001123                     BNE     TST45-12        ;BR TO ERROR HALT ON SEQ ERROR
5760 006656  012706  000500             MOV     #BUFF,SP
5761 006662  012767  006676  171114     MOV     #RETF5,RTRAP5
5762 006670  005067  171112             CLR     RTRAP5+2        ;CLEAR FUTURE PRIORITY AND CC
5763 006674  000100                     JMP     %0
5764 006676                     RETF5:
5765 006676  100005                     BPL     1$
(3)  006700  012737  000160  000402     MOV     #160,@#$FATAL   ;MOVE TO MAILBOX #  *******  160  *******
(2)  006706  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  006710  000000                     HALT                    ;C NOT CLEARED
(4)                                                             ; TO SCOPE REPLACE HALT W/ 240
(4)                                                             ; AND REPLACE NEXT INST W/ 761
5766 006712                     1$:
(1)  006712  001005                     BNE     2$
(3)  006714  012737  000161  000402     MOV     #161,@#$FATAL   ;MOVE TO MAILBOX #  *******  161  *******
(2)  006722  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  006724  000000                     HALT                    ;Z NOT CLEARED
(4)                                                             ; TO SCOPE REPLACE HALT W/ 240
(4)                                                             ; AND REPLACE NEXT INST W/ 753
5767 006726                     2$:
(1)  006726  102005                     BVC     3$
(3)  006730  012737  000162  000402     MOV     #162,@#$FATAL   ;MOVE TO MAILBOX #  *******  162  *******
(2)  006736  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  006740  000000                     HALT                    ;V NOT CLEARED
(4)                                                             ; TO SCOPE REPLACE HALT W/ 240
(4)                                                             ; AND REPLACE NEXT INST W/ 745
5768 006742                     3$:
(1)  006742  103005                     BCC     4$
(3)  006744  012737  000163  000402     MOV     #163,@#$FATAL   ;MOVE TO MAILBOX #  *******  163  *******
(2)  006752  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  006754  000000                     HALT                    ;C NOT CLEARED
(4)                                                             ; TO SCOPE REPLACE HALT W/ 240
(4)                                                             ; AND REPLACE NEXT INST W/ 737
5772 006756                     4$:     MFPS    STATUS
(1)  006756  106767                     .WORD   106700!..C
5776 006762  032767  000357  004106     BIT     #357,STATUS             ;TEST PRIORITY
5777 006770  001405                     BEQ     5$
(3)  006772  012737  000164  000402     MOV     #164,@#$FATAL   ;MOVE TO MAILBOX #  *******  164  *******
(2)  007000  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
(2)  007002  000000                     HALT                    ;PRIORITY NOT ZERO
(4)                                                             ; TO SCOPE REPLACE HALT W/ 240
(4)                                                             ; AND REPLACE NEXT INST W/ 724
5778 007004  012706  000500     5$:     MOV     #BUFF,SP
5779 007010  012767  007026  170766     MOV     #RETG5,RTRAP5
5780 007016  012767  000357  170762     MOV     #357,RTRAP5+2   ;SET NEW "CC" AND PRIORITY
5781 007024  000100                     JMP     %0              ;TRAP HERE
5782 007026                     RETG5:
5783 007026  100405                     BMI     1$
```

```
   (3)  007030  012737  000165  000402          MOV     #165,@#$FATAL   ;MOVE TO MAILBOX #  *******  165  *******
   (2)  007036  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007040  000000                           HALT                    ;N NOT SET
   (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                   ; AND REPLACE NEXT INST W/ 705
 5784   007042                               1$:
   (1)  007042  001405                           BEQ     2$
   (3)  007044  012737  000166  000402          MOV     #166,@#$FATAL   ;MOVE TO MAILBOX #  *******  166  *******
   (2)  007052  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007054  000000                           HALT                    ;Z NOT SET
   (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                   ; AND REPLACE NEXT INST W/ 677
 5785   007056                               2$:
   (1)  007056  102405                           BVS     3$
   (3)  007060  012737  000167  000402          MOV     #167,@#$FATAL   ;MOVE TO MAILBOX #  *******  167  *******
   (2)  007066  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007070  000000                           HALT                    ;V NOT SET
   (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                   ; AND REPLACE NEXT INST W/ 671
 5786   007072                               3$:
   (1)  007072  103405                           BCS     4$
   (3)  007074  012737  000170  000402          MOV     #170,@#$FATAL   ;MOVE TO MAILBOX #  *******  170  *******
   (2)  007102  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007104  000000                           HALT                    ;C NOT SET
   (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                   ; AND REPLACE NEXT INST W/ 663
 5790   007106                               4$:     MFPS    STATUS
   (1)  007106  106767                           .WORD   106700!..C
 5794   007112  016706  003760                  MOV     STATUS,SP
 5795   007116  022706  000357                  CMP     #357,SP
 5796   007122  001405                          BEQ     TST45
   (4)  007124  012737  000171  000402          MOV     #171,@#$FATAL   ;MOVE TO MAILBOX #  *******  171  *******
   (3)  007132  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  007134  000000                           HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
   (5)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                   ; AND REPLACE NEXT INST W/ 647
 5797                                   ;*****************************************************************************
   (2)                                  ;TEST 45        TEST  THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCION
   (3)                                  ;*****************************************************************************
   (2)  007136  005237  000404          TST45:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  007142  022737  000045  000404          CMP     #45,@#$TESTN    ;SEQUENCE ERROR?
   (2)  007150  001006                          BNE     TST46-12        ;BR TO ERROR HALT ON SEQ ERROR
 5798   007152  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
 5799   007156  012767  007200  170620          MOV     #RETH5,RTRAPS   ;RETURN LOCATION
 5800   007164  004000                          JSR     %0,%0           ;RESERVED INSTRUCTION, SHOULD TRAP
 5801   007166  012737  000172  000402          MOV     #172,@#$FATAL   ;MOVE TO MAILBOX #  *******  172  *******
   (2)  007174  005212                           INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007176  000000                           HALT                    ;DID NOT TRAP,OR WRONG $TESTN
   (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                   ; AND REPLACE NEXT INST W/ 764
 5802   007200                               RETH5:
 5803                                   ;*****************************************************************************
   (2)                                  ;TEST 46        TEST  DECREMENT OF STACK POINTER ON A TRAP OPERATION
   (3)                                  ;*****************************************************************************
   (2)  007200  005237  000404          TST46:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  007204  022737  000046  000404          CMP     #46,@#$TESTN    ;SEQUENCE ERROR?
```

```
   (2)  007212  001011                          BNE     TST47-12        ;BR TO ERROR HALT ON SEQ ERROR
 5804   007214  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
 5805   007220  012767  007230  170556          MOV     #RETJ,RTRAPS    ;RETURN POINTER
 5806   007226  004000                          JSR     %0,%0           ;RESERVED INSTRUCTION
 5807*  007230  020627  000474          RETJ:   CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
 5808   007234  001405                          BEQ     TST47
   (4)  007236  012737  000173  000402          MOV     #173,@#$FATAL   ;MOVE TO MAILBOX #  *******  173  *******
   (3)  007244  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  007246  000000                          HALT                    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
   (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                  ; AND REPLACE NEXT INST W/ 761
 5809                           ;*****************************************************************************
   (2)                          ;TEST 47        TEST  THAT PROPER P.C. IS SAVED
   (3)                          ;*****************************************************************************
   (2)  007250  005237  000404  TST47:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  007254  022737  000047  000404  CMP     #47,@#$TESTN    ;SEQUENCE ERROR?
   (2)  007262  001012                          BNE     TST50-12        ;BR TO ERROR HALT ON SEQ ERROR
 5810   007264  012706  000500                  MOV     #BUFF,SP        ;STACK POINTER SETUP
 5811   007270  012767  007300  170506          MOV     #RETK,RTRAPS    ;RETURN FROM TRAP POINTER
 5812   007276  004000          INSTK:  JSR     %0,%0           ;TRAP ON THIS INSTRUCTION
 5813   007300  022767  007300  171166  RETK:   CMP     #INSTK+2,BUFF-4 ;CHECK FOR INCREMENED P.C.
 5814   007306  001405                          BEQ     TST50
   (4)  007310  012737  000174  000402          MOV     #174,@#$FATAL   ;MOVE TO MAILBOX #  *******  174  *******
   (3)  007316  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3)  007320  000000                          HALT                    ;INCORRECT P.C.,OR WRONG $TESTN
   (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                  ; AND REPLACE NEXT INST W/ 760
 5815
 5816                           ;*****************************************************************************
   (2)                          ;TEST 50        TEST  THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
   (3)                          ;*****************************************************************************
   (2)  007322  005237  000404  TST50:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2)  007326  022737  000050  000404  CMP     #50,@#$TESTN    ;SEQUENCE ERROR?
   (2)  007334  001044                          BNE     TST51-12        ;BR TO ERROR HALT ON SEQ ERROR
 5817   007336  012706  000500                  MOV     #BUFF,SP        ;SET UP
 5818   007342  012767  007364  170434          MOV     #RETL,RTRAPS    ;SET UP
 5819   007350  005067  003522                  CLR     STATUS          ;CLEAR STATUS AND PRIORITY
 5823   007354                                  MTPS    STATUS
   (1)  007354  106467                          .WORD   106400!..C
 5827   007360  000257                          CCC
 5828   007362  004000                          JSR     %0,%0           ;TRAP
 5829   007364  026727  171106  000000  RETL:   CMP     BUFF-2,#0       ;TEST THAT OLD STATUS WENT TO STACK
 5830   007372  001405                          BEQ     1$
   (3)  007374  012737  000175  000402          MOV     #175,@#$FATAL   ;MOVE TO MAILBOX #  *******  175  *******
   (2)  007402  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2)  007404  000000                          HALT                    ;INCORRCT STATUS
   (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                  ; AND REPLACE NEXT INST W/ 753
 5831   007406  012706  000500          1$:     MOV     #BUFF,SP        ;SET UP
 5832   007412  012767  007436  170364          MOV     #RETM,RTRAPS    ;SET UP
 5833   007420  012767  000357  003450          MOV     #357,STATUS             ;SET PRIORITY
 5837   007426                                  MTPS    STATUS
   (1)  007426  106467                          .WORD   106400!..C
 5841   007432  000277                          SCC                     ;SET CC
 5842   007434  004000                          JSR     %0,%0           ;TRAP
 5843   007436  026727  171034  000357  RETM:   CMP     BUFF-2,#357     ;COMPARES STATUS ON STACK
```

```
 5844  007444  001405                        BEQ     TST51
  (4)  007446  012737  000176  000402        MOV     #176,@#$FATAL   ;MOVE TO MAILBOX #  *******  176  *******
  (3)  007454  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  007456  000000                        HALT                    ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
  (5)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                ; AND REPLACE NEXT INST W/ 726
 5845                           ;*****************************************************************************
  (2)                           ;TEST 51        TEST  THAT "NEW" STATUS IS CORRECT
  (3)                           ;*****************************************************************************
  (2)  007460  005237  000404   TST51:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  007464  022737  000051  000404   CMP     #51,@#$TESTN    ;SEQUENCE ERROR?
  (2)  007472  001122                   BNE     STP1            ;BR TO ERROR HALT ON SEQ ERROR
 5846  007474  012706  000500            MOV     #BUFF,SP
 5847  007500  012767  007514  170276    MOV     #RETN,RTRAPS
 5848  007506  005067  170274            CLR     RTRAPS+2        ;CLEAR FUTURE PRIORITY AND CC
 5849  007512  004000                     JSR     %0,%0
 5850  007514                        RETN:                       ;TEST FOR "C" CLEARED
 5851  007514  100005                     BPL     1$
  (3)  007516  012737  000177  000402    MOV     #177,@#$FATAL   ;MOVE TO MAILBOX #  *******  177  *******
   2)  007524  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  007526  000000                     HALT                    ;C NOT CLEARED
  (4)                                                            ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                            ; AND REPLACE NEXT INST W/ 761
 5852  007530                        1$:
  (1)  007530  001005                     BNE     2$
  (3)  007532  012737  000200  000402    MOV     #200,@#$FATAL   ;MOVE TO MAILBOX #  *******  200  *******
  (2)  007540  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  007542  000000                     HALT                    ;Z NOT CLEARED
  (4)                                                            ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                            ; AND REPLACE NEXT INST W/ 753
 5853  007544                        2$:
  (1)  007544  102005                     BVC     3$
  (3)  007546  012737  000201  000402    MOV     #201,@#$FATAL   ;MOVE TO MAILBOX #  *******  201  *******
  (2)  007554  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  007556  000000                     HALT                    ;V NOT CLEARED
  (4)                                                            ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                            ; AND REPLACE NEXT INST W/ 745
 5854  007560                        3$:
  (1)  007560  103005                     BCC     4$
  (3)  007562  012737  000202  000402    MOV     #202,@#$FATAL   ;MOVE TO MAILBOX #  *******  202  *******
  (2)  007570  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  007572  000000                     HALT                    ;C NOT CLEARED
  (4)                                                            ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                            ; AND REPLACE NEXT INST W/ 737
 5858  007574                        4$:     MFPS    STATUS
  (1)  007574  106767                     .WORD   106700!..C
 5862  007630  016700  003272            MOV     STATUS,%0       ;TEMP STORAGE
 5863  007604  001405                     BEQ     5$
  (3)  007606  012737  000203  000402    MOV     #203,@#$FATAL   ;MOVE TO MAILBOX #  *******  203  *******
  (2)  007614  005212                     INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  007616  000000                     HALT                    ;PRIORITY NOT ZERO
  (4)                                                            ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                            ; AND REPLACE NEXT INST W/ 725
 5864  007620  012706  000500        5$:     MOV     #BUFF,SP
 5865  007624  012767  007642  170152    MOV     #RET0,RTRAPS
 5866  007632  012767  000357  170146    MOV     #357,RTRAPS+2   ;SET NEW "CC" AND PRIORITY
```

```
 5867  007640  004000                          JSR     %0,%0           ;TRAP HERE
 5868  007642                          RET0:
 5869  007642  100405                          BMI     1$
   (3) 007644  012737  000204  000402          MOV     #204,@#$FATAL   ;MOVE TO MAILBOX #  *******  204  *******
   (2) 007652  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 007654  000000                          HALT                    ;N NOT SET
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 706
 5870  007656                          1$:
   (1) 007656  001405                          BEQ     2$
   (3) 007660  012737  000205  000402          MOV     #205,@#$FATAL   ;MOVE TO MAILBOX #  *******  205  *******
   (2) 007666  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 007670  000000                          HALT                    ;Z NOT SET
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 700
 5871  007672                          2$:
   (1) 007672  102405                          BVS     3$
   (3) 007674  012737  000206  000402          MOV     #206,@#$FATAL   ;MOVE TO MAILBOX #  *******  206  *******
   (2) 007702  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 007704  000000                          HALT                    ;V NOT SET
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 672
 5872  007706                          3$:
   (1) 007706  103405                          BCS     4$
   (3) 007710  012737  000207  000402          MOV     #207,@#$FATAL   ;MOVE TO MAILBOX #  *******  207  *******
   (2) 007716  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 007720  000000                          HALT                    ;C NOT SET
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 564
 5876  007722                          4$:     MFPS    STATUS
   (1) 007722  106767                          .WORD   106700!..C
 5880  007726  016700  003144                  MOV     STATUS,%0
 5881  007732  022700  000357                  CMP     #357,%0
 5882  007736  001405                          BEQ     STP88
   (1) 007740                          STP1:
   (3) 007740  012737  000210  000402          MOV     #210,@#$FATAL   ;MOVE TO MAILBOX #  *******  210  *******
   (2) 007746  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 007750  000000                          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TESTN
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 650
 5883  007752  012767  000006  170024  STP88:  MOV     #6,4
 5884  007760  005067  170022                  CLR     6
 5885                                ;#################################################################################
   (2)                               ;TEST 52        TEST  THAT THE TRACE TRAP; (BIT4 20(8)) WILL CAUSE A TRAP TO 14
   (3)                               ;#################################################################################
   (2) 007764  005237  000404          TST52:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 007770  022737  000052  000404          CMP     #52,@#$TESTN    ;SEQUENCE ERROR?
   (2) 007776  001013                          BNE     TST53-12        ;BR TO ERROR HALT ON SEQ ERROR
 5886  010000  012706  000500                  MOV     #BUFF,SP
 5887  010004  012767  010040  170002          MOV     #RETAT,RTRAP4   ;SET UP TO TRAP TO 14
 5888  010012  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 5889  010016  012746  010024                  MOV     #.+6,-(SP)      ;PUSH PC
 5890  010022  000002                          RTI                     ;SET T BIT
 5891  010024  000240                          NOP                     ;TRAP HERE
 5892  010026  012737  000211  000402          MOV     #211,@#$FATAL   ;MOVE TO MAILBOX #  *******  211  *******
   (2) 010034  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
  (2)  010036  000000                        HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 757
 5893  010040                          RETAT:
 5894                                  ;*************************************************************************************
  (2)                                  ;TEST 53        TEST  STACK POINTER DECREMENTS
  (3)                                  ;*************************************************************************************
  (2)  010040  005237  000404          TST53:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  010044  022737  000053  000404          CMP     #53,@#$TESTN    ;SEQUENCE ERROR?
  (2)  010052  001023                          BNE     TST54-12        ;BR TO ERROR HALT ON SEQ ERROR
 5895  010054  012706  000500                  MOV     #BUFF,SP
 5896  010060  012767  010114  167726          MOV     #RETBT,RTRAP4
 5897  010066  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 5898  010072  012746  010100                  MOV     #.+6,-(SP)      ;PUSH PC
 5899  010076  000002                          RTI                     ;SET T BIT
 5900  010100  000240                          NOP                     ;TRAP HERE
 5901  010102  012737  000212  000402          MOV     #212,@#$FATAL   ;MOVE TO MAILBOX #  *******  212  *******
  (2)  010110  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  010112  000000                          HALT                    ;TRACE BIT DID NOT TRAP!
  (4)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                ; AND REPLACE NEXT INST W/ 757
 5902  010114  020627  000474          RETBT:  CMP     SP,#BUFF-4
 5903  010120  001405                          BEQ     TST54
  (4)  010122  012737  000213  000402          MOV     #213,@#$FATAL   ;MOVE TO MAILBOX #  *******  213  *******
  (3)  010130  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  010132  000000                          HALT                    ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
  (5)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                ; AND REPLACE NEXT INST W/ 747
 5904                                  ;*************************************************************************************
  (2)                                  ;TEST 54        TEST  FOR PROPER PC ON STACK
  (3)                                  ;*************************************************************************************
  (2)  010134  005237  000404          TST54:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  010140  022737  000054  000404          CMP     #54,@#$TESTN    ;SEQUENCE ERROR?
  (2)  010146  001016                          BNE     TST55-12        ;BR TO ERROR HALT ON SEQ ERROR
 5905  010150  012706  000500                  MOV     #BUFF,SP
 5906  010154  012767  010174  167632          MOV     #RETCT,RTRAP4
 5907  010162  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 5908  010166  012746  010174                  MOV     #.+6,-(SP)      ;PUSH PC
 5909  010172  000002                          RTI                     ;SET T BIT
 5910                                                                  ;TRAP HERE
 5911  010174  022767  010174  170272  RETCT:  CMP     #.,BUFF-4
 5912  010202  001405                          BEQ     TST55
  (4)  010204  012737  000214  000402          MOV     #214,@#$FATAL   ;MOVE TO MAILBOX #  *******  214  *******
  (3)  010212  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  010214  000000                          HALT                    ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
  (5)                                                                ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                ; AND REPLACE NEXT INST W/ 754
 5913
 5914
 5915                                  ;*************************************************************************************
  (2)                                  ;TEST 55        TEST  THAT RTT POPS T- BIT
  (3)                                  ;*************************************************************************************
  (2)  010216  005237  000404          TST55:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  010222  022737  000055  000404          CMP     #55,@#$TESTN    ;SEQUENCE ERROR?
  (2)  010230  001015                          BNE     TST56-12        ;BR TO ERROR HALT ON SEQ ERROR
 5916
```

```
 5917  010232  012706  000500                  MOV     #BUFF,SP
 5918  010236  005001                          CLR     R1                  ;CLEAR R1
 5919  010240  012746  000020                  MOV     #20,-(SP)
 5920  010244  012746  010260                  MOV     #RTT1,-(SP)
 5921  010250  012767  010276  167536          MOV     #RTT2,14
 5922  010256  000006                          RTT
 5923  010260  000240                  RTT1:   NOP
 5924  010262  001405                          BEQ     TST56
   (4) 010264  012737  000215  000402          MOV     #215,@#$FATAL       ;MOVE TO MAILBOX #  *******  215  *******
   (3) 010272  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
   (3) 010274  000000                          HALT                        ;T-BIT DID NOT TRAP,OR WRONG $TESTN
   (5)                                                                     ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                     ; AND REPLACE NEXT INST W/ 755
 5925
 5926  010276                          RTT2:
 5927                                  ;*****************************************************************************
   (2)                                 ;TEST 56        TEST  THAT RTT ALLOWS ONE INST. BEFORE TRAP
   (3)                                 ;*****************************************************************************
   (2) 010276  005237  000404          TST56:  INC     @#$TESTN            ;UPDATE TEST NUMBER
   (2) 010302  022737  000056  000404          CMP     #56,@#$TESTN        ;SEQUENCE ERROR?
   (2) 010310  001031                          BNE     TST57-12            ;BR TO ERROR HALT ON SEQ ERROR
 5928  010312  012705  177777                  MOV     #177777,%5
 5929  010316  012706  000500          RTT5:   MOV     #BUFF,SP
 5930  010322  012746  000020                  MOV     #20,-(SP)
 5931  010326  012746  010344                  MOV     #RTT3,-(SP)
 5932  010332  012767  010364  167454          MOV     #RTT4,14
 5933  010340  005001                          CLR     R1                  ;CLEAR R0
 5934  010342  000006                          RTT                         ;SET T-BIT
 5935  010344  005201                  RTT3:   INC     R1
 5936  010346  005205                          INC     %5
 5937  010350  001762                          BEQ     RTT5                ;DO THIS TEST NO MORE THAN 2 TIMES
 5938  010352  012737  000216  000402          MOV     #216,@#$FATAL       ;MOVE TO MAILBOX #  *******  216  *******
   (2) 010360  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
   (2) 010362  000000                          HALT                        ;DID NOT TRAP
   (4)                                                                     ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                     ; AND REPLACE NEXT INST W/ 752
 5939  010364  005301                  RTT4:   DEC     R1                  ;SEE IF RTT ALLOWS 1 INST.
 5940  010366  001407                          BEQ     RTT6
 5941  010370  005205                          INC     %5                  ;DO THIS TEST NO MORE THAN TWO TIMES
 5942  010372  001751                          BEQ     RTT5
   (3) 010374  012737  000217  000402          MOV     #217,@#$FATAL       ;MOVE TO MAILBOX #  *******  217  *******
   (2) 010402  005212                          INC     (R2)                ;SET MSGTYP TO FATAL ERROR
   (2) 010404  000000                          HALT                        ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
   (4)                                                                     ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                     ; AND REPLACE NEXT INST W/ 741
 5943  010406                          RTT6:
 5944                                  ;*****************************************************************************
   (2)                                 ;TEST 57        TEST  THAT RTI DOES NOT ALLOW 1 INST.
   (3)                                 ;*****************************************************************************
   (2) 010406  005237  000404          TST57:  INC     @#$TESTN            ;UPDATE TEST NUMBER
   (2) 010412  022737  000057  000404          CMP     #57,@#$TESTN        ;SEQUENCE ERROR?
   (2) 010420  001023                          BNE     TST60-12            ;BR TO ERROR HALT ON SEQ ERROR
 5945  010422  012706  000500                  MOV     #BUFF,SP
 5946  010426  012746  000020                  MOV     #20,-(SP)
 5947  010432  012746  010450                  MOV     #RTI1,-(SP)
 5948  010436  012767  010464  167350          MOV     #RTI2,14
```

```
 5949  010444  005001                          CLR     R1
 5950  010446  000002                          RTI
 5951  010450  005201                  RTI1:   INC     R1              ;SET T-BIT
 5952  010452  012737  000220  000402          MOV     #220,@#$FATAL   ;RTI SHOULD NOT ALLOW THIS
  (2)  010460  005212                          INC     (R2)            ;MOVE TO MAILBOX #  *******  220  *******
  (2)  010462  000000                          HALT                    ;SET MSGTYP TO FATAL ERROR
  (4)                                                                  ;T- BIT DID NOT CAUSE TRAP
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
 5953  010464  005701                  RTI2:   TST     R1              ; AND REPLACE NEXT INST W/ 756
 5954
 5955  010466  001405                          BEQ     TST60           ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
  (4)  010470  012737  000221  000402          MOV     #221,@#$FATAL   ;MOVE TO MAILBOX #  *******  221  *******
  (3)  010476  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (3)  010500  000000                          HALT                    ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
  (5)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (5)                                                                  ; AND REPLACE NEXT INST W/ 747
 5956
 5957                           ;*********************************************************************************
  (2)                           ;TEST 60        TEST  TRAP ON TRAP
  (3)                           ;*********************************************************************************
  (2)  010502  005237  000404   TST60:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  010506  022737  000060  000404   CMP     #60,@#$TESTN    ;SEQUENCE ERROR?
  (2)  010514  001033                   BNE     TRACE           ;BR TO ERROR HALT ON SEQ ERROR
 5958                           ;TEST THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
 5959
 5960  010516  012705  177777                  MOV     #177777,%5
 5961  010522  012706  000500           TRPTRP: MOV     #BUFF,%6
 5962  010526  012767  010600  167260          MOV     #TRACE1,14      ;TRACE TRAP
 5963  010534  005027  000016                  CLR     #16             ;
 5964  010540  005027  000022                  CLR     #22
 5965  010544  012767  010616  167246          MOV     #TONT1,20       ;IOT TRAP
 5966  010552  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 5967  010556  012746  010564                  MOV     #.+6,-(SP)      ;PUSH PC
 5968  010562  000006                          RTT                     ;SET T BIT
 5969  010564  000004                          IOT                     ;TRAP, NEW STATUS HAVE TRACE RESET
 5970  010566  012737  000222  000402          MOV     #222,@#$FATAL   ;MOVE TO MAILBOX #  *******  222  *******
  (2)  010574  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  010576  000000                          HALT                    ;NO TRAP OCCURRED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 746
 5971  010600  005205                  TRACE1: INC     %5      ;IF FAILED TRY THIS TEST TWICE BUT NO MORE
 5972  010602  001747                          BEQ     TRPTRP
  (1)  010604                           TRACE:
  (3)  010604  012737  000223  000402          MOV     #223,@#$FATAL   ;MOVE TO MAILBOX #  *******  223  *******
  (2)  010612  005212                          INC     (R2)            ;SET MSCTYP TO FATAL ERROR
  (2)  010614  000000                          HALT                    ;IOT SHOULD HAVE CLEARED THE T BIT,OR WRONG $TESTN
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 737
 5973  010616  012767  000016  167170  TONT1:  MOV     #16,14
 5974  010624  012767  000022  167166          MOV     #22,20
 5975                           ;*********************************************************************************
  (2)                           ;TEST 61        TEST  THAT THE TRACE BIT WILL CAUSE A TRAP
  (3)                           ;*********************************************************************************
  (2)  010632  005237  000404   TST61:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  010636  022737  000061  000404   CMP     #61,@#$TESTN    ;SEQUENCE ERROR?
  (2)  010644  001026                   BNE     TST62-12        ;BR TO ERROR HALT ON SEQ ERROR
```

```
 5976  010646  012706  000500                MOV     #BUFF,%6        ;SET UP STACK POINTER
 5977  010652  012767  010712  167134        MOV     #TRC1,14        ;TRACE TRAP RETURN
 5978  010660  005067  167132                CLR     16
 5979  010664  012746  000020                MOV     #20,-(SP)       ;PUSH T BIT
 5980  010670  012746  010676                MOV     #.+6,-(SP)      ;PUSH PC
 5981  010674  000002                        RTI                     ;SET T BIT
 5982  010676  000240                        NOP
 5983  010700  012737  000224  000402        MOV     #224,@#$FATAL   ;MOVE TO MAILBOX #  *******  224  *******
   (2) 010706  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 010710  000000                        HALT                    ;DO NOT TRAP
   (4)                                                               ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                               ; AND REPLACE NEXT INST W/ 755
 5984  010712  036727  167560  000020  TRC1: BIT     BUFF-2,#20      ;CHECK FOR T BIT ON STACK
 5985  010720  001005                        BNE     TST62
   (4) 010722  012737  000225  000402        MOV     #225,@#$FATAL   ;MOVE TO MAILBOX #  *******  225  *******
   (3) 010730  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3) 010732  000000                        HALT                    ;T BIT NOT SAVED ON STACKED,OR WRONG $TESTN
   (5)                                                               ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                               ; AND REPLACE NEXT INST W/ 744
 5986                              ;*****************************************************************************
   (2)                             ;TEST 62        TEST  THAT AN RTI POPS THE T BIT
   (3)                             ;*****************************************************************************
   (2) 010734  005237  000404      TST62:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 010740  022737  000062  000404      CMP     #62,@#$TESTN    ;SEQUENCE ERROR?
   (2) 010746  001020                      BNE     TST63-12        ;BR TO ERROR HALT ON SEQ ERROR
 5987  010750  012706  000500                MOV     #BUFF,%6        ;SET UP THE STACK
 5988  010754  012746  000020                MOV     #20,-(6)        ;FUTURE T BIT ON STACK
 5989  010760  012746  010774                MOV     #TRC2,-(6)      ;RTI RETURN
 5990  010764  012767  011010  167022        MOV     #TRC3,14        ;TRACE TRAP INTERRUPT POINTER
 5991  010772  000002                        RTI
 5992
 5993  010774  000240                TRC2:   NOP                     ;TRACE IS SET SHOULD TRAP TO 14
 5994  010776  012737  000226  000402        MOV     #226,@#$FATAL   ;MOVE TO MAILBOX #  *******  226  *******
   (2) 011004  005212                        INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 011006  000000                        HALT                    ;DID NOT TRACE TRAP,OR WRONG $TESTN
   (4)                                                               ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                               ; AND REPLACE NEXT INST W/ 757
 5995
 5996  011010  012767  000016  166776  TRC3:  MOV     #16,14
 5997  011016  005067  166774                CLR     16
 5998                              ;*****************************************************************************
   (2)                             ;TEST 63        TEST  THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
   (3)                             ;*****************************************************************************
   (2) 011022  005237  000404      TST63:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 011026  022737  000063  000404      CMP     #63,@#$TESTN    ;SEQUENCE ERROR?
   (2) 011034  001045                      BNE     TST64-12        ;BR TO ERROR HALT ON SEQ ERROR
 5999  011036  105737  177564                TSTB    @#TPS
 6000  011042  100375                        BPL     .-4
 6001  011044  012706  000500                MOV     #BUFF,%6
 6002  011050  012767  000340  002020        MOV     #340,STATUS     ;HIGHEST PRIORITY LEVEL
 6006  011056                                MTPS    STATUS
   (1) 011056  106467                        .WORD   106400!..C
 6010  011062  012767  011132  166774        MOV     #TR0,64
 6011  011070  012767  000100  166466        MOV     #100,TTCSR      ;INTERRUPT FOR TTY PUNCH/PRINTER
 6012  011076  012767  011144  166730        MOV     #TR1,34         ;TRAP VECTOR
 6013  011104  012767  011156  166752        MOV     #TR2,64         ;TTY VECTOR
```

```
 6014  011112  012767  000340  166716          MOV     #340,36         ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
 6015  011120  005067  001752                  CLR     STATUS          ;SHOULD TRAP AT END OF CLR INST
 6019  011124                                  MTPS    STATUS
  (1)  011124  106467                          .WORD   106400!..C
 6023  011130  104400                          TRAP                    ;TTY INTERRUPT SHOULD OVERRIDE TRAP
 6024  011132                          TR0:
  (3)  011132  012737  000227  000402          MOV     #227,@#$FATAL   ;MOVE TO MAILBOX #  *******  227  *******
  (2)  011140  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  011142  000000                          HALT                    ;TTY SHOULDN'T HAVE INTERRUPTED
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 734
 6025  011144                          TR1:
  (3)  011144  012737  000230  000402          MOV     #230,@#$FATAL   ;MOVE TO MAILBOX #  *******  230  *******
  (2)  011152  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  011154  000000                          HALT                    ;INTERRUPT DID NOT OCCUR FIRST,OR WRONG $TESTN
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 727
 6026  011156  005067  166654          TR2:    CLR     36
 6027                                 ;*************************************************************************
  (2)                                 ;TEST 64        TEST  THAT A PENDING INTERRUPT;INTERRUPTS BETWEEN TRAPS
  (3)                                 ;*************************************************************************
  (2)  011162  005237  000404          TST64:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  011166  022737  000064  000404          CMP     #64,@#$TESTN    ;SEQUENCE ERROR?
  (2)  011174  001050                          BNE     TST65-12        ;BR TO ERROR HALT ON SEQ ERROR
 6028  011176  042767  000100  166360          BIC     #100,TTCSR
 6029  011204  012706  000500                  MOV     #BUFF,%6
 6030  011210  012767  000340  001660          MOV     #340,STATUS
 6034  011216                                  MTPS    STATUS
  (1)  011216  106467                          .WORD   106400!..C
 6038  011222  012767  000100  166334          MOV     #100,TTCSR
 6039  011230  012767  011262  166576          MOV     #TR3,34         ;TRAP
 6040  011236  012767  011276  166620          MOV     #TR4,64         ;TTY OUTPUT
 6041  011244  012767  011264  166546          MOV     #TR5,20         ;IOT
 6042  011252  012767  000340  166542          MOV     #340,22         ;IOT PRIORITY
 6043  011260  104400                          TRAP                    ;THE ACT OF TRAPPING LOWER PRIORITY
 6044  011262  000004          TR3:    IOT                             ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
 6045  011264                  TR5:
  (3)  011264  012737  000231  000402          MOV     #231,@#$FATAL   ;MOVE TO MAILBOX #  *******  231  *******
  (2)  011272  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)  011274  000000                          HALT                    ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $TESTN
  (4)                                                                  ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                  ; AND REPLACE NEXT INST W/ 737
 6046  011276  005067  166520          TR4:    CLR     22              ;CLR IOT PRIORITY
 6047  011302  005067  166560                  CLR     66
 6048  011306  012767  000066  166550          MOV     #66,64
 6049  011314  012767  000036  166512          MOV     #36,34
 6050  011322  012767  000022  166470          MOV     #22,20
 6051
 6052                                 ;*************************************************************************
  (2)                                 ;TEST 65        TEST  THAT "RESET" GOES TO OUTSIDE WORLD
  (3)                                 ;*************************************************************************
  (2)  011330  005237  000404          TST65:  INC     @#$TESTN        ;UPDATE TEST NUMBER
  (2)  011334  022737  000065  000404          CMP     #65,@#$TESTN    ;SEQUENCE ERROR?
  (2)  011342  001026                          BNE     TST66-12        ;BR TO ERROR HALT ON SEQ ERROR
 6056  011344                                  MTPS    #340
  (1)  011344  106427                          .WORD   106400!..C
```

```
 6060  011350  012767  000100  166206          MOV     #100,TTCSR      ;SET INTERRUPT ENABLE
 6061  011356  012767  000100  166174          MOV     #100,TRCSR      ;SET INTERRUPT ENABLE
 6062  011364  000005                          RESET                   ;SHOULD CLEAR INTERRUPT ENABLE
 6063  011366  032767  000100  166170          BIT     #100,TTCSR      ;TEST FOR CLEAR
 6064  011374  001405                          BEQ     1$
   (3) 011376  012737  000232  000402          MOV     #232,@#$FATAL   ;MOVE TO MAILBOX #  *******  232  *******
   (2) 011404  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 011406  000000                          HALT                    ;RESET FAILED TO CLEAR TTCSR
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 755
 6065  011410  032767  000100  166142  1$:     BIT     #100,TRCSR      ;TEST FOR CLEAR
 6066  011416  001405                          BEQ     TST66
   (4) 011420  012737  000233  000402          MOV     #233,@#$FATAL   ;MOVE TO MAILBOX #  *******  233  *******
   (3) 011426  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (3) 011430  000000                          HALT                    ;RESET FAILED TO CLEAR TRCSR,OR WRONG $TESTN
   (5)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (5)                                                                 ; AND REPLACE NEXT INST W/ 744
 6067                                  ;*************************************************************************
   (2)                                 ;TEST 66        TEST  THAT RESET HAS NO EFFECT ON THE TRACE TRAP
   (3)                                 ;*************************************************************************
   (2) 011432  005237  000404          TST66:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 011436  022737  000066  000404          CMP     #66,@#$TESTN    ;SEQUENCE ERROR?
   (2) 011444  001025                          BNE     TST67-12        ;BR TO ERROR HALT ON SEQ ERROR
 6068  011446  012706  000500                  MOV     #BUFF,%6        ;SET STACK
 6069  011452  012767  011510  166334          MOV     #RESET2,14      ;SET UP TRACE VECTOR
 6070  011460  012746  000020                  MOV     #20,-(SP)       ;PUSH T BIT
 6071  011464  012746  011472                  MOV     #.+6,-(SP)      ;PUSH PC
 6072  011470  000006                          RTT                     ;SET T BIT
 6073  011472  000005                          RESET                   ;SHOULD HAVE NO EFFECT
 6074  011474  000005                          RESET                   ;NO EFFECT
 6075  011476  012737  000234  000402          MOV     #234,@#$FATAL   ;MOVE TO MAILBOX #  *******  234  *******
   (2) 011504  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 011506  000000                          HALT                    ;TRACE TRAP FAILED,OR WRONG $TESTN
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 756
 6076  011510  005067  001362          RESET2: CLR     STATUS          ;CLEAR TRACK
 6080  011514                          STATUS  MTPS    STATUS
   (1) 011514  106467                          .WORD   106400!..C
 6084  011520  012767  000016  166266          MOV     #16,14
 6085  011526  005067  166264                  CLR     16              ;TRACE STATUS
 6086
 6087                                  ;*************************************************************************
   (2)                                 ;TEST 67        TEST  THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
   (3)                                 ;*************************************************************************
   (2) 011532  005237  000404          TST67:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 011536  022737  000067  000404          CMP     #67,@#$TESTN    ;SEQUENCE ERROR?
   (2) 011544  001066                          BNE     TST70-12        ;BR TO ERROR HALT ON SEQ ERROR
 6088  011546  000005                          RESET
 6089  011550  012706  000500                  MOV     #BUFF,%6        ;SET UP STACK
 6090  011554  012767  011616  166302          MOV     #TTY3,64        ;INTERRUPT VECTOR
 6094  011562                          TTY3    MTPS    #0
   (1) 011562  106427                          .WORD   106400!..C
 6098  011566  012767  000357  166272          MOV     #357,66         ;HIGH PRIORITY ON INTERRUPT
 6099  011574  052767  000100  165762          BIS     #100,TTCSR      ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
 6100  011602  000240                          NOP
 6101  011604  012737  000235  000402          MOV     #235,@#$FATAL   ,MOVE TO MAILBOX #  *******  235  *******
```

```
011612  005212                            INC     (R2             ;SET MSGTYP TO FATAL ERROR
011614  000000                            HALT                    ;NO INTERRUPT
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 753
011616                            TTY3:   MFPS    STATUS
011616  106767                            .WORD   106700!..C
011622  022767  000357  001246            CMP     #357,STATUS
011630  001405                            BEQ     1$
011632  012737  000236  000402            MOV     #236,@#$FATAL   ;MOVE TO MAILBOX #  *******  236  *******
011640  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
011642  000000                            HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 740
011644  000005                    1$:     RESET                   ;CLR NTERRUPT ENABLE
011646  012706  000500                    MOV     #BUFF,%6        ;STACK SET UP
011652  012767  011676  166204            MOV     #TTY4,64        ;INTERRUPT VECTOR
011660  005067  166202                    CLR     66              ;CLR NEW STATUS
011664                                    MTPS    #0
011664  106427                            .WORD   106400!..C
011670  052767  000100  165666            BIS     #100,TTCSR      ;SET INTERRUPT ENABLE
011676                            TTY4:   MFPS    STATUS
011676  106767                            .WORD   106700!..C
011702  005767  001170                    TST     STATUS
011706  001405                            BEQ     1$
011710  012737  000237  000402            MOV     #237,@#$FATAL   ;MOVE TO MAILBOX #  *******  237  *******
011716  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
011720  000000                            HALT                    ;INTERRUPT DID NOT POP CORRECT STATUS,OR WRONG $TESTN
                                                                  ; TO SCOPE REPLACE HALT W/ 240
                                                                  ; AND REPLACE NEXT INST W/ 711
011722  005067  165636            1$:     CLR     TTCSR
011726  012767  000066  166130            MOV     #66,64


                                  ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
                                  ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
                                  ;****************************************************************************
                                  ;TEST 70          TEST  NON-EXISTENT ADDRESS TRAPS
                                  ;****************************************************************************
011734  005237  000404            TST70:  INC     @#$TESTN        ;UPDATE TEST NUMBER
011740  022737  000070  000404            CMP     #70,@#$TESTN    ;SEQUENCE ERROR?
011746  001066                            BNE     AUT01           ;BR TO ERROR HALT ON SEQ ERROR

                                  ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM STOP
011750  000402                            BR      ADALL
011752  000000                    TSL:    0
011754  000000                    CORH:   0
011756  005000                    ADALL:  CLR     %0
011760  005067  166022                    CLR     6
011764  012767  012020  166012            MOV     #ATRAP,4        ;SET UP ADDRESS TRAP ENTRANCE
011772  012706  000500            NOR:    MOV     #BUFF,SP
011776  105720                            TSTB    (0)+            ;IF OUTSIDE OF CORE, TRAP TO 4
012000  020027  160000                    CMP     %0,#160000              ;IS POINTER IN SIDE CORE
012004  101772                            BLOS    NOR             ;TEST THE REST OF CORE
012006                            AUTO:
012006  012737  000240  000402            MOV     #240,@#$FATAL   ;MOVE TO MAILBOX #  *******  240  *******
012014  005212                            INC     (R2)            ;SET MSGTYP TO FATAL ERROR
```

```
                012016  000000                          HALT                    ;SHOULD HAVE TRAPED
                                                                                ; TO SCOPE REPLACE HALT W/ 240
                                                                                ; AND REPLACE NEXT INST W/ 753
                                        ;RETURN HERE ON AN ADDRESS TRAP
                012020  005300          ATRAP:  DEC     R0
                012022  010067  177726          MOV     R0,CORH         ;MOVE THE FIRST NXM LOCATION IN CORH
                                        ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
                012026  012700  160001          MOV     #160001,R0      ;SET UP THE HIGHEST MEM LOCATION
                012032  012767  012070  165744  CTRAP:  MOV     #BTRAP,4        ;SET UP THE VECTOR
                012040  012706  000500          MOV     #BUFF,SP
                012044  105740                  TSTB    -(R0)           ;DOES IT EXIST?
                012046  005200          DTRAP:  INC     R0              ;IF YES INCREMENT IT
                012050  020067  177700          CMP     R0,CORH         ;IS IT THE SAME LOCATION?
                012054  001430                  BEQ     TRAPB
                012056  012737  000241  000402          MOV     #241,@#$FATAL   ;MOVE TO MAILBOX #  *******  241  *******
                012064  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                012066  000000                  HALT                    ;CONTENTS OF R0 AND CORH SHOULD HAVE BEEN EQUAL
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 727
                                                                        ;IF THIS COMPARISON FAILS IT MEANS
                                                                        ;THAT SOME LEGAL ADDRESS TRAPPEDOR
                                                                        ;THAT AN ILLEGAL ADDRESS DID NOT TRAP
                012070          BTRAP:  MFPS    STATUS
                012070  106767          .WORD   106700!..C
                012074  005767  000776          TST     STATUS
                012100  001405                  BEQ     1$
                012102  012737  000242  000402          MOV     #242,@#$FATAL   ;MOVE TO MAILBOX #  *******  242  *******
                012110  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                012112  000000                  HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 715
                012114  026727  166354  012046  1$:     CMP     BUFF-4,#DTRAP
                012122  001743                  BEQ     CTRAP
                012124          AUTO1:
                012124  012737  000243  000402          MOV     #243,@#$FATAL   ;MOVE TO MAILBOX #  *******  243  *******
                012132  005212                  INC     (R2)            ;SET MSGTYP TO FATAL ERROR
                012134  000000                  HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
                                                                        ; TO SCOPE REPLACE HALT W/ 240
                                                                        ; AND REPLACE NEXT INST W/ 704
                012136  012767  000006  165640  TRAPB:  MOV     #6,4
                012144  005067  165636          CLR     6

                                        ;*****************************************************************************
                                        ;TEST 71        TEST THE 'WAIT' INSTRUCTION
                                        ;*****************************************************************************
                012150  005237  000404  TST71:  INC     @#$TESTN        ;UPDATE TEST NUMBER
                012154  022737  000071  000404          CMP     #71,@#$TESTN    ;SEQUENCE ERROR?
                012162  001064                  BNE     REES1           ;BR TO ERROR HALT ON SEQ ERROR
                012164  105767  166230          TSTB    $ENV            ;ARE WE UNDER APT?
                012170  001066                  BNE     REES            ;YES
                012172  042767  000100  165364          BIC     #100,TPS        ;CLEAR INTERRUPT ENABLE
                012200  012706  000500          MOV     #BUFF,SP        ;SET UP THE STACK
                012204  012767  012300  165652          MOV     #WATE,64        ;SET UP THE INTERRUPT VECTOR
                012212  005067  165650          CLR     66
                012216  105767  165342  WATE1:  TSTB    TPS             ;WAIT FOR READY
                012222  100375                  BPL     WATE1           ;TO BE UP
```

```
 6189  012224  012767  000015  165334          MOV     #15,TPB         ;DO A CARRIAGE RETURN
 6190  012232  105767  165326          WATE2:  TSTB    TPS             ;WAIT FOR READY TO COME UP
 6191  012236  100375                          BPL     WATE2
 6192  012240  012767  000015  165320          MOV     #15,TPB         ;DO ANOTHER CARRIAGE RETURN
 6193  012246  052767  000100  165310          BIS     #100,TPS        ;SET THE INTERRUPT ENABLE
 6194  012254  005067  000616                  CLR     STATUS          ;CLEAR THE PSW
 6195  012260                                  MTPS    STATUS
   (1) 012260  106467                          .WORD   106400!..C
 6202  012264  000001          WATE3:  WAIT                            ;WAIT FOR THE INTERRUPT
 6203  012266  012737  000244  000402          MOV     #244,@#$FATAL   ;MOVE TO MAILBOX #  *******  244  *******
   (2) 012274  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 012276  000000                          HALT                    ;WAIT INSTRUCTION DID NOT LOOP
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 731
 6207  012300                          WATE:   MFPS    STATUS
   (1) 012300  106767                          .WORD   106700!..C
 6211  012304  005767  000566                  TST     STATUS          ;IS THE PSW CORRECT?
 6212  012310  001405                          BEQ     1$
   (3) 012312  012737  000245  000402          MOV     #245,@#$FATAL   ;MOVE TO MAILBOX #  *******  245  *******
   (2) 012320  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 012322  000000                          HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 717
 6213  012324  026727  166144  012266  1$:     CMP     BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
 6214  012332  001405                          BEQ     REES
   (1) 012334                          REES1:
   (3) 012334  012737  000246  000402          MOV     #246,@#$FATAL   ;MOVE TO MAILBOX #  *******  246  *******
   (2) 012342  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 012344  000000                          HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 706
 6215  012346  042767  000100  165210  REES:   BIC     #100,TPS        ;CLEAR THE INTERRUPT ENABLE
 6216  012354  012767  000066  165502          MOV     #66,64
 6217                              ;*************************************************************************
   (2)                             ;TEST 72        TEST  ,THAT ODD ADDRESSING WILL IGNORE BIT 0
   (3)                             ;*************************************************************************
   (2) 012362  005237  000404      TST72:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 012366  022737  000072  000404          CMP     #72,@#$TESTN    ;SEQUENCE ERROR?
   (2) 012374  001003                          BNE     TST73-12        ;BR TO ERROR HALT ON SEQ ERROR
 6218  012376  000167  000013                  JMP     ODD+1
 6219  012402  012737  000247  000402          MOV     #247,@#$FATAL   ;MOVE TO MAILBOX #  *******  247  *******
   (2) 012410  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
   (2) 012412  000000                          HALT                    ;SHOULD HAVE JUMPED,OR WRONG $TESTN
   (4)                                                                 ; TO SCOPE REPLACE HALT W/ 240
   (4)                                                                 ; AND REPLACE NEXT INST W/ 770
 6220  012414  005307                  ODD:    DEC     PC
 6221                              ;*************************************************************************
   (2)                             ;TEST 73        TEST  THAT ALL RESERVED INSTRUCTIONS TRAP
   (3)                             ;*************************************************************************
   (2) 012416  005237  000404      TST73:  INC     @#$TESTN        ;UPDATE TEST NUMBER
   (2) 012422  022737  000073  000404          CMP     #73,@#$TESTN    ;SEQUENCE ERROR?
   (2) 012430  001166                          BNE     RET4            ;BR TO ERROR HALT ON SEQ ERROR
 6222  012432  010700                          MOV     PC,%0           ;SET THESE
 6223  012434  010704                          MOV     PC,%4           ;REGISTERS
 6224  012436  010705                          MOV     PC,%5           ;TO EXISTENT MEMORY LOCATIONS
 6225  012440  012703  013032                  MOV     #TABLE,TAB      ;TABLE POINTER
```

```
 6226  012444  012302                  GIN1:   MOV     (TAB)+,FIRST    ;FIRST OR CURRENT INSTRUCTION
 6227  012446  012301                          MOV     (TAB)+,LAST     ;LAST INSTRUCTION OR GROUP
 6228  012450  020267  000366                  CMP     FIRST,EISFIS    ;IS IT THE 'EISFIS' GROUP?
 6229  012454  001007                          BNE     1$              ;NO
 6230  012456  032767  000300  165742          BIT     #300,$CPUOP     ;DO WE HAVE EISFIS OPTION?
 6231  012464  001403                          BEQ     1$              ;NO
 6232  012466  062703  000004                  ADD     #4,TAB          ;IF YES DO NO DO THE
 6233  012472  000764                          BR      GIN1            ;EIS FIS OP CODES
 6234  012474  020267  000352          1$:     CMP     FIRST,STOP      ;IS IT THE STOP GROUP
 6235  012500  001005                          BNE     2$              ;NO
 6236  012502  032767  000020  165712          BIT     #20,$SWREG      ;DO WE WANT TO DO IT?
 6237  012510  001401                          BEQ     2$              ;YES
 6238  012512  000754                          BR      GIN1            ;NO
 6239  012514  020267  000336          2$:     CMP     FIRST,STOP1     ;IS IT THE STOP1 GROUP?
 6240  012520  001005                          BNE     3$              ;NO
 6241  012522  032767  000010  165672          BIT     #10,$SWREG      ;DO WE WANT TO DO IT?
 6242  012530  001401                          BEQ     3$              ;YES
 6243  012532  000744                          BR      GIN1            ;NO
 6244  012534  020267  000322          3$:     CMP     FIRST,FINISH    ;TESTED ALL
 6245  012540  001417                          BEQ     GIN3            ;YES BRANCH
 6246  012542  010267  000316                  MOV     FIRST,INST      ;SET UP INST
 6247  012546  005267  000312          GIN2:   INC     INST
 6248  012552  012767  012736  165230          MOV     #RET,10         ;SET UP RETURN FROM TRAP
 6249  012560  012706  000500                  MOV     #BUFF,SP        ;SET UP STACK POINTER
 6250  012564  005067  000306                  CLR     STATUS          ;CLEAR PRIORITY
 6254  012570                                  MTPS    STATUS
   (1) 012570  106467                          .WORD   106400!..C
 6258  012574  000167  000264                  JMP     INST            ;EXECUTE RESERVED INSTRUCTION
 6259
 6260  012600  005237  000406          GIN3:   INC     @#$PASS
 6261  012604  105267  000106                  INCB    PASSPT          ;SHOULD PRINT THIS PASS?
 6262  012610  001023                          BNE     ACT             ;NO
 6263  012612  132767  000040  165601          BITB    #40,$ENVM       ;WILL APT ALLOW PRINTING?
 6264  012620  001017                          BNE     ACT             ;NO
 6265  012622  012700  012720                  MOV     #MSG,R0         ;GET MSG ADDR.
 6266  012626  105737  177564          WAIT:   TSTB    @#TPS           ;TTY READY
 6267  012632  100375                          BPL     WAIT            ;NO WAIT
 6268  012634  112037  177566                  MOVB    (R0)+,@#TPB     ;PRINT CHARACTER
 6269  012640  001372                          BNE     WAIT            ;NEXT IF NOT DONE.
 6270  012642  105737  177564          WAIT1:  TSTB    @#TPS
 6271  012646  100375                          BPL     WAIT1
 6272  012650  000005                          RESET
 6273  012652  012767  177761  000036          MOV     #177761,PASSPT  ;DO IT 15 DECIMAL TIMES
 6274  012660  013700  000042          ACT:    MOV     @#42,R0         ;CHECK ACT
 6275  012664  001405                          BEQ     GOAGIN          ;KEEP GOING
 6276  012666  000005                          RESET
 6277  012670  004710                  $ENDAD: JSR     PC,(R0)         ;ACT HOOKS
 6278  012672  000240                          NOP
 6279  012674  000240                          NOP
 6280  012676  000240                          NOP
 6281  012700  012767  000012  165102  GOAGIN: MOV     #12,10
 6282  012706  005067  165100                  CLR     12
 6283  012712  000167  165662                  JMP     RESTRT          ;DO NEXT PASS
 6284  012716  177777                  PASSPT: -1
 6285  012720  005015  047105  020104  MSG:    .ASCIZ  <15><12>.END OF PASS.
       012726  043117  050040  051501
```

```
                012734  000123
 6286
 6287                                           ;TRAPPING SHOULD SEND YOU HERE
 6288   012736  020627  000474          RET:    CMP     SP,#BUFF-4      ;TEST DECREMENT OF SP
 6289   012742  001405                          BEQ     RET1
  (3)   012744  012737  000250  000402          MOV     #250,@#$FATAL   ;MOVE TO MAILBOX #  *******  250  *******
  (2)   012752  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)   012754  000000                          HALT                    ;WRONG DECREMENT
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 625
 6290   012756  026727  165512  013066  RET1:   CMP     BUFF-4,#INST+2  ;LOC OF INST UNINCREMENTED
 6291   012764  001405                          BEQ     RET2
  (3)   012766  012737  000251  000402          MOV     #251,@#$FATAL   ;MOVE TO MAILBOX #  *******  251  *******
  (2)   012774  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)   012776  000000                          HALT                    ;INST INC ON TRAP
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 614
 6292   013000  005767  165472          RET2:   TST     BUFF-2
 6293   013004  001405                          BEQ     RET3
  (1)   013006                          RET4:
  (3)   013006  012737  000252  000402          MOV     #252,@#$FATAL   ;MOVE TO MAILBOX #  *******  252  *******
  (2)   013014  005212                          INC     (R2)            ;SET MSGTYP TO FATAL ERROR
  (2)   013016  000000                          HALT                    ;CONDITION CODES SET ON TRAP
  (4)                                                                   ; TO SCOPE REPLACE HALT W/ 240
  (4)                                                                   ; AND REPLACE NEXT INST W/ 604
 6294   013020  026701  000040          RET3:   CMP     INST,LAST
 6295   013024  001607                          BEQ     GIN1            ;SET UP NEW GROUP
 6296   013026  000167  177514                  JMP     GIN2            ;FINISH OLD GROUP
 6297                                                                   ;END OF INSTRUCTION GROUP
 6298   013032  006777                  TABLE:  6777
 6299   013034  007777                          7777
 6300   013036  106777                          106777
 6301   013040  107777                          107777
 6302   013042  067777                  EISFIS: 67777   ;IF WE HAVE THE EIS FIS OPTION
 6303   013044  073777                          73777   ;THEN THE EISFIS GROUP
 6304   013046  074777                          74777   ;WILL BE SKIPED
 6305   013050  075037                          75037
 6306   013052  075377                  STOP:   75377
 6307   013054  076777                          76777
 6308   013056  167777                  STOP1:  167777
 6309   013060  177777                          177777
 6310   013062  013062                  FINISH: .                       ;END FLAG
 6311   013064  000000                  INST:   HALT                    ;WILL CONTINUE RESERVED INST
 6312   013066  000000                          HALT                    ;SHOULD TRAP TO LOC 10
 6313   013070  000000                          HALT                    ;LOC 10 SHOULD SEND YOU TO
 6314   013072  000000                          HALT                    ;RET
 6315   013074  000000                          HALT
 6316   013076  000000                  STATUS: 0
 6317
 6318
 6319                                           ;*********************************
 6320                                           ;POWER FAIL ROUTINE
 6321                                           ;*********************************
 6322
 6323   013100  012767  013110  164716  PWRDWN: MOV     #PWRUP,24
 6324   013106  000000                          HALT
```

```
 6325
 6326  013110  012767  013100  164706  PWRLP:  MOV     #PWRDWN,24
 6327  013116  012706  000500                  MOV     #BUFF,SP
 6328  013122  132767  000040  165271          BITB    #40,$ENVM       ;WILL APT ALLOW PRINTING?
 6329  013130  001013                          BNE     PFRES           ;NO
 6330  013132  012700  013164                  MOV     #MSGPWF,R0      ;GET MSG ADDR.
 6331  013136  105737  177564          PWAIT:  TSTB    @#TPS           ;TTY READY
 6332  013142  100375                          BPL     PWAIT           ;NO WAIT
 6333  013144  112037  177566                  MOVB    (R0)+,@#TPB     ;PRINT CHARACTER
 6334  013150  001372                          BNE     PWAIT           ;NEXT IF NOT DONE.
 6335  013152  105737  177564          PWAIT1: TSTB    @#TPS
 6336  013156  100375                          BPL     PWAIT1
 6337  013160  000167  165316          PFRES:  JMP     START
 6338  013164  005015  047520  042527  MSGPWF: .ASCIZ  <15><12>.POWER FAILED!.
       013172  020122  040506  046111
       013200  042105  000041
 6339          000001                          .END
```

```
ABASE = 000000           5055
ACDW1 = 000000           5055
ACDW2 = 000000           5055
ACDW3 = 000000           5055
ACDW4 = 000000           5055
ACPUOP= 000000           5055
ACT     012660           6262    6264    6274#
ADALL   011756           6141    6144#
ADDW1 = 000000           5055
ADDW10= 000000           5055
ADDW11= 000000           5055
ADDW12= 000000           5055
ADDW13= 000000           5055
ADDW14= 000000           5055
ADDW15= 000000           5055
ADDW2 = 000000           5055
ADDW3 = 000000           5055
ADDW4 = 000000           5055
ADDW5 = 000000           5055
ADDW6 = 000000           5055
ADDW7 = 000000           5055
ADDW8 = 000000           5055
ADDW9 = 000000           5055
ADEVCT= 000000           5055
ADEVM = 000000           5055
AENV  = 000000           5055
AENVM = 000000           5055
AFATAL= 000000           5055
AMADR1= 000000           5055
AMADR2= 000000           5055
AMADR3= 000000           5055
AMADR4= 000000           5055
AMSGAD= 000000           5055
AMSGLG= 000000           5055
AMSGTY= 000000           5055
AMTYP1= 000000           5055
AMTYP2= 000000           5055
AMTYP3= 000000           5055
AMTYP4= 000000           5055
APASS = 000000           5055
APRIOR= 000000           5055
ASWREG= 000000           5055
ATESTN= 000000           5055
ATRAP   012020           6146    6153#
AUNIT = 000000           5055
AUSWR = 000000           5055
AUTO    012006           6151#
AUTO1   012124           6138    6176#
AVECT1= 000000           5055
AVECT2= 000000           5055
BEGIN   000572           5069    5078    5083#
BELL  = 000240           4968#
BTRAP   012070           6157    6169#
BUFF    000500           5065#   5246    5252    5255    5258    5261    5264    5276    5278    5290    5293    5311    5334
                         5340    5343    5346    5349    5352    5364    5366    5377    5380    5398    5421    5430    5436
                         5439    5442    5445    5448    5460    5462    5474    5477    5495    5518    5524    5527    5530
```

```
                        5533    5536    5548    5550    5562    5565    5583    5606    5616    5622    5625    5628    5631
                        5634    5646    5648    5660    5663    5683    5713    5719    5722    5725    5728    5731    5743
                        5745    5757    5760    5778    5798    5804    5807    5810    5813    5817    5829    5831    5843
                        5846    5864    5886    5895    5902    5905    5911    5917    5929    5945    5961    5976    5984
                        5987    6001    6029    6068    6089    6112    6147    6158    6175    6184    6213    6249    6288
                        6290    6292    6327
CORH    011754          6143*   6154*   6161
CTRAP   012032          6157*   6176
DTRAP   012046          6160*   6175
EISFIS  013042          6228    6302*
EMT   = 104000          4956*   5604
FINISH  013062          6244    6310*
FIRST =%000002          4953*   6226*   6228    6234    6239    6244    6246
GIN1    012444          6226*   6233    6238    6243    6295
GIN2    012546          6247*   6296
GIN3    012600          6245    6260*
GOAGIN  012700          6275    6281*
HERE    000650          5099*   5102*   5107*   5141
HLT   = 000000          4954*
ILLA  = 004700          4972*
ILLB  = 000100          4973*
INST    013064          6246*   6247*   6258    6290    6294    6311*
INSTC   002276          5260*
INSTK   007276          5812*   5813
ITRAPS= 000004          4958*
K1      000624          5089*   5146*   5147    5150    5154*   5155    5158    5161*   5163    5169*   5171    5177*   5179
                        5182
K10     000642          5096*   5191    5195    5197    5200    5203    5206
K11     000644          5097*
K12     000646          5098*
K2      000626          5090*
K3      000630          5091*
K4      000632          5092*
K5      000634          5093*   5145*   5148    5153*   5162*   5164    5166    5170*   5172    5174    5178*   5180
K6      000636          5094*   5156    5195
K7      000640          5095*   5185    5188    5191    5197    5206
LAST  =%000001          4952*   6227*   6294
MSG     012720          6265    6285*
MSGPWF  013164          6330    6338*
NOP   = 000240          4969*
NOR     011772          6147*   6150
ODD     012414          6218    6220*
PASSPT  012716          5083*   6261*   6273*   6284*
PC    =%000007          4948*   6220*   6222    6223    6224    6277*
PFRES   013160          6329    6337*
PWAIT   013136          6331*   6332    6334
PWAIT1  013152          6335*   6336
PWRDWN  013100          5066    6323*   6326
PWRUP   013110          6323    6326*
RA      005436          5605    5609*
RA1     003662          5420    5424*
RB      005422          5604*   5607*   5609*   5610
RBBB    005424          5603    5608*
RB1     003646          5419*   5422*   5424*   5425
RB1AA   003650          5418    5423*
RC      005416          5606*   5611
```

RC1	003642	5421#	5426	
REES	012346	6182	6214	6215#
REES1	012334	6180	6214#	
RESET2	011510	6069	6076#	
RESTRT	000600	5084#	6283	
RET	012736	6248	6288#	
RETA	002200	5247	5250#	
RETAT	010040	5887	5893#	
RETA1	003034	5335	5338#	
RETA2	003752	5431	5434#	
RETA3	004606	5519	5522#	
RETA4	005526	5617	5620#	
RETA5	006362	5714	5717#	
RETB	002230	5253	5255#	
RETBT	010114	5896	5902#	
RETB1	003064	5341	5343#	
RETB2	004002	5437	5439#	
RETB3	004636	5525	5527#	
RETB4	005556	5623	5625#	
RETB5	006412	5720	5722#	
RETC	002300	5259	5261#	
RETCT	010174	5906	5911#	
RETC1	003134	5347	5349#	
RETC2	004052	5443	5445#	
RETC3	004706	5531	5533#	
RETC4	005626	5629	5631#	
RETC5	006462	5726	5728#	
RETD	002364	5265	5276#	
RETD1	003220	5353	5364#	
RETD2	004136	5449	5460#	
RETD3	004772	5537	5548#	
RETD4	005712	5635	5646#	
RETD5	006546	5732	5743#	
RETE	002436	5279	5290#	
RETE1	003270	5367	5377#	
RETE2	004210	5463	5474#	
RETE3	005044	5551	5562#	
RETE4	005764	5649	5660#	
RETE5	006620	5746	5757#	
RETF	002514	5294	5297#	
RETF1	003346	5381	5384#	
RETF2	004266	5478	5481#	
RETF3	005122	5566	5569#	
RETF4	006042	5664	5669#	
RETF5	006676	5761	5764#	
RETG	002644	5312	5315#	
RETG1	003476	5399	5402#	
RETG2	004416	5496	5499#	
RETG3	005252	5584	5587#	
RETG4	006172	5684	5687#	
RETG5	007026	5779	5782#	
RETH5	007200	5799	5802#	
RETJ	007230	5805	5807#	
RETK	007300	5811	5813#	
RETL	007361	5818	5829#	
RETM	007436	5832	5843#	

```
RETN    007514          5847    5850#
RET0    007642          5865    5868#
RET1    012756          6289    6290#
RET2    013000          6291    6292#
RET3    013020          6293    6294#
RET4    013006          6221    6293#
RTI1    010450          5947    5951#
RTI2    010464          5948    5953#
RTRAP = 000010          4971#   5247*   5253*   5259*   5265*   5279*   5294*   5295*   5312*   5313*
RTRAP1= 000034          4963#   5335*   5341*   5347*   5353*   5367*   5381*   5382*   5399*   5400*
RTRAP2= 000020          4962#   5431*   5437*   5443*   5449*   5463*   5478*   5479*   5496*   5497*
RTRAP3= 000030          4961#   5519*   5525*   5531*   5537*   5551*   5566*   5567*   5584*   5585*
RTRAP4= 000014          4960#   5617*   5623*   5629*   5635*   5649*   5664*   5665*   5684*   5685*   5887*   5896*   5906*
RTRAP5= 000004          4959#   5714*   5720*   5726*   5732*   5746*   5761*   5762*   5779*   5780*   5799*   5805*   5811*
                        5818*   5832*   5847*   5848*   5865*   5866*
RTT1    010260          5920    5923#
RTT2    010276          5921    5926#
RTT3    010344          5931    5935#
RTT4    010364          5932    5939#
RTT5    010316          5929#   5937    5942
RTT6    010406          5940    5943#
R0    =%000000          4951#   5076*   5077    6153*   6154    6156*   6159    6160*   6161    6265*   6268    6274*   6277
                        6330*   6333
R1    =%000001          5918*   5933*   5935*   5939*   5949*   5951*   5953
R2    =%000002          5104*   5109*   5114*   5120*   5126*   5132*   5138*   5143*   5151*   5159*   5167*   5175*   5183*
                        5186*   5189*   5193*   5196*   5198*   5201*   5204*   5207*   5219*   5220*   5221*   5222*   5241*
                        5242*   5243*   5244*   5249*   5256*   5262*   5277*   5291*   5298*   5299*   5300*   5301*   5310*
                        5316*   5317*   5318*   5319*   5330*   5337*   5344*   5350*   5365*   5378*   5385*   5386*   5387*
                        5388*   5397*   5403*   5404*   5405*   5406*   5417*   5423*   5433*   5440*   5446*   5461*   5475*
                        5482*   5483*   5484*   5485*   5494*   5500*   5501*   5502*   5503*   5514*   5521*   5528*   5534*
                        5549*   5563*   5570*   5571*   5572*   5573*   5582*   5588*   5589*   5590*   5591*   5602*   5608*
                        5619*   5626*   5632*   5647*   5661*   5670*   5671*   5672*   5673*   5682*   5688*   5689*   5690*
                        5691*   5702*   5716*   5723*   5729*   5744*   5758*   5765*   5766*   5767*   5768*   5777*   5783*
                        5784*   5785*   5786*   5796*   5801*   5808*   5814*   5830*   5844*   5851*   5852*   5853*   5854*
                        5863*   5869*   5870*   5871*   5872*   5882*   5892*   5901*   5903*   5912*   5924*   5938*   5942*
                        5952*   5955*   5970*   5972*   5983*   5985*   5994*   6024*   6025*   6045*   6064*   6066*   6075*
                        6101*   6110*   6131*   6151*   6162*   6174*   6176*   6203*   6212*   6214*   6219*   6289*   6291*
                        6293*
R6TST   000666          5101#
SP    =%000006          4949#   5246*   5252*   5255    5258*   5264*   5278*   5293*   5311*   5327*   5328*   5329    5334*
                        5340*   5343    5346*   5352*   5366*   5380*   5398*   5414*   5415*   5416    5421*   5430*   5436*
                        5439    5442*   5448*   5462*   5477*   5495*   5511*   5512*   5513    5518*   5524*   5527    5530*
                        5536*   5550*   5565*   5583*   5599*   5600*   5601    5606*   5616*   5622*   5625    5628*   5634*
                        5648*   5663*   5683*   5699*   5700*   5701    5713*   5719*   5722    5725*   5731*   5745*   5760*
                        5778*   5794*   5795    5798*   5804*   5807    5810*   5917*   5831*   5846*   5864*   5886*   5888*
                        5889*   5895*   5897*   5898*   5902    5905*   5907*   5908*   5917*   5919*   5920*   5929*   5930*
                        5931*   5945*   5946*   5947*   5966*   5967*   5979*   5980*   6070*   6071*   6147*   6158*   6184*
                        6249*   6288    6327*
START   000502          5060    5063    5066#   6337
STATUS  013076          5211*   5215*   5228*   5232*   5236*   5266*   5270*   5280*   5284*   5305*   5309    5323*   5327
                        5354*   5358*   5368*   5372*   5392*   5396    5410*   5414    5450*   5454*   5464*   5468*   5489*
                        5493    5507*   5511    5538*   5542*   5552*   5556*   5577*   5581    5595*   5599    5636*   5640*
                        5650*   5654*   5677*   5681    5695*   5699    5733*   5737*   5747*   5751*   5772*   5776    5790*
                        5794    5819*   5823*   5833*   5837*   5858*   5862    5876*   5880    6002*   6006*   6015*   6019*
                        6030*   6034*   6076*   6080*   6105*   6109    6126*   6130    6169*   6173    6194*   6198*   6207*
                        6211    6250*   6254*   6316#
```

```
STOP    013052          6234    6306#
STOP1   013056          6239    6308#
STP     004520          5476    5514#
STPA    004532          5514    5515#
STPBB   007752          5882    5883#
STPI    007740          5845    5882#
TAB   =%000003          4950#   6225*   6226    6227    6232*
TABLE   013032          6225    6298#
TONTI   010616          5965    5973#
TPB   = 177566          4967#   6189*   6192*   6268*   6333*
TPS   = 177564          4966#   5999    6183*   6187    6190    6193*   6215*   6266    6270    6331    6335
TRACE   010604          5957    5972#
TRACE1  010630          5962    5971#
TRAP  = 104400          4955#   5419
TRAPA = 000007          4970#   5248    5254    5260    5275    5289    5296    5314
TRAPB   012136          6162    6177#
TRCSR = 177560          4965#   6061*   6065
TRC1    010712          5977    5984#
TRC2    010774          5989    5993#
TRC3    011010          5990    5996#
TRPTRP  010522          5961#   5972
TRT   = 000003          4957#   5618    5624    5630    5645    5659    5668    5686
TR0     011132          6010    6024#
TR1     011144          6012    6025#
TR2     011156          6013    6026#
TR3     011262          6039    6044#
TR4     011276          6040    6046#
TR5     011264          6041    6045#
TSL     011752          6142#
TST1    000652          5088    5100#
TST10   002322          5257    5262    5263#
TST11   002460          5263    5291    5292#
TST12   002772          5292    5333#
TST13   003034          5333    5339#
TST14   003104          5339    5344    5345#
TST15   003156          5345    5350    5351#
TST16   003312          5351    5378    5379#
TST17   003612          5379    5417    5418#
TST2    001150          5100    5143    5144#
TST20   003710          5429#
TST21   003752          5429    5435#
TST22   004022          5435    5440    5441#
TST23   004074          5441    5446    5447#
TST24   004232          5447    5475    5476#
TST25   004544          5517#
TST26   004606          5517    5523#
TST27   004656          5523    5528    5529#
TST3    001474          5144    5183    5184#
TST30   004730          5529    5534    5535#
TST31   005066          5535    5563    5564#
TST32   005366          5564    5602    5603#
TST33   005464          5615#
TST34   005526          5615    5621#
TST35   005576          5621    5626    5627#
TST36   005650          5627    5632    5633#
TST37   006006          5633    5661    5662#
```

```
TST4     001730          5184    5193    5207    5209#
TST40    006320          5662    5712#
TST41    006362          5712    5718#
TST42    006432          5718    5723    5724#
TST43    006504          5724    5729    5730#
TST44    006642          5730    5758    5759#
TST45    007136          5759    5796    5797#
TST46    007200          5797    5803#
TST47    007250          5803    5808    5809#
TST5     002136          5209    5244    5245#
TST50    007322          5809    5814    5816#
TST51    007460          5816    5844    5845#
TST52    007764          5885#
TST53    010040          5885    5894#
TST54    010134          5894    5903    5904#
TST55    010216          5904    5912    5915#
TST56    010276          5915    5924    5927#
TST57    010406          5927    5944#
TST6     002200          5245    5251#
TST60    010502          5944    5955    5957#
TST61    010632          5975#
TST62    010734          5975    5985    5986#
TST63    011022          5986    5998#
TST64    011162          5998    6027#
TST65    011330          6027    6052#
TST66    011432          6052    6066    6067#
TST67    011532          6067    6087#
TST7     002250          5251    5256    5257#
TST70    011734          6087    6138#
TST71    012150          6180#
TST72    012362          6217#
TST73    012416          6217    6221#
TTCSR =  177564          4964#   6011#   6028#   6038#   6060#   6063    6099#   6122#   6132#
TTY3     011616          6090    6105#
TTY4     011676          6113    6126#
WAIT     012626          6266#   6267    6269
WAIT1    012642          6270#   6271
WATE     012300          6185    6207#
WATE1    012216          6187#   6188
WATE2    012232          6190#   6191
WATE3    012264          6202#   6213
$APTHD   000450          5056#
$CPUOP   000426          5055#   5071#   5079#   6230
$DEVCT   000410          5055#
$ENDAD   012670          5054    6277#
$ENV     000420          5055#   5068    6181
$ENVM    000421          5055#   5070#   5074#   6263    6328
$ERN  =  000253          4668#   5104#   5109#   5114#   5120#   5126#   5132#   5138#   5143#   5151#   5159#   5167#   5175#
                         5183#   5186#   5189#   5193#   5196#   5198#   5201#   5204#   5207#   5219#   5220#   5221#   5222#
                         5241#   5242#   5243#   5244#   5249#   5256#   5262#   5277#   5291#   5298#   5299#   5300#   5301#
                         5310#   5316#   5317#   5318#   5319#   5330#   5337#   5344#   5350#   5365#   5378#   5385#   5386#
                         5387#   5388#   5397#   5403#   5404#   5405#   5406#   5417#   5423#   5433#   5440#   5446#   5461#
                         5475#   5482#   5483#   5484#   5485#   5494#   5500#   5501#   5502#   5503#   5514#   5521#   5528#
                         5534#   5549#   5563#   5570#   5571#   5572#   5573#   5582#   5588#   5589#   5590#   5591#   5602#
                         5608#   5619#   5626#   5632#   5647#   5661#   5670#   5671#   5672#   5673#   5682#   5688#   5689#
                         5690#   5691#   5702#   5716#   5723#   5729#   5744#   5758#   5765#   5766#   5767#   5768#   5777#
```

```
                    5783#  5784#  5785#  5786#  5796#  5801#  5808#  5814#  5830#  5844#  5851#  5852#  5853#
                    5854#  5863#  5869#  5870#  5871#  5872#  5882#  5892#  5901#  5903#  5912#  5924#  5938#
                    5942#  5952#  5955#  5970#  5972#  5983#  5985#  5994#  6024#  6025#  6045#  6064#  6066#
                    6075#  6101#  6110#  6131#  6151#  6162#  6174#  6176#  6203#  6212#  6214#  6219#  6289#
                    6291#  6293#
$ERROR= 000402      4975#  5087*
$ETABL  000420      5055#
$ETEND  000450      5055#  5056
$FATAL  000402      4975   5055#  5104*  5109*  5114*  5120*  5126*  5132*  5138*  5143*  5151*  5159*  5167*
                    5175*  5183*  5186*  5189*  5193*  5196*  5198*  5201*  5204*  5207*  5219*  5220*  5221*
                    5222*  5241*  5242*  5243*  5244*  5249*  5256*  5262*  5277*  5291*  5298*  5299*  5300*
                    5301*  5310*  5316*  5317*  5318*  5319*  5330*  5337*  5344*  5350*  5365*  5378*  5385*
                    5386*  5387*  5388*  5397*  5403*  5404*  5405*  5406*  5417*  5423*  5433*  5440*  5446*
                    5461*  5475*  5482*  5483*  5484*  5485*  5494*  5500*  5501*  5502*  5503*  5514*  5521*
                    5528*  5534*  5549*  5563*  5570*  5571*  5572*  5573*  5582*  5588*  5589*  5590*  5591*
                    5602*  5608*  5619*  5626*  5632*  5647*  5661*  5670*  5671*  5672*  5673*  5682*  5688*
                    5689*  5690*  5691*  5702*  5716*  5723*  5729*  5744*  5758*  5765*  5766*  5767*  5768*
                    5777*  5783*  5784*  5785*  5786*  5796*  5801*  5808*  5814*  5830*  5844*  5851*  5852*
                    5853*  5854*  5863*  5869*  5870*  5871*  5872*  5882*  5892*  5901*  5903*  5912*  5924*
                    5938*  5942*  5952*  5955*  5970*  5972*  5983*  5985*  5994*  6024*  6025*  6045*  6064*
                    6066*  6075*  6101*  6110*  6131*  6151*  6162*  6174*  6176*  6203*  6212*  6214*  6219*
                    6289*  6291*  6293*
$HIBTS  000450      5056#
$MADR1  000432      5055#
$MADR2  000436      5055#
$MADR3  000442      5055#
$MADR4  000446      5055#
$MAIL   000400      5055#  5056
$MBADR  000452      5056#
$MSGAD  000414      5055#
$MSGLG  000416      5055#
$MSGTY  000400      5055#  5084   5085*
$MTYP1  000430      5055#
$MTYP2  000434      5055#
$MTYP3  000440      5055#
$MTYP4  000444      5055#
$PASS   000406      5055#  5062*  6260*
$PASTM  000456      5056#
$SVPC = 000400      5054#
$SWR  = 000000      4666#
$SWREG  000422      5055#  5072   5076   6236   6241
$TESTN  000404      4974   5055#  5100*  5144*  5184*  5209*  5245*  5251*  5257*  5263*  5292*  5333*  5339*
                    5345*  5351*  5379*  5418*  5429*  5435*  5441*  5447*  5476*  5517*  5523*  5529*  5535*
                    5564*  5603*  5615*  5621*  5627*  5633*  5662*  5712*  5718*  5724*  5730*  5759*  5797*
                    5803*  5809*  5816*  5845*  5885*  5894*  5904*  5915*  5927*  5944*  5957*  5975*  5986*
                    5998*  6027*  6052*  6067*  6087*  6138*  6180*  6217*  6221*
$TN   = 000074      4667#  5100#  5143   5144#  5183   5184#  5193   5207   5209#  5244   5245#  5251#  5256
                    5257#  5262   5263#  5291   5292#  5333#  5339#  5344   5345#  5350   5351#  5378   5379#
                    5417   5418#  5429#  5435#  5440   5441#  5446   5447#  5475   5476#  5517#  5523#  5528
                    5529#  5534   5535#  5563   5564#  5602   5603#  5615#  5621#  5626   5627#  5632   5633#
                    5661   5662#  5712#  5718#  5723   5724#  5729   5730#  5758   5759#  5796   5797#  5803#
                    5808   5809#  5814   5816#  5844   5845#  5885#  5894#  5903   5904#  5912   5915#  5924
                    5927#  5944#  5955   5957#  5975#  5985   5986#  5998#  6027#  6052#  6066   6067#  6087#
                    6138#  6180#  6217#  6221#
$TSTM   000454      5056#
$TSTNM= 000404      4974#  5086*
```

```
$UNIT    000412         5055#
$UNITN   000460         5056#
$USWR    000424         5055#
$\     = 012432         5100#  5104   5109   5114   5120   5126   5132   5138   5143   5144#  5151   5159   5167
                        5175   5183   5184#  5186   5189   5193   5196   5198   5201   5204   5207   5209#  5219
                        5220   5221   5222   5241   5242   5243   5244   5245#  5249   5251#  5256   5257#  5262
                        5263#  5277   5291   5292#  5298   5299   5300   5301   5310   5316   5317   5318   5319
                        5330   5333#  5337   5339#  5344   5345#  5350   5351#  5365   5378   5379#  5385   5386
                        5387   5388   5397   5403   5404   5405   5406   5417   5418#  5423   5429#  5433   5435#
                        5440   5441#  5446   5447#  5461   5475   5476#  5482   5483   5484   5485   5494   5500
                        5501   5502   5503   5514   5517#  5521   5523#  5528   5529#  5534   5535#  5549   5563
                        5564#  5570   5571   5572   5573   5582   5588   5589   5590   5591   5602   5603#  5608
                        5615#  5619   5621#  5626   5627#  5632   5633#  5647   5661   5662#  5670   5671   5672
                        5673   5682   5688   5689   5690   5691   5702   5712#  5716   5718#  5723   5724#  5729
                        5730#  5744   5758   5759#  5765   5766   5767   5768   5777   5783   5784   5785   5786
                        5796   5797#  5801   5803#  5808   5809#  5814   5816#  5830   5844   5845#  5851   5852
                        5853   5854   5863   5869   5870   5871   5872   5882   5885#  5892   5894#  5901   5903
                        5904#  5912   5915#  5924   5927#  5938   5942   5944#  5952   5955   5957#  5970   5972
                        5975#  5983   5985   5986#  5994   5998#  6024   6025   6027#  6045   6052#  6064   6066
                        6067#  6075   6087#  6101   6110   6131   6138#  6151   6162   6174   6176   6190#  6203
                        6212   6214   6217#  6219   6221#  6289   6291   6293
$XX    = 177605         5104#  5109#  5114#  5120#  5126#  5132#  5138#  5143#  5151#  5159#  5167#  5175#  5183#
                        5186#  5189#  5193#  5196#  5198#  5201#  5204#  5207#  5219#  5220#  5221#  5222#  5241#
                        5242#  5243#  5244#  5249#  5256#  5262#  5277#  5291#  5298#  5299#  5300#  5301#  5310#
                        5316#  5317#  5318#  5319#  5330#  5337#  5344#  5350#  5365#  5378#  5385#  5386#  5387#
                        5388#  5397#  5403#  5404#  5405#  5406#  5417#  5423#  5433#  5440#  5446#  5461#  5475#
                        5482#  5483#  5484#  5485#  5494#  5500#  5501#  5502#  5503#  5514#  5521#  5528#  5534#
                        5549#  5563#  5570#  5571#  5572#  5573#  5582#  5588#  5589#  5590#  5591#  5602#  5608#
                        5619#  5626#  5632#  5647#  5661#  5670#  5671#  5672#  5673#  5682#  5688#  5689#  5690#
                        5691#  5702#  5716#  5723#  5729#  5744#  5758#  5765#  5766#  5767#  5768#  5777#  5783#
                        5784#  5785#  5786#  5796#  5801#  5808#  5814#  5830#  5844#  5851#  5852#  5853#  5854#
                        5863#  5869#  5870#  5871#  5872#  5882#  5892#  5901#  5903#  5912#  5924#  5938#  5942#
                        5952#  5955#  5970#  5972#  5983#  5985#  5994#  6024#  6025#  6045#  6064#  6066#  6075#
                        6101#  6110#  6131#  6151#  6162#  6174#  6176#  6203#  6212#  6214#  6219#  6289#  6291#
                        6293#
$XXX   = 000604         5104#  5109#  5114#  5120#  5126#  5132#  5138#  5143#  5151#  5159#  5167#  5175#  5183#
                        5186#  5189#  5193#  5196#  5198#  5201#  5204#  5207#  5219#  5220#  5221#  5222#  5241#
                        5242#  5243#  5244#  5249#  5256#  5262#  5277#  5291#  5298#  5299#  5300#  5301#  5310#
                        5316#  5317#  5318#  5319#  5330#  5337#  5344#  5350#  5365#  5378#  5385#  5396#  5397#
                        5388#  5397#  5403#  5404#  5405#  5406#  5417#  5423#  5433#  5440#  5446#  5461#  5475#
                        5482#  5483#  5484#  5485#  5494#  5500#  5501#  5502#  5503#  5514#  5521#  5528#  5534#
                        5549#  5563#  5570#  5571#  5572#  5573#  5582#  5588#  5589#  5590#  5591#  5602#  5609#
                        5619#  5626#  5632#  5647#  5661#  5670#  5671#  5672#  5673#  5682#  5688#  5689#  5690#
                        5691#  5702#  5716#  5723#  5729#  5744#  5758#  5765#  5766#  5767#  5768#  5777#  5783#
                        5784#  5785#  5786#  5796#  5801#  5808#  5814#  5830#  5844#  5951#  5852#  5853#  5854#
                        5863#  5869#  5870#  5871#  5872#  5882#  5892#  5901#  5903#  5912#  5924#  5939#  5942#
                        5952#  5955#  5970#  5972#  5983#  5985#  5994#  6024#  6025#  6045#  6064#  6066#  6075#
                        6101#  6110#  6131#  6151#  6162#  6174#  6176#  6203#  6212#  6214#  6219#  6289#  6291#
                        6293#
.      = 013204         4978#  4982   4983   4985   4987   4989   4991   4993   4995   4997   4999   5001   5003
                        5005   5007   5009   5011   5013   5015   5017   5019   5021   5023   5025   5027   5029
                        5031   5033   5035   5037   5039   5041   5043   5045   5053#  5054#  5056#  5059#  5061#
                        5064#  5100   5104   5109   5114   5120   5126   5132   5138   5143   5144   5151   5159
                        5167   5175   5183   5184   5186   5189   5193   5196   5198   5201   5204   5207   5209
                        5215#  5219   5220   5221   5222   5228#  5236#  5241   5242   5243   5244   5245   5249
                        5251   5256   5257   5261   5262   5263   5270#  5277   5284#  5291   5292   5298   5299
```

```
                    5300    5301    5305#   5310    5316    5317    5318    5319    5323#   5330    5333    5337    5339
                    5344    5345    5349    5350    5351    5358#   5365    5372#   5378    5379    5385    5386    5387
                    5388    5392#   5397    5403    5404    5405    5406    5410#   5417    5418    5423    5429    5433
                    5435    5440    5441    5445    5446    5447    5454#   5461    5468#   5475    5476    5482    5483
                    5484    5485    5489#   5494    5500    5501    5502    5503    5507#   5514    5517    5521    5523
                    5528    5529    5533    5534    5535    5542#   5549    5556#   5563    5564    5570    5571    5572
                    5573    5577#   5582    5588    5589    5590    5591    5595#   5602    5603    5609    5615    5619
                    5621    5626    5627    5631    5632    5633    5640#   5647    5654#   5661    5662    5670    5671
                    5672    5673    5677#   5682    5688    5689    5690    5691    5695#   5702    5712    5716    5718
                    5723    5724    5728    5729    5730    5737#   5744    5751#   5758    5759    5765    5766    5767
                    5768    5772#   5777    5783    5784    5785    5786    5790#   5796    5797    5801    5803    5808
                    5809    5814    5816    5823#   5830    5837#   5844    5845    5851    5852    5853    5854    5858#
                    5863    5869    5870    5871    5872    5876#   5882    5885    5889    5892    5894    5898    5901
                    5903    5904    5908    5911    5912    5915    5924    5927    5938    5942    5944    5952    5955
                    5957    5967    5970    5972    5975    5980    5983    5985    5986    5994    5998    6000    6006#
                    6019#   6024    6025    6027    6034#   6045    6052    6056#   6064    6066    6067    6071    6075
                    6080#   6087    6094#   6101    6105#   6110    6118#   6126#   6131    6138    6151    6162    6169#
                    6174    6176    6180    6198#   6203    6207#   6212    6214    6217    6219    6221    6254#   6299
                    6291    6293    6310
.$X     = 000450    5056#
..A     = 012570    5215#   5228#   5236#   5270#   5284#   5305#   5323#   5358#   5372#   5392#   5410#   5454#   5469#
                    5489#   5507#   5542#   5556#   5577#   5595#   5640#   5654#   5677#   5695#   5737#   5751#   5772#
                    5790#   5823#   5837#   5858#   5876#   6006#   6019#   6034#   6056#   6080#   6094#   6105#   6119#
                    6126#   6169#   6198#   6207#   6254#
..B     = 012574    5215#   5228#   5236#   5270#   5284#   5305#   5323#   5358#   5372#   5392#   5410#   5454#   5469#
                    5489#   5507#   5542#   5556#   5577#   5595#   5640#   5654#   5677#   5695#   5737#   5751#   5772#
                    5790#   5823#   5837#   5858#   5876#   6006#   6019#   6034#   6056#   6080#   6094#   6105#   6119#
                    6126#   6169#   6198#   6207#   6254#
..C     = 000067    5215#   5228#   5236#   5270#   5284#   5305#   5323#   5358#   5372#   5392#   5410#   5454#   5469#
                    5489#   5507#   5542#   5556#   5577#   5595#   5640#   5654#   5677#   5695#   5737#   5751#   5772#
                    5790#   5823#   5837#   5858#   5876#   6006#   6019#   6034#   6056#   6080#   6094#   6105#   6119#
                    6126#   6169#   6198#   6207#   6254#
```

```
COMMEN    974#
ENDCOM    986#
ERROR    4633#  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183  5186
          5189   5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243  5244
          5249   5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319  5330
          5337   5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406  5417
          5423   5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502  5503
          5514   5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5588  5589  5590  5591
          5602   5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682  5688  5689  5690
          5691   5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777  5783  5784  5785
          5786   5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863  5869  5870  5871
          5872   5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970  5972  5983  5985
          5994   6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162  6174  6176  6203
          6212   6214  6219  6289  6291  6293
ESCAPE    1091#
LOOP      4699#  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183  5186
          5189   5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243  5244
          5249   5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319  5330
          5337   5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406  5417
          5423   5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502  5503
          5514   5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5588  5589  5590  5591
          5602   5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682  5688  5689  5690
          5691   5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777  5783  5784  5795
          5786   5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863  5869  5870  587?
          5872   5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970  5972  5983  5985
          5994   6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162  6174  6176  6203
          6212   6214  6219  6289  6291  6293
MFPS      4934#  5228  5305  5323  5392  5410  5489  5507  5577  5595  5677  5695  5772  5790  5858
          5876   6105  6126  6169  6207
MTPS      4920#  5215  5236  5270  5284  5358  5372  5454  5468  5542  5556  5640  5654  5737  5751
          5823   5837  6006  6019  6034  6056  6080  6094  6118  6198  6254
MULT      3460#
NEWTST    1026#  4687#  5100  5144  5184  5209  5245  5251  5257  5263  5292  5333  5339  5345  5351
          5379   5418  5429  5435  5441  5447  5476  5517  5523  5529  5535  5564  5603  5615  5631
          5627   5633  5662  5712  5718  5724  5730  5759  5797  5803  5809  5816  5845  5885  5894
          5904   5915  5927  5944  5957  5975  5986  5998  6027  6052  6067  6087  6139  6180  6217
          6221
POP       1477#
PUSH      1469#
REPORT    4445#
SETUP      901#
SKIP      1125#
SLASH      926#
STARS      895#  4695#  5054  5055  5056  5100  5144  5184  5209  5245  5251  5257  5263  5292  5333
          5339   5345  5351  5379  5418  5429  5435  5441  5447  5476  5517  5523  5529  5535  5564
          5603   5615  5621  5627  5633  5662  5712  5718  5724  5730  5759  5797  5803  5809  5816
          5845   5885  5894  5904  5915  5927  5944  5957  5975  5986  5998  6027  6052  6067  6087
          6138   6180  6217  6221
TYPBIN    1413#
TYPDEC    1383#
TYPNAM    1171#
TYPNUM    1350#
TYPOCS    1303#
TYPOCT    1266#
TYPTXT    1220#
$SERCD    4660#  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183  5196
```

```
                5189    5193    5196    5198    5201    5204    5207    5219    5220    5221    5222    5241    5242    5243    5244
                5249    5256    5262    5277    5291    5298    5299    5300    5301    5310    5316    5317    5318    5319    5330
                5337    5344    5350    5365    5378    5385    5386    5387    5388    5397    5403    5404    5405    5406    5417
                5423    5433    5440    5446    5461    5475    5482    5483    5484    5485    5494    5500    5501    5502    5503
                5514    5521    5528    5534    5549    5563    5570    5571    5572    5573    5582    5588    5589    5590    5591
                5602    5608    5619    5626    5632    5647    5661    5670    5671    5672    5673    5682    5688    5689    5690
                5691    5702    5716    5723    5729    5744    5758    5765    5766    5767    5768    5777    5783    5784    5785
                5786    5796    5801    5808    5814    5830    5844    5851    5852    5853    5854    5863    5869    5870    5871
                5872    5882    5892    5901    5903    5912    5924    5938    5942    5952    5955    5970    5972    5983    5985
                5994    6024    6025    6045    6064    6066    6075    6101    6110    6131    6151    6162    6174    6176    6203
                6212    6214    6219    6289    6291    6293
$$ERNU          4654#   5104    5109    5114    5120    5126    5132    5138    5143    5151    5159    5167    5175    5183    5186
                5189    5193    5196    5198    5201    5204    5207    5219    5220    5221    5222    5241    5242    5243    5244
                5249    5256    5262    5277    5291    5298    5299    5300    5301    5310    5316    5317    5318    5319    5330
                5337    5344    5350    5365    5378    5385    5386    5387    5388    5397    5403    5404    5405    5406    5417
                5423    5433    5440    5446    5461    5475    5482    5483    5484    5485    5494    5500    5501    5502    5503
                5514    5521    5528    5534    5549    5563    5570    5571    5572    5573    5582    5588    5589    5590    5591
                5602    5608    5619    5626    5632    5647    5661    5670    5671    5672    5673    5682    5688    5689    5690
                5691    5702    5716    5723    5729    5744    5758    5765    5766    5767    5768    5777    5783    5784    5785
                5786    5796    5801    5808    5814    5830    5844    5851    5852    5853    5854    5863    5869    5870    5871
                5872    5882    5892    5901    5903    5912    5924    5938    5942    5952    5955    5970    5972    5983    5985
                5994    6024    6025    6045    6064    6066    6075    6101    6110    6131    6151    6162    6174    6176    6203
                6212    6214    6219    6289    6291    6293
$$ERRO          4649#   5143    5183    5193    5207    5244    5256    5262    5291    5344    5350    5378    5417    5440    5446
                5475    5528    5534    5563    5602    5626    5632    5661    5723    5729    5758    5796    5808    5814    5844
                5903    5912    5924    5955    5985    6066
$$ESCA          1104#
$$LOOP          4709#   5104    5109    5114    5120    5126    5132    5138    5143    5151    5159    5167    5175    5183    5186
                5189    5193    5196    5198    5201    5204    5207    5219    5220    5221    5222    5241    5242    5243    5244
                5249    5256    5262    5277    5291    5298    5299    5300    5301    5310    5316    5317    5318    5319    5330
                5337    5344    5350    5365    5378    5385    5386    5387    5388    5397    5403    5404    5405    5406    5417
                5423    5433    5440    5446    5461    5475    5482    5483    5484    5485    5494    5500    5501    5502    5503
                5514    5521    5528    5534    5549    5563    5570    5571    5572    5573    5582    5588    5589    5590    5591
                5602    5608    5619    5626    5632    5647    5661    5670    5671    5672    5673    5682    5688    5689    5690
                5691    5702    5716    5723    5729    5744    5758    5765    5766    5767    5768    5777    5783    5784    5785
                5786    5796    5801    5808    5814    5830    5844    5851    5852    5853    5854    5863    5869    5870    5871
                5872    5882    5892    5901    5903    5912    5924    5938    5942    5952    5955    5970    5972    5983    5985
                5994    6024    6025    6045    6064    6066    6075    6101    6110    6131    6151    6162    6174    6176    6203
                6212    6214    6219    6289    6291    6293
$$NEWT          1058#   4671#   5100    5144    5184    5209    5245    5251    5257    5263    5292    5333    5339    5345    5351
                5379    5418    5429    5435    5441    5447    5476    5517    5523    5529    5535    5564    5603    5615    5621
                5627    5633    5662    5712    5718    5724    5730    5759    5797    5803    5909    5816    5845    5885    5894
                5904    5915    5927    5944    5957    5975    5986    5998    6027    6052    6067    6087    6138    6180    6217
                6221
$$SKIP          1138#
.EQUAT           168#
.HEADE            39#
.KTII            308#
.SETUP           747#
.SWRHI            81#
.$ACTI          4026#   5050#   5054
.$APTB          4074#   5049#   5055
.$APTH          4358#   5048#   5056
.$APTY          4521#
.$ASTA          4405#
.$CATC           485#
```

FOS


```
.$CMTA    586#
.$DB2D   3660#
.$DB2O   3794#
.$DIV    3562#
.$EOP    1529#
.$ERRO   1941#
.$ERRT   2134#
.$MULT   3498#
.$POWE   3217#
.$RAND   3280#
.$RDDE   2913#
.$RDOC   2821#
.$READ   2607#
.$R2AZ   3928#
.$SAVE   2989#
.$SB2O   3745#
.$SB2O   3847#
.$SCOP   1733#
.$SIZE   3342#
.$SUPR   3885#
.$TRAP   3089#
.$TYPB   2522#
.$TYPC   2444#
.$TYPE   2222#
.$TYPO   2347#
.$4OCA    515#
```

DVKADA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
ADD     6232
BCC     5219  5301  5388  5485  5573  5673  5768  5854
BCS     5241  5319  5406  5503  5591  5691  5786  5872
BEQ     5073  5078  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183
        5186  5189  5193  5196  5198  5204  5243  5256  5262  5277  5291  5310  5317  5330  5344
        5350  5365  5378  5397  5404  5417  5440  5446  5461  5475  5494  5501  5514  5528  5534
        5549  5563  5582  5589  5602  5626  5632  5647  5661  5682  5689  5702  5723  5729  5744
        5758  5777  5784  5796  5808  5814  5830  5844  5863  5870  5882  5903  5912  5924  5937
        5940  5942  5955  5972  6064  6066  6110  6131  6162  6174  6176  6212  6214  6231  6237
        6242  6245  6275  6289  6291  6293  6295
BHIS    5426  5611
BIC     5328  5415  5512  5600  5700  6028  6183  6215
BIS     5079  5232  6099  6122  6193
BISB    5074
BIT     5077  5309  5396  5493  5581  5681  5776  5984  6063  6065  6230  6236  6241
BITB    5072  6263  6328
BLOS    6150
BMI     5244  5316  5403  5500  5588  5688  5783  5869
BNE     5069  5100  5144  5184  5201  5207  5209  5221  5245  5251  5257  5263  5292  5299  5333
        5339  5345  5351  5379  5386  5418  5429  5435  5441  5447  5476  5483  5517  5523  5529
        5535  5564  5571  5603  5615  5621  5627  5633  5662  5671  5712  5718  5724  5730  5759
        5766  5797  5803  5809  5816  5845  5852  5885  5894  5904  5915  5927  5944  5957  5975
        5985  5986  5998  6027  6052  6067  6087  6138  6180  6182  6217  6221  6229  6235  6240
        6262  6264  6269  6329  6334
BPL     5222  5298  5385  5482  5570  5670  5765  5851  6000  6188  6191  6267  6271  6332  6336
BR      6141  6233  6238  6243
BVC     5220  5300  5387  5484  5572  5672  5767  5853
BVS     5242  5318  5405  5502  5590  5690  5785  5871
CCC     5224  5274  5362  5458  5546  5644  5741  5827
CLR     5062  5070  5071  5085  5086  5087  5101  5111  5116  5117  5122  5123  5128  5129  5134
        5135  5211  5215  5228  5236  5266  5270  5284  5295  5305  5323  5332  5354  5358  5372
        5382  5392  5410  5428  5450  5454  5468  5479  5489  5507  5516  5538  5542  5556  5567
        5577  5595  5613  5636  5640  5654  5665  5677  5695  5704  5733  5737  5751  5762  5772
        5790  5819  5823  5837  5848  5858  5876  5884  5918  5933  5949  5963  5964  5978  5997
        6006  6015  6019  6026  6034  6046  6047  6056  6076  6080  6085  6094  6105  6114  6118
        6126  6132  6144  6145  6169  6178  6186  6194  6198  6207  6250  6254  6282
CMP     5100  5103  5108  5113  5119  5125  5131  5137  5142  5144  5150  5158  5166  5174  5182
        5184  5209  5245  5251  5255  5257  5261  5263  5276  5290  5292  5329  5333  5339  5343
        5345  5349  5351  5364  5377  5379  5416  5418  5425  5429  5435  5439  5441  5445  5447
        5460  5474  5476  5513  5517  5523  5527  5529  5533  5535  5548  5562  5564  5601  5603
        5610  5615  5621  5625  5627  5631  5633  5646  5660  5662  5701  5712  5718  5722  5724
        5728  5730  5743  5757  5759  5795  5797  5803  5807  5809  5813  5816  5829  5843  5845
        5881  5885  5894  5902  5904  5911  5915  5927  5944  5957  5975  5986  5998  6027  6052
        6067  6087  6109  6138  6149  6161  6175  6180  6213  6217  6221  6228  6234  6239  6244
        6288  6290  6294
CMPB    5118  5124  5130  5136  5141  5185  5188  5191  5195  5197  5200  5203  5206
DEC     5939  6153  6220
EMT     5520  5526  5532  5547  5561  5568  5586  5607
HALT    4954  4982  4984  4986  4988  4990  4992  4994  4996  4998  5000  5002  5004  5006  5008
        5010  5012  5014  5016  5018  5020  5022  5024  5026  5028  5030  5032  5034  5036  5038
        5040  5042  5044  5046  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167
        5175  5183  5186  5189  5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241
        5242  5243  5244  5249  5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317
        5318  5319  5330  5337  5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404
        5405  5406  5417  5423  5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500
        5501  5502  5503  5514  5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5598
```

DVKADA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS *** SEQ 0061

```
        5589  5590  5591  5602  5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682
        5688  5689  5690  5691  5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777
        5783  5784  5785  5786  5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863
        5869  5870  5871  5872  5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970
        5972  5983  5985  5994  6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162
        6174  6176  6203  6212  6214  6219  6289  6291  6293  6311  6312  6313  6314  6315  6324
INC     5100  5104  5109  5114  5120  5126  5132  5138  5143  5144  5151  5159  5167  5175  5183
        5184  5186  5189  5193  5196  5198  5201  5204  5207  5209  5219  5220  5221  5222  5241
        5242  5243  5244  5245  5249  5251  5256  5257  5262  5263  5277  5291  5292  5298  5299
        5300  5301  5310  5316  5317  5318  5319  5330  5333  5337  5339  5344  5345  5350  5351
        5365  5378  5379  5385  5386  5387  5388  5397  5403  5404  5405  5406  5417  5418  5423
        5424  5429  5433  5435  5440  5441  5446  5447  5461  5475  5476  5482  5483  5484  5485
        5494  5500  5501  5502  5503  5514  5517  5521  5523  5528  5529  5534  5535  5549  5563
        5564  5570  5571  5572  5573  5582  5588  5589  5590  5591  5602  5603  5608  5609  5615
        5619  5621  5626  5627  5632  5633  5647  5661  5662  5670  5671  5672  5673  5682  5688
        5689  5690  5691  5702  5712  5716  5718  5723  5724  5729  5730  5744  5758  5759  5765
        5766  5767  5768  5777  5783  5784  5785  5786  5796  5797  5801  5803  5808  5809  5814
        5816  5830  5844  5845  5851  5852  5853  5854  5863  5869  5870  5871  5872  5882  5885
        5892  5894  5901  5903  5904  5912  5915  5924  5927  5935  5936  5938  5941  5942  5944
        5951  5952  5955  5957  5970  5971  5972  5975  5983  5985  5986  5994  5998  6024  6025
        6027  6045  6052  6064  6066  6067  6075  6087  6101  6110  6131  6138  6151  6160  6162
        6174  6176  6180  6203  6212  6214  6217  6219  6221  6247  6260  6289  6291  6293
INCB    6261
IOT     5432  5438  5444  5459  5473  5480  5498  5969  6044
JMP     5060  5063  5088  5715  5721  5727  5742  5756  5763  5781  6218  6258  6283  6296  6337
JSR     5800  5806  5812  5828  5842  5849  5867  6277
MOV     5066  5067  5076  5083  5084  5104  5106  5109  5114  5120  5126  5132  5138  5140  5143
        5145  5146  5147  5148  5151  5153  5154  5155  5156  5159  5161  5162  5163  5164  5167
        5169  5170  5171  5172  5175  5177  5178  5179  5180  5183  5186  5189  5193  5196  5198
        5201  5204  5207  5219  5220  5221  5222  5241  5242  5243  5244  5246  5247  5249  5252
        5253  5256  5258  5259  5262  5264  5265  5277  5278  5279  5280  5291  5293  5294  5298
        5299  5300  5301  5310  5311  5312  5313  5316  5317  5318  5319  5327  5330  5331  5334
        5335  5337  5340  5341  5344  5346  5347  5350  5352  5353  5365  5366  5367  5368  5378
        5380  5381  5385  5386  5387  5388  5397  5398  5399  5400  5403  5404  5405  5406  5414
        5417  5419  5420  5421  5423  5427  5430  5431  5433  5436  5437  5440  5442  5443  5446
        5448  5449  5461  5462  5463  5464  5475  5477  5478  5482  5483  5484  5485  5494  5495
        5496  5497  5500  5501  5502  5503  5511  5514  5515  5518  5519  5521  5524  5525  5528
        5530  5531  5534  5536  5537  5549  5550  5551  5552  5563  5565  5566  5570  5571  5572
        5573  5582  5583  5584  5585  5588  5589  5590  5591  5599  5602  5604  5605  5606  5608
        5612  5616  5617  5619  5622  5623  5626  5628  5629  5632  5634  5635  5647  5648  5649
        5650  5661  5663  5664  5670  5671  5672  5673  5682  5683  5684  5685  5688  5689  5690
        5691  5699  5702  5703  5713  5714  5716  5719  5720  5723  5725  5726  5729  5731  5732
        5744  5745  5746  5747  5758  5760  5761  5765  5766  5767  5768  5777  5778  5779  5780
        5783  5784  5785  5786  5794  5796  5798  5799  5801  5804  5805  5808  5810  5811  5814
        5817  5818  5830  5831  5832  5833  5844  5846  5847  5851  5852  5853  5854  5862  5863
        5864  5865  5866  5869  5870  5871  5872  5880  5882  5883  5886  5887  5888  5889  5892
        5895  5896  5897  5898  5901  5903  5905  5906  5907  5908  5912  5917  5919  5920  5921
        5924  5928  5929  5930  5931  5932  5938  5942  5945  5946  5947  5948  5952  5955  5960
        5961  5962  5965  5966  5967  5970  5972  5973  5974  5976  5977  5979  5980  5983  5985
        5987  5988  5989  5990  5994  5996  6001  6002  6010  6011  6012  6013  6014  6024  6025
        6029  6030  6038  6039  6040  6041  6042  6045  6048  6049  6050  6060  6061  6064  6066
        6068  6069  6070  6071  6075  6084  6089  6090  6098  6101  6110  6112  6113  6131  6133
        6146  6147  6151  6154  6156  6157  6158  6162  6174  6176  6177  6184  6195  6189  6192
        6203  6212  6214  6216  6219  6222  6223  6224  6225  6226  6227  6246  6248  6249  6265
        6273  6274  6281  6289  6291  6293  6323  6326  6327  6330
MOVB    5102  5107  5112  5149  5157  5165  5173  5181  6268  6333
```

```
NOP     5891  5900  5923  5982  5993  6100  6278  6279  6280
RESET   6062  6073  6074  6088  6111  6272  6276
RTI     5890  5899  5909  5950  5981  5991
RTT     5922  5934  5968  6072
SCC     5210  5288  5472  5560  5658  5755  5841
TRAP    5336  5342  5348  5363  5376  5383  5401  5422  6023  6043
TST     5953  6130  6173  6211  6292
TSTB    5068  5999  6148  6159  6181  6187  6190  6266  6270  6331  6335
WAIT    6202
.ABS    4976
.ASCIZ  6285  6338
.BYTE   5055
.ENABL     4
.END    6339
.ENDC   5054  5055  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183
        5186  5189  5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243
        5244  5249  5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319
        5330  5337  5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406
        5417  5423  5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502
        5503  5514  5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5588  5589  5590
        5591  5602  5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682  5688  5689
        5690  5691  5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777  5783  5784
        5785  5786  5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863  5869  5870
        5871  5872  5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970  5972  5983
        5985  5994  6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162  6174  6176
        6203  6212  6214  6219  6289  6291  6293
.EVEN    5055
.IF     5054  5055  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183
        5186  5189  5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243
        5244  5249  5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319
        5330  5337  5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406
        5417  5423  5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502
        5503  5514  5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5588  5589  5590
        5591  5602  5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682  5688  5699
        5690  5691  5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777  5783  5784
        5785  5786  5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863  5869  5870
        5871  5872  5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970  5972  5983
        5985  5994  6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162  6174  6176
        6203  6212  6214  6219  6289  6291  6293
.IFF     5054  5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183  5186
        5189  5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243  5244
        5249  5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319  5330
        5337  5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406  5417
        5423  5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502  5503
        5514  5521  5528  5534  5549  5563  5570  5571  5572  5573  5582  5588  5589  5590  5591
        5602  5608  5619  5626  5632  5647  5661  5670  5671  5672  5673  5682  5688  5689  5690
        5691  5702  5716  5723  5729  5744  5758  5765  5766  5767  5768  5777  5783  5784  5785
        5786  5796  5801  5808  5814  5830  5844  5851  5852  5853  5854  5863  5869  5870  5871
        5872  5882  5892  5901  5903  5912  5924  5938  5942  5952  5955  5970  5972  5983  5985
        5994  6024  6025  6045  6064  6066  6075  6101  6110  6131  6151  6162  6174  6176  6203
        6212  6214  6219  6289  6291  6293
.IFT     5104  5109  5114  5120  5126  5132  5138  5143  5151  5159  5167  5175  5183  5186  5189
        5193  5196  5198  5201  5204  5207  5219  5220  5221  5222  5241  5242  5243  5244  5249
        5256  5262  5277  5291  5298  5299  5300  5301  5310  5316  5317  5318  5319  5330  5337
        5344  5350  5365  5378  5385  5386  5387  5388  5397  5403  5404  5405  5406  5417  5423
        5433  5440  5446  5461  5475  5482  5483  5484  5485  5494  5500  5501  5502  5503  5514
```

```
                5521    5528    5534    5549    5563    5570    5571    5572    5573    5582    5588    5589    5590    5591    5602
                5608    5619    5626    5632    5647    5661    5670    5671    5672    5673    5682    5688    5689    5690    5691
                5702    5716    5723    5729    5744    5758    5765    5766    5767    5768    5777    5783    5784    5785    5786
                5796    5801    5808    5814    5830    5844    5851    5852    5853    5854    5863    5869    5870    5871    5872
                5882    5892    5901    5903    5912    5924    5938    5942    5952    5955    5970    5972    5983    5985    5994
                6024    6025    6045    6064    6066    6075    6101    6110    6131    6151    6162    6174    6176    6203    6212
                6214    6219    6289    6291    6293
.IIF            5055    5100    5104    5109    5114    5120    5126    5132    5138    5143    5144    5151    5159    5167    5175
                5183    5184    5186    5189    5193    5196    5198    5201    5204    5207    5209    5219    5220    5221    5222
                5241    5242    5243    5244    5245    5249    5251    5256    5257    5262    5263    5277    5291    5292    5298
                5299    5300    5301    5310    5316    5317    5318    5319    5330    5333    5337    5339    5344    5345    5350
                5351    5365    5378    5379    5385    5386    5387    5388    5397    5403    5404    5405    5406    5417    5418
                5423    5429    5433    5435    5440    5441    5446    5447    5461    5475    5476    5482    5483    5484    5485
                5494    5500    5501    5502    5503    5514    5517    5521    5523    5528    5529    5534    5535    5549    5563
                5564    5570    5571    5572    5573    5582    5588    5589    5590    5591    5602    5603    5608    5615    5619
                5621    5626    5627    5632    5633    5647    5661    5662    5670    5671    5672    5673    5682    5688    5689
                5690    5691    5702    5712    5716    5718    5723    5724    5729    5730    5744    5758    5759    5765    5766
                5767    5768    5777    5783    5784    5785    5786    5796    5797    5801    5803    5808    5809    5814    5816
                5830    5844    5845    5851    5852    5853    5854    5863    5869    5870    5871    5872    5882    5885    5892
                5894    5901    5903    5904    5912    5915    5924    5927    5938    5942    5944    5952    5955    5957    5970
                5972    5975    5983    5985    5986    5994    5998    6024    6025    6027    6045    6052    6064    6066    6067
                6075    6087    6101    6110    6131    6138    6151    6162    6174    6176    6180    6203    6212    6214    6217
                6219    6221    6289    6291    6293
.LIST              2    4631    4669    4713    4918    5047    5055    5100    5104    5109    5114    5120    5126    5132    5138
                5143    5144    5151    5159    5167    5175    5183    5184    5186    5189    5193    5196    5198    5201    5204
                5207    5209    5213    5214    5215    5218    5219    5220    5221    5222    5226    5227    5228    5231    5234
                5235    5236    5239    5241    5242    5243    5244    5245    5249    5251    5256    5257    5262    5263    5268
                5269    5270    5273    5277    5282    5283    5284    5287    5291    5292    5298    5299    5300    5301    5303
                5304    5305    5308    5310    5316    5317    5318    5319    5321    5322    5323    5326    5330    5333    5337
                5339    5344    5345    5350    5351    5356    5357    5358    5361    5365    5370    5371    5372    5375    5378
                5379    5385    5386    5387    5388    5390    5391    5392    5395    5397    5403    5404    5405    5406    5408
                5409    5410    5413    5417    5418    5423    5429    5433    5435    5440    5441    5446    5447    5452    5453
                5454    5457    5461    5466    5467    5468    5471    5475    5476    5482    5483    5484    5485    5487    5488
                5489    5492    5494    5500    5501    5502    5503    5505    5506    5507    5510    5514    5517    5521    5523
                5528    5529    5534    5535    5540    5541    5542    5545    5549    5554    5555    5556    5559    5563    5564
                5570    5571    5572    5573    5575    5576    5577    5580    5582    5588    5589    5590    5591    5593    5594
                5595    5598    5602    5603    5608    5615    5619    5621    5626    5627    5632    5633    5638    5639    5640
                5643    5647    5652    5653    5654    5657    5661    5662    5670    5671    5672    5673    5675    5676    5677
                5680    5682    5688    5689    5690    5691    5693    5694    5695    5698    5702    5712    5716    5718    5723
                5724    5729    5730    5735    5736    5737    5740    5744    5749    5750    5751    5754    5758    5759    5765
                5766    5767    5768    5770    5771    5772    5775    5777    5783    5784    5785    5786    5788    5789    5790
                5793    5796    5797    5801    5803    5808    5809    5814    5816    5821    5822    5823    5826    5830    5835
                5836    5837    5840    5844    5845    5851    5852    5853    5854    5856    5857    5858    5861    5863    5869
                5870    5871    5872    5874    5875    5876    5879    5882    5885    5892    5894    5901    5903    5904    5912
                5915    5924    5927    5938    5942    5944    5952    5955    5957    5970    5972    5975    5983    5985    5986
                5994    5998    6004    6005    6006    6009    6017    6018    6019    6022    6024    6025    6027    6032    6033
                6034    6037    6045    6052    6054    6055    6056    6059    6064    6066    6067    6075    6078    6079    6080
                6083    6087    6092    6093    6094    6097    6101    6103    6104    6105    6108    6110    6116    6117    6118
                6121    6124    6125    6126    6129    6131    6138    6151    6162    6167    6168    6169    6172    6174    6176
                6180    6196    6197    6198    6201    6203    6205    6206    6207    6210    6212    6214    6217    6219    6221
                6252    6253    6254    6257    6289    6291    6293
.MACRO            39      81     168     308     485     515     586     747     801     895     926     974     986    1026    1058
                1091    1104    1125    1138    1171    1220    1266    1303    1350    1383    1413    1469    1477    1529    1733
                1941    2134    2222    2347    2444    2522    2607    2821    2913    2989    3089    3217    3280    3342    3460
                3498    3562    3660    3745    3784    3847    3885    3928    4026    4074    4358    4405    4445    4521    4633
                4649    4654    4660    4671    4687    4695    4699    4709    4920    4934
```

```
.MCALL   5048    5049    5050
.MEXIT   5055
.NLIST      1       3    4632    4670    4917    4977    5055    5100    5104    5109    5114    5120    5126    5132    5138
         5143    5144    5151    5159    5167    5175    5183    5184    5186    5189    5193    5196    5198    5201    5204
         5207    5209    5212    5215    5216    5217    5219    5220    5221    5222    5225    5228    5229    5230    5233
         5236    5237    5238    5241    5242    5243    5244    5245    5249    5251    5256    5257    5262    5263    5267
         5270    5271    5272    5277    5281    5284    5285    5286    5291    5292    5298    5299    5300    5301    5302
         5305    5306    5307    5310    5316    5317    5318    5319    5320    5323    5324    5325    5330    5333    5337
         5339    5344    5345    5350    5351    5355    5358    5359    5360    5365    5369    5372    5373    5374    5378
         5379    5385    5386    5387    5388    5389    5392    5393    5394    5397    5403    5404    5405    5406    5407
         5410    5411    5412    5417    5418    5423    5429    5433    5435    5440    5441    5446    5447    5451    5454
         5455    5456    5461    5465    5468    5469    5470    5475    5476    5482    5483    5484    5485    5486    5489
         5490    5491    5494    5500    5501    5502    5503    5504    5507    5508    5509    5514    5517    5521    5523
         5528    5529    5534    5535    5539    5542    5543    5544    5549    5553    5556    5557    5558    5563    5564
         5570    5571    5572    5573    5574    5577    5578    5579    5582    5588    5589    5590    5591    5592    5595
         5596    5597    5602    5603    5608    5615    5619    5621    5626    5627    5632    5633    5637    5640    5641
         5642    5647    5651    5654    5655    5656    5661    5662    5670    5671    5672    5673    5674    5677    5678
         5679    5682    5688    5689    5690    5691    5692    5695    5696    5697    5702    5712    5716    5718    5723
         5724    5729    5730    5734    5737    5738    5739    5744    5748    5751    5752    5753    5758    5759    5765
         5766    5767    5768    5769    5772    5773    5774    5777    5783    5784    5785    5786    5787    5790    5791
         5792    5796    5797    5801    5803    5808    5809    5814    5816    5820    5823    5824    5825    5830    5834
         5837    5838    5839    5844    5845    5851    5852    5853    5854    5855    5858    5859    5860    5863    5869
         5870    5871    5872    5873    5876    5877    5878    5882    5885    5892    5894    5901    5903    5904    5912
         5915    5924    5927    5938    5942    5944    5952    5955    5957    5970    5972    5975    5983    5985    5986
         5994    5998    6003    6006    6007    6008    6016    6019    6020    6021    6024    6025    6027    6031    6034
         6035    6036    6045    6052    6053    6056    6057    6058    6064    6066    6067    6075    6077    6080    6081
         6082    6087    6091    6094    6095    6096    6101    6102    6105    6106    6107    6110    6115    6118    6119
         6120    6123    6126    6127    6128    6131    6138    6151    6162    6166    6169    6170    6171    6174    6176
         6180    6195    6198    6199    6200    6203    6204    6207    6208    6209    6212    6214    6217    6219    6221
         6251    6254    6255    6256    6289    6291    6293
.NTYPE   5215    5228    5236    5270    5284    5305    5323    5358    5372    5392    5410    5454    5468    5489    5507
         5542    5556    5577    5595    5640    5654    5677    5695    5737    5751    5772    5790    5823    5837    5858
         5876    6006    6019    6034    6056    6080    6094    6105    6118    6126    6169    6198    6207    6254
.PAGE    5051    5057
.REPT    4714    4979
.SBTTL   5054    5055    5056    5100    5144    5184    5209    5245    5251    5257    5263    5292    5333    5339    5345
         5351    5379    5418    5429    5435    5441    5447    5476    5517    5523    5529    5535    5564    5603    5615
         5621    5627    5633    5662    5712    5718    5724    5730    5759    5797    5803    5809    5816    5845    5885
         5894    5904    5915    5927    5944    5957    5975    5986    5998    6027    6052    6067    6087    6138    6180
         6217    6221
.WORD    5054    5055    5056    5215    5228    5236    5270    5284    5305    5323    5358    5372    5392    5410    5454
         5468    5489    5507    5542    5556    5577    5595    5640    5654    5677    5695    5737    5751    5772    5790
         5823    5837    5858    5876    6006    6019    6034    6056    6080    6094    6105    6118    6126    6169    6198
         6207    6254


ERRORS DETECTED:  0
DEFAULT GLOBALS GENERATED:  0

*,DVKADA/DS:ERFZ/CRF=DVKADA.SML,DVKADA.P11
RUN-TIME: 46 58 9 SECONDS
RUN TIME RATIO: 2054/114=17.9
CORE USED:  30K  (59 PAGES)
```

LO5

Spooler runtime 12 Seconds, 52 KCS, 320 disk reads, 3 disk writes, 62 pages